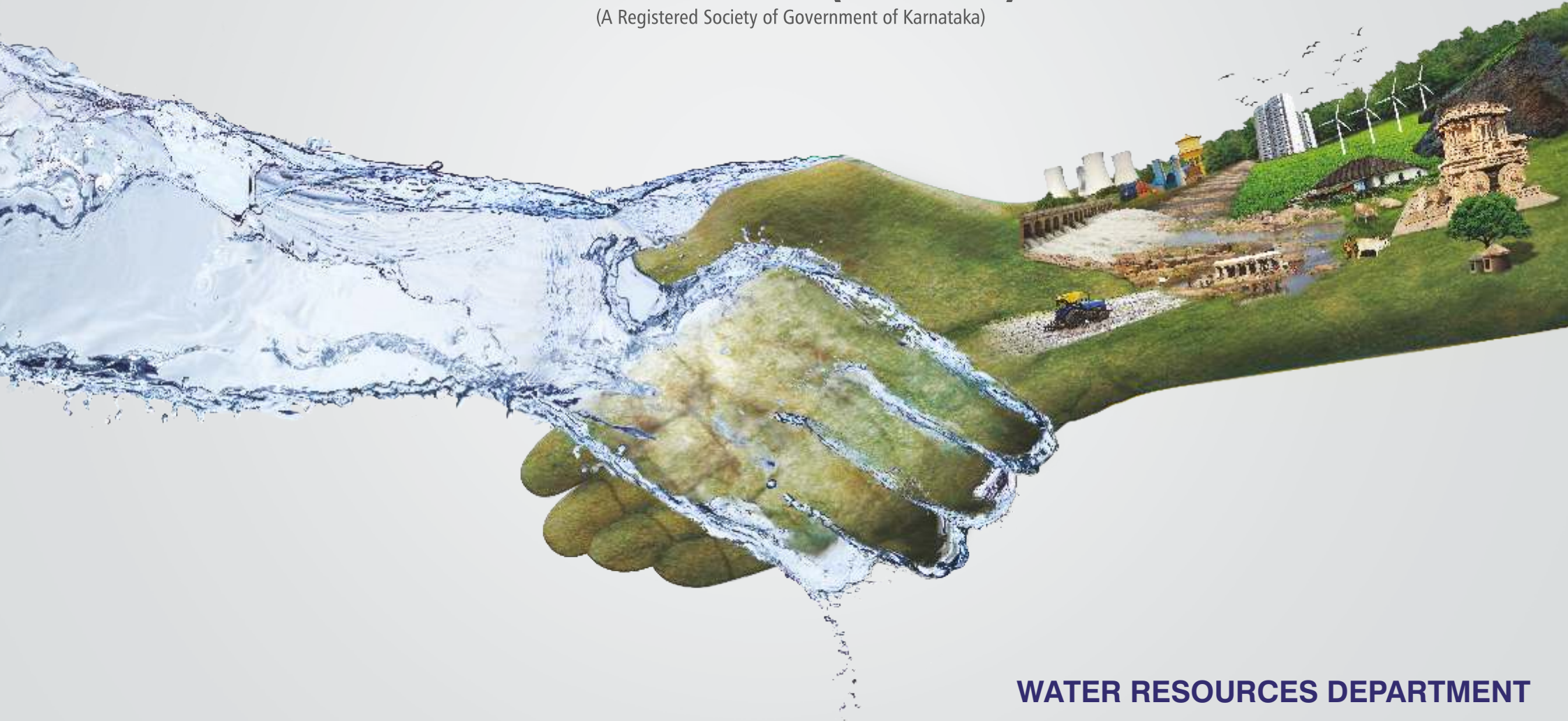




ADVANCED CENTRE for INTEGRATED WATER RESOURCES MANAGEMENT (ACIWRM)

(A Registered Society of Government of Karnataka)



WATER RESOURCES DEPARTMENT

RIVER BASIN MAP OF KARNATAKA



VISION

The vision of the Government of Karnataka for ACIWRM is:
“scientific and sustainable management of water resources to get the maximum water, food and energy security by balancing the demands of various sectors and to ensure harmonious sharing and utilization of resources by mutual understanding and coordination of various stakeholders.”

MISSION

To be a global Centre of Excellence in enabling adoption of the principles of the Integrated Water Resources Management (IWRM).

To facilitate the exchange of expertise, knowledge and experience in adoption of IWRM principles and to drive IWRM as a process.

