

## Sanjay Bajpai (1965–2021)

Dr Sanjay Bajpai, Scientist-G, Department of Science and Technology (DST), Government of India, who successfully implemented creative national and international R&D programmes, passed away on 12 May 2021. He was born on 19 February 1965. He pursued B.Tech. in Mechanical Engineering from Malaviya National Institute of Technology, Jaipur, followed by MBA from University of Rajasthan, Jaipur and subsequently earned Ph.D. for the work on 'Alternative fuels for internal combustion engines' from IIT-Delhi.

After a brief stint in industry, Sanjay joined as Scientist-B in DST in 1991. His outstanding accomplishments ensured elevation to various levels, becoming Head of Technology Mission Division – Water and Energy. During three decades of dedicated service, he conceptualized and steered various schemes, particularly state S&T mechanisms through application of appropriate technology development and commercialization endeavours. While implementing the State Council of S&T programme and being a visionary, he identified water and energy sectors, where DST had to work in mission mode. As a true *Karma Yogi*, he translated his vision into action keeping synergy of thoughts with all his colleagues and laid the foundation for Water and Energy programmes with clear focus on societal interventions and industry linkages, where appropriate. He started field-specific initiatives in the areas of water, bio-fuels and clean energy, with outcomes impacting people. His acumen in relating technology for societal relevance was the reason for assigning the Winning, Augmentation and Renovation for Water (WAR for Water) programme, spearheaded by T. Ramasami, the then Secretary of DST, on the directions of Supreme Court of India, to come out with technological solutions for addressing various water challenges. His proactive approach and inclusiveness enabled in finding sustainable solutions, through establishment of appropriate drinking water facilities/units in 300 much needed villages, benefiting over 1.60 million people, across the country, which have been replicated by various states, NGOs and a few corporates. This unique approach led to international collaborations, viz. Dutch India Water Alliance

for Leadership Initiative (DIWALI), through a consortium of knowledge institutions and enterprises from The Netherlands and India, between India and European Union, and a new Indigo initiative between DST and R&D institutions of Belgium, Finland, France, The Netherlands, Germany and Spain, in designing solutions to meet the utility price envelope of countries similar to Indian situation. He was the brain behind the



Indo-UK projects on Water Quality Research programme, which focused mainly on fate and management of emerging contaminants. He was also instrumental in starting Water Innovation Centers under Water Technology Initiatives to carry out collaborative research with many institutions/groups to come up with sustainable solutions and technologies for various water-related challenges.

Sanjay shaped a strong eco-system for R&D and technology demonstration in launching Clean Energy Research Initiative, with initial focus on Solar Energy. Seeing its success, it was expanded to cover programmes related to Methanol, Desalination, Clean coal, Building energy research, Materials for energy storage, Carbon capture storage and utilization, etc., by leveraging international collaborations. These enabled India to occupy a leadership position among 23 nations under Mission Innovation. He accelerated Clean Energy Innovation with enhanced funding, greater public-private partnership and knowledge sharing. In the process, India became the first country in developing collaborative pro-

grammes for Smart Grid and Off Grid in mounting demand-driven convergent solutions, in consortia mode, reaching advanced technology readiness levels.

Sanjay's interventions resulted in several papers, technical reports, Indian and US patents, and successful demonstration of various technologies; some of them leading to commercialization. As part of various technical committees, he ably mentored many young researchers in taking up challenging tasks and projects of great relevance. He also played a stellar role in spearheading many unique programmes of contemporary interest and guided policy makers in formulating significant initiatives of national importance. The worthy contributions of Sanjay and his team received many honours, to name a few, National Urban Water Award by the Union Ministry of Urban Development, Grand Challenges: Top Solutions Award by Technology Review – Massachusetts Institute of Technology (USA), National Award for Excellence in Ground Water by the Union Ministry of Water Resources, FICCI-HSBC Water-Innovation Award by FICCI, Hydrology Research Promotion Award by the Association of Hydrologists of India, Make in India Award by Indian Desalination Association and Global Water Award by Energy and Environment Foundation and Aqua Excellence Award by Aqua Foundation. Sanjay was a Fellow of Indian National Academy of Engineering and conferred with Honorary Fellowship of Association of Hydrologists of India.

Sanjay has been instrumental in shaping DST's foray in water and energy technologies and has led mission programmes in both these domains. He has conceptualized, crafted and implemented research, development and demonstration programmes in these domains for accelerated innovations. While quantifying the impact of his work on the S&T landscape of India may not be accurate, one may state the following. Under his direct supervision, over 1100 individual R&D projects, 4 Centers of Excellence, 2 of them jointly with Institutions in USA under India-US bilateral cooperation, in Clean Solar Energy, 2 Solar Hubs and 10 Water Quality, Management and Testing Centers, amounting to Rs 1350 crore, were sanctioned over the last 14 years.

Fifty five Post-doctoral Fellowships for young faculty/scientists and 65 Internships for doctoral students were awarded in the areas of Solar Energy, Water Technology and Energy Efficiency in Buildings for pursuing research in some of the leading Universities/Institutions in USA. This contributed to the work of 800 researchers in 350 S&T institutions and NGOs across the country. Many of these projects were across disciplines and multi-institutional, having strong industry participation leading to technology development for adoption by the industry. He was instrumental in leveraging crucial multilateral collaborations in the areas of clean energy and water under the aegis of Mission Innovation, Accelerating Carbon Capture Utilisation and Storage Technologies and European Union, along with establishing significant bilateral interactions in the areas of water and clean energy with UK, The Netherlands, Sweden, France and USA. In addition, he facilitated formulation of schemes and annual budgetary plans for all the 28 State S&T Councils for which DST extended core support to the tune of Rs 450 crore for taking up various activities of local relevance. The mechanisms he created, with the support of younger colleagues, ensured that the allocated funds reach the investigators quickly. This made a large difference for the in-

vestigator; there was always an individual who was considerate to the needs of R&D and the Society. He made significant contribution to development of National Cooling Action Plan. He was instrumental in conceptualizing and launching Global Cooling Prize as part of Mission Innovation Challenge on Affordable Heating and Cooling Challenge.

Sanjay will be fondly remembered by scientific fraternity as the true champion of S&T face of India. He brought together many researchers across academia, R&D labs and industry, in taking up some of the challenges faced across the globe. He was concerned about the development of S&T in less endowed institutions and therefore created channels for them whenever opportunity arose. Despite health concerns faced over the last decade, he ensured that 'the show must go on', which was in fact his working principle at office. While on leave or even when in hospital, he used to respond to the mails/messages/calls of S&T fraternity, or queries from his colleagues and offer guidance in processing the proposals for sanction, so as not to keep the matter pending. He was approachable to all. Compassion and ever willing positive attitude were his hall marks with a lasting SMILE (characterized by simplicity, modesty, integrity, leadership and empathy) in the service of the nation.

With his sad demise, DST has lost one of its most capable officers who represented India's emerging S&T management face.

Sanjay leaves behind his mother, wife, two daughters and a son.

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