

### Implementation Format

The training programme will be conducted by eminent persons, who are experts with several years of professional experience on different aspects of water resources management and water supply and sanitation, including research, consulting and implementation of field projects. The resource persons will offer lecture notes and presentations which will bring in examples that link the theoretical and practical aspects of problem-solving in the WASH sector. The training programme will be intensive, covering all aspects of planning and design of WASH systems for climate-resilience in different regions.

### About Course Director

Dr M. Dinesh Kumar is Executive Director of IRAP. He has 27 years of experience working on technical, economic, institutional & policy issues in water management in India and other south Asian countries such as Nepal, Pakistan and Bangladesh. Dr Kumar who has a PhD in Water Resources Management has experience in diverse areas including irrigation, river basin management, groundwater management, water-energy-food security nexus, urban water management, water productivity in agriculture and virtual water trade. He is the author of several books on water, energy, agriculture and food security and has published extensively in international peer-reviewed journals. He has 180 research papers to his credit. Dr Kumar is the Associate Editor of *Water Policy* since 2011 and a Member of the Editorial Board of *International Journal of Water Resources Development* since 2014.



Dr Kumar's current research interests include Integrated Catchment Management, Groundwater management and Tank Management, River Basin Water Balance, Water Accounting, Governance & Management, Rural Water Supply and Sanitation, Economics and Financing of Water, Water Productivity in Agriculture, and Integrated Urban Water Management. His approach is problem-solving and policy oriented research on topics which have direct relevance to the field, and which would lead to better discourse on water management.

### Course Dates and Venue

The training programme would be organized in Hyderabad on February 4-8, 2019. Hyderabad normally has pleasant weather during the month of February, with maximum and minimum temperatures at around 32°C and 18° C, respectively and occasional showers from the North-East monsoon. The exact venue of the training programme and detailed scheme would be communicated three weeks before the commencement of the training.

### Programme Fee

The programme fee is Rs 24,000/- per participant. It includes tuitions fee, course kit, lunch, refreshments, dinner and accommodation.

# Training Programme on Climate-Resilient WASH

February 4 - 8, 2019



Organized by

**Institute for Resource Analysis and Policy (IRAP)**

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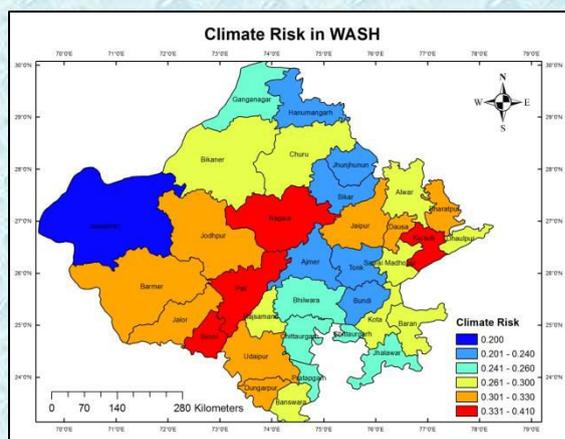
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## Training Programme on Climate-Resilient WASH

“Climate Change” and ways to cope with it are topics which have gained paramount importance in the recent past. In the Indian context where we experience erratic monsoon weather patterns in the form of droughts, high intensity storms and floods, there are many uncertainties inherent in the climate change predictions. It is well known that most water supply and sanitation systems fail during extreme weather conditions. The inter-annual variability in weather parameters in India is often much more conspicuous than the changes to these parameters due to climate change. As a result, the effects of these changes on water supply, sanitation and human health are sometimes very complex and not amenable to simplistic formulations. It is very important that we are enabled to analyze these changes and develop resilient water supply and sanitation systems.

