

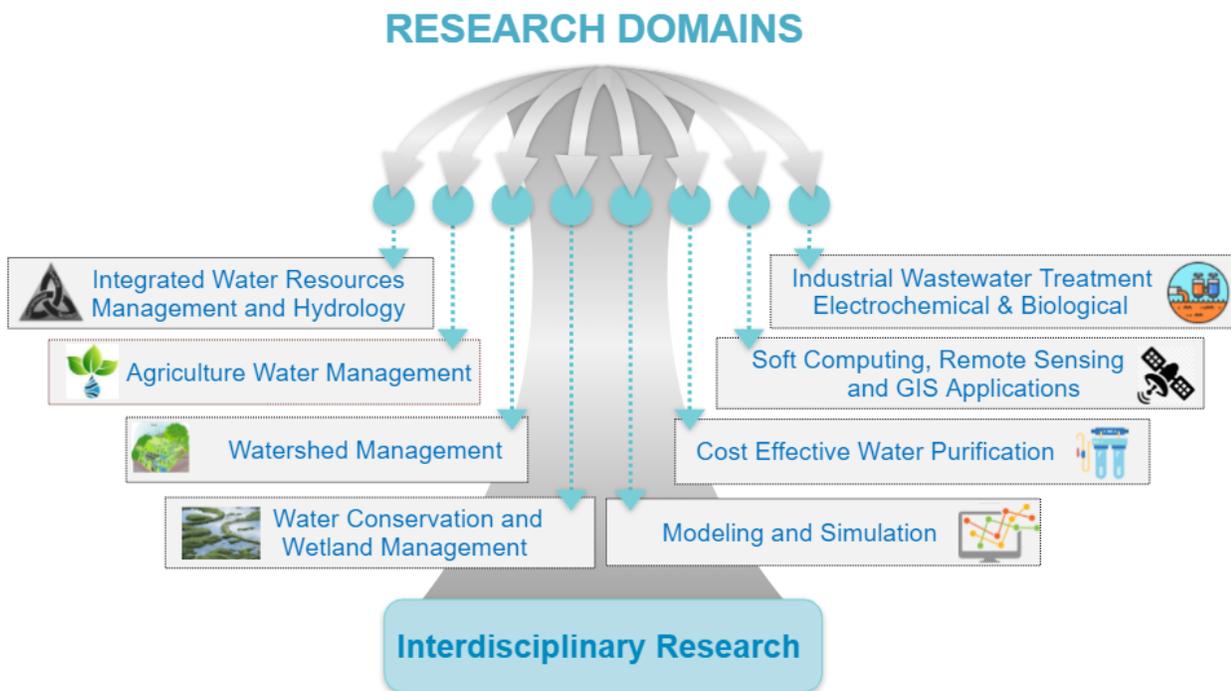
INSTITUTIONAL DISTINCTIVENESS

Focus on Socially Relevant Domain of WATER

KITS identified four thrust areas of societal importance in 2008, namely water, food, healthcare and sustainable energy. The Water Institute (WI) was established in 2008 as a flagship programme to encourage interdisciplinary research aiming at scientific water management, and ensuring water security, especially in semi-arid zones. WI was established keeping in view MDGs; since 2016, the focus shifted to SDGs. The Dublin Conference-1912, Jio Conference-1942 and Johannesburg Conference-2022, and the initiatives of GoI, namely the National Drinking Water Mission and WAR for Water prompted by the Supreme Court of India motivated KITS to focus more on water. The relevance of research in WI gained significance with more areas coming under water stress or water scarcity in India. The WI succeeded in bringing together the faculty and students of different Departments-arts, science, agriculture, engineering and management for interdisciplinary research and to address multifarious water related issues. As a result, several projects, papers, products, consultancy, capacity building and extension activities emerged.