India has a high degree of spatial heterogeneity in climate, hydrology, geology, geo-hydrology, soils and topography, causing significant regional variations in the availability of water resources. There is also wide variation in access to improved sanitation and waste water treatment facilities. Added to this are differences in the levels and spread of literacy and education across the states, which have a direct bearing on the people’s understanding of WASH issues and hygiene practices. Even within a state there are wide variations in rainfall, climate, geology and geo hydrology as well as socio-cultural characteristics and the level of institutional preparedness and flexibility, so much so that how a community responds to WASH challenges imposed by climate change and variability differs from place to place. It is thus very important that site specific analysis of climate risks to WASH services be carried out and unique solutions to those problems identified and applied.



### About the Institute

The Institute for Resource Analysis and Policy (IRAP) has proven experience of extensively analysing several water problems in India, including analysis of risks posed by climate extremes on water availability for irrigation and drinking water supplies at the basin and local level in Maharashtra, Gujarat, Rajasthan, Andhra Pradesh, Telangana and Chhattisgarh.

IRAP also has all round expertise and capability in providing training on various aspects of planning and designing climate resilient WASH systems. It includes identifying and mapping climate induced risks in WASH; identifying technical and institutional innovations required to develop resilience towards these risks; assessing the cost implications of the interventions and identifying the capacity building requirements for the line agencies in the water and sanitation sectors.

Started with the objective of promoting sustainable natural resource management in 2008, IRAP covered a wide ground in water management sector, doing consulting, research and training. In the recent past, it has completed the following projects.

The project, “Mapping of Climate Risk in WASH sector of Rajasthan” involved development of an index for assessing climate risk in WASH and computation of the index at the district level, along with UNICEF, Rajasthan. The project was to build institutional capacities in the rural WASH sector of the state to plan, design and build climate-resilient water and sanitation systems converging with existing national and state flagships on rural water and sanitation and associated sector of water resource management. Having completed these tasks, the institute is presently developing action plans for climate-resilient WASH for two districts of Rajasthan, viz., Barmer and Sirohi.

A study undertaken by IRAP for UNICEF, Mumbai in 2016 looked at building institutional capacities in the rural WASH sector of Maharashtra to plan, design and build climate-resilient water and sanitation systems, based on climate risk assessments in two distinct regions of the state. The project involved mapping the magnitude of various risks in water supply and sanitation associated with climate variability and change and identifying the technical and institutional innovations required in the existing national and state government programmes related to WATSAN to make the water supply and sanitation interventions resilient against climate-induced risks. Along with the Groundwater Survey and Development Agency (GSDA) Pune and UNICEF, Mumbai, IRAP also developed a tool kit for developing a decision support tool on planning drought mitigation measures in the tribal blocks of Maharashtra.

Another study undertaken by IRAP for the Oxford Policy Management Limited (OPML), UK, for the project, Action for Climate Today (ACT) and supported by DFID, developed strategies in the water resources management sector in Chhattisgarh part of Mahanadi river basin for adapting to stresses induced by climate change. The study assessed the overall water resource availability and water uses across competitive use sectors; analysed issues in water resource planning and management; performed basin-wide water balance studies and projected future scenarios of water supply and demand using models, particularly for dry and wet years. It also analysed the potential impact of various water management interventions on the basin's water supply-demand balance and identified viable interventions that would improve basin-wide water resources management, especially during drought years.

IRAP had organized and conducted training programmes on various aspects of water supply and management for government officials, ministerial staff, teachers, students as well as delegates from India and abroad. It has conducted international training programmes including those for the higher-level officials of the Ministry of Agriculture, Federal Democratic Republic of Ethiopia (FDRE), in association with Sheladia Associates Inc. Maryland, US.

### The Training Format

The training programme will be of five-day duration. The training will comprise the right mix of theoretical and practical problem-solving sessions. Participants will be encouraged to share their views on various factors affecting sustainability of WASH systems under extreme weather condition. The focus of the discussions will be on understanding: 1] the factors that influence the climate-induced hazards, exposure of WASH systems to the hazard and community vulnerability; 2] the factors that are critical to designing WASH systems for climate resilience; and 3] identifying the key interventions that would help reduce the disruptions in WASH services resulting from climate extremes in specific contexts.