ACADEMIC PROGRAMMES

- In the background of the Dublin Conference and the importance assigned to sustainability, WI introduced a M.Tech. in Integrated Water Resources Management (IWRM) in 2009; this programme was revamped in 2017 by including the overall environmental perspective, as M.Tech. Environmental and Water Resources Engineering. Around 60 students passed out of the portals of Karunya to practice IWRM in different parts of India and abroad.
- WI also offers Ph.D. Programme, and more than 20 doctoral theses related to water are either completed or in the process of completion. These works cover a large spectrum of topics in hydrology and water management: impact of LULC on hydrology, isotope application for groundwater recharge studies; evolving reservoir operation policy, contribution of hydroelectric projects to environmental flows, application of nano-membranes, electrocoagulation, electro-dialysis, CDI and bio-remediation for water treatment.

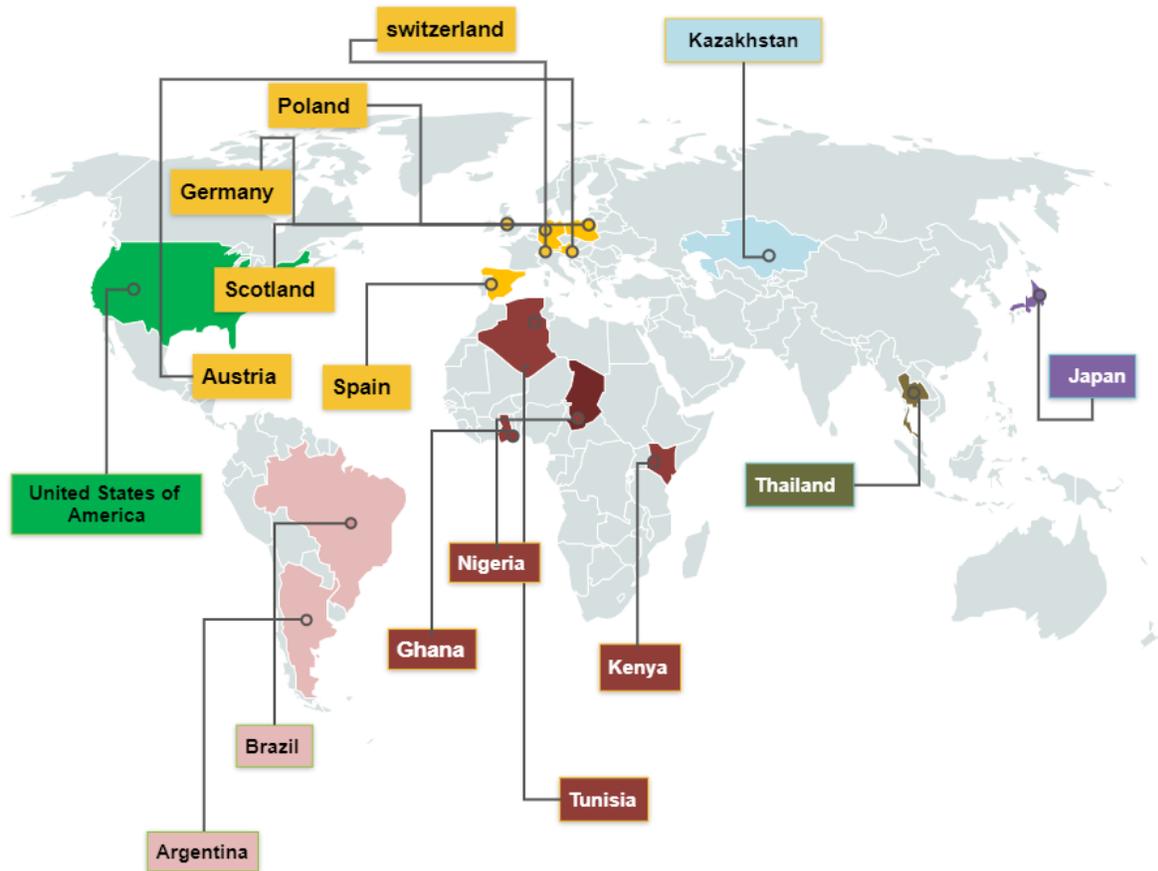


RESEARCH OUTPUT

During the past decade, more than one dozen projects were carried out in water domain at a total outlay of more than Rs.250 lakh, most of which are funded by DST, MoEF&CC and DRDO. The projects dealt with a spectrum of topics like river basin management in relation to wise use of wetlands, isotope hydrology, electrochemical methods for water treatment, and bio-remediation for improving water quality. An interdisciplinary group of 50 faculty members are involved in water research and more than 100 papers on the thome of water have been published in Scopus/WoS indexed journals.

- The emerging tools used, methodology and models evolved would be of use to the water resources management in different hydro-ecological and agro-climatic zones of the country.
- A laboratory with analytical instruments has been established with AAS, IC, TOC analyser, UV spectrophotometer and also for studies on water treatment using electrochemical, membrane and bioremediation techniques

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CONSULTANCY ASSIGNMENTS

The faculty members of Karunya, under the umbrella of WI, have taken up consultancy assignments worth more than Rs.100 lakh from international agencies like Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH, Wetlands International - South Asia (WISA) and Japan International Cooperation Agency (JICA) as well as from Government of India, and Government of Manipur, Kerala, Tamil Nadu and Odisha. The major consultancy work pertains to the Point Calimere wetland, Loktak lake, watershed model of Attapady, electro-fluorination, and integrated management of Mahanadi river. The methodologies and models evolved can be replicated in other parts of the country.

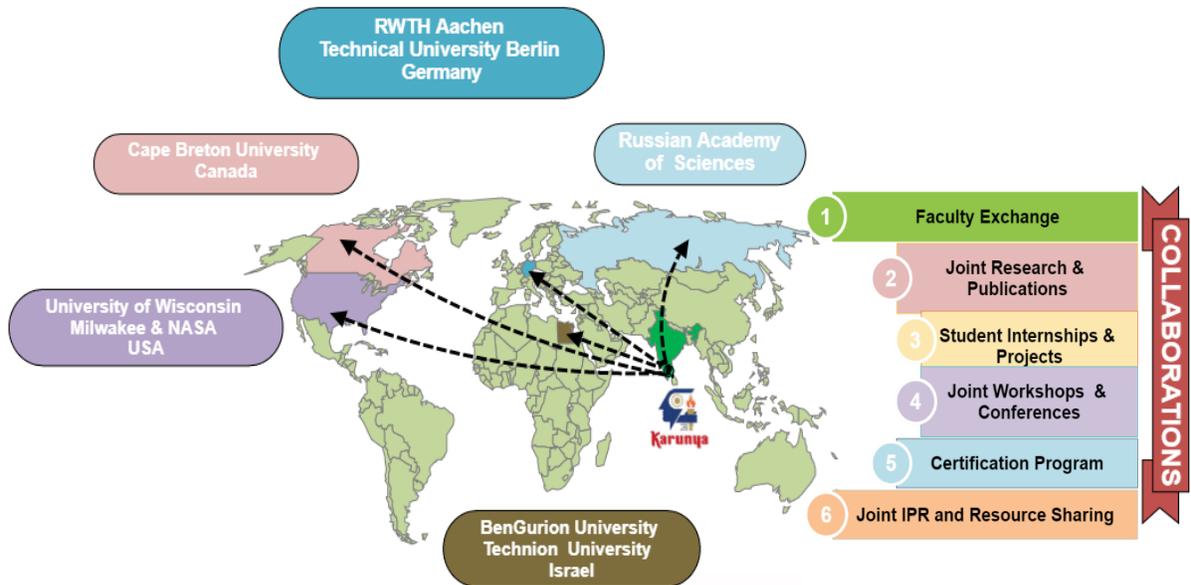
PRODUCTS AND PATENTS

KITS has developed more than 20 patents and products in the water sector of which 2 are granted. A few of these products are being commercialized. 2 patents on water treatment have been jointly filed by KITS and ZIWR, Israel, and Cape Breton University, Canada.



COLLABORATIONS

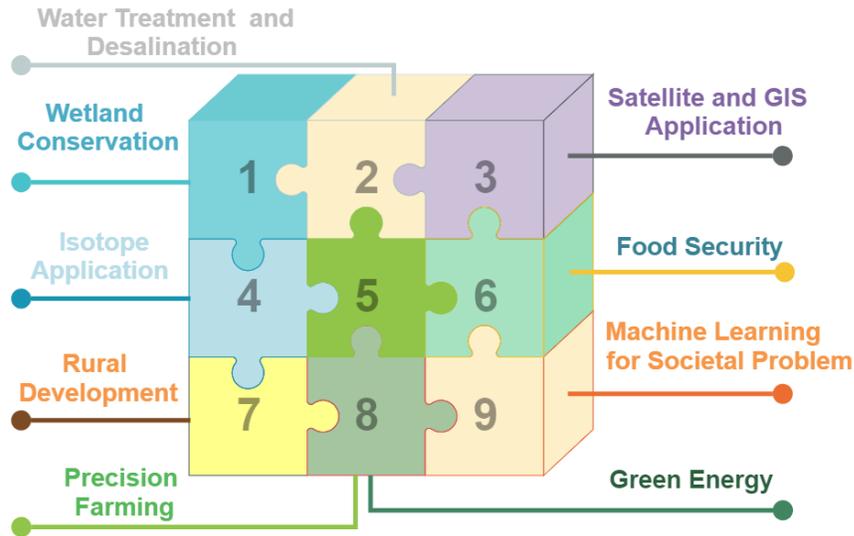
Karunya has established collaborative links with National Institute of Hydrology, Roorkee and Center for Water Resources Development and Management, Calicut and National Environmental Engineering ... It has entered into MoUs with institutions in Israel: Water Institute of Technion of Haifa, Smith Faculty of Food and Water of Hebrew University (Rehovot campus), Jacob Blaustein Institutes for Desert Research, Agricultural Research Organization of Israel and also with Water Partnership of University of Wisconsin, Milwaukee, Hydrogeology Group of Technical University of Aachen, and Environmental and Water Groups of Brandenburg University of Germany, and Cape Breton University and University of Saskatchewan of Canada.



TECHNOLOGY MISSIONS IN THE WATER SECTOR

Nine of the Technology Missions of KITS have relevance to water resources development and management. These are in the emerging areas of application of drones, remote sensing, and isotopes, wetland conservation, desalination and solving the water problems of smart cities and rural areas. Around 2 faculty members and more than 200 students are involved in these Missions. These Missions are initiated keeping in view the Government schemes like *AatmaNirbhar Bharath Abhiyan*, *Swachh Bharath Mission* and *National Mission on Water*.

Technology Missions in the Domain of Water



TRANSFER OF TECHNOLOGY AND CAPACITY BUILDING

More than one dozen transfer of technology programmes and capacity building workshops were conducted by WI, most of which were sponsored by the Government of India; an International Regional Science Meeting on LULC Change Dynamics was sponsored by NASA. These programmes were conducted at a total outlay of Rs.40 lakh. More than two dozen keynote addresses on water were delivered by the faculty of WI; the faculty members also served in the Central Wetland Regulatory Authority (Hydrology Expert), National Wetland Atlas Project (Chairman, Steering Committee), Working Group on Tidal Waters of ICID, Surface Water Research Group of CWC, Wetland Authority of Tamil Nadu and Kerala, and Wetlands International-SA (Governing Body). Conferences were conducted together with experts from Russian Academy of Sciences, University of Berlin, University of Cape Breton and Blaustein Desert Research Institute-Israel.

EXTENSION ACTIVITIES

Team Karunya was active in creating awareness on water and sanitation among the rural population. Several water samples were tested and solutions to local problems provided. The groundwater and surface water problems were studied in the nearby water sources especially Sulur and Ukkadam lakes in Coimbatore. Together with the LSGs, KITS provided sanitation facilities in rural areas. A prototype model of multi-channel baffle type electrocoagulation was installed, experimented and demonstrated in a small-scale thread mill in Coimbatore.