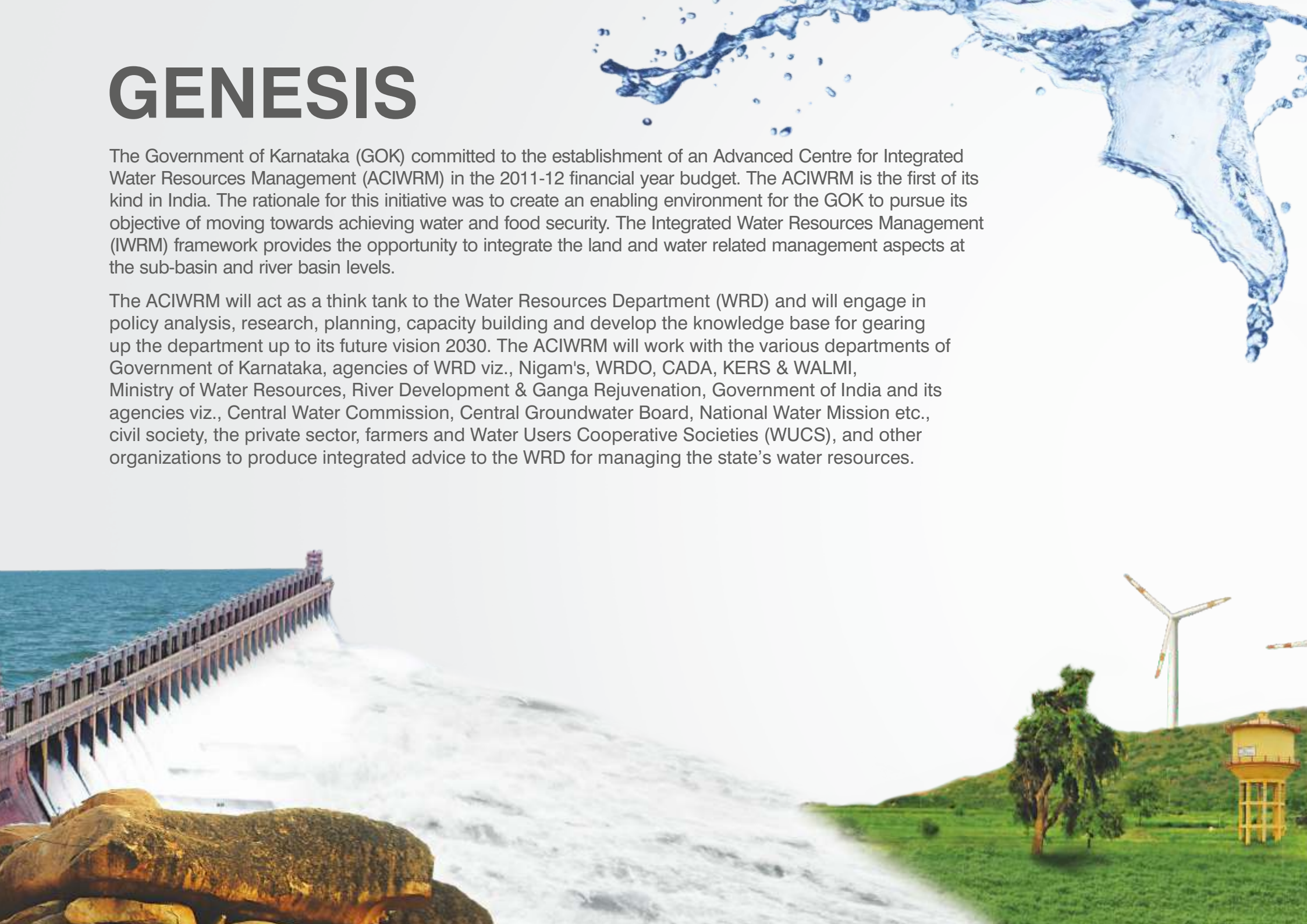
To provide a platform for enabling partnerships of various stakeholders and interested agencies in IWRM to carry out policy analysis, action research, capacity building and professional networking.



GENESIS

The Government of Karnataka (GOK) committed to the establishment of an Advanced Centre for Integrated Water Resources Management (ACIWWM) in the 2011-12 financial year budget. The ACIWWM is the first of its kind in India. The rationale for this initiative was to create an enabling environment for the GOK to pursue its objective of moving towards achieving water and food security. The Integrated Water Resources Management (IWRM) framework provides the opportunity to integrate the land and water related management aspects at the sub-basin and river basin levels.

The ACIWWM will act as a think tank to the Water Resources Department (WRD) and will engage in policy analysis, research, planning, capacity building and develop the knowledge base for gearing up the department up to its future vision 2030. The ACIWWM will work with the various departments of Government of Karnataka, agencies of WRD viz., Nigam's, WRDO, CADA, KERS & WALMI, Ministry of Water Resources, River Development & Ganga Rejuvenation, Government of India and its agencies viz., Central Water Commission, Central Groundwater Board, National Water Mission etc., civil society, the private sector, farmers and Water Users Cooperative Societies (WUCS), and other organizations to produce integrated advice to the WRD for managing the state's water resources.





FUNCTIONS AND WORKING MODALITY

ACWIRM will:

Function as an advisory group agency for WRD to co-ordinate policies and programs related to IWRM.

Coordinate with various WRD agencies to strengthening their respective core responsibilities and enhance their impact.

Refresh and enhance professional capabilities of engineers and other specialists in WRD through training, consultancy and research in IWRM.

Collaborate with national, international, and multi-lateral institutions including the Asian Development Bank, World Bank, JICA, United Nations, EU and development partners– government, service delivery, academic, and research; so as to introduce new IWRM knowledge and best practices, and trial and adapt these to Karnataka.


Provide a platform for experts from across the world to partner with Karnataka in furthering the IWRM processes and activities – either on short term or long term basis.



OBJECTIVES

- To bring the principles of the Integrated Water Resources Management into the water resources sector in Karnataka and to apply them as practical tools.
- To facilitate the guiding vision of the water security so that “Societies can enjoy water security when they successfully manage their water resources and services to:
 - Support productive economies in agriculture and industry
 - Restore healthy rivers and ecosystems
 - Satisfy household water and sanitation needs in all communities
 - Develop vibrant, livable cities and towns
 - Build resilient communities that can adapt to change”
- To bring about improvement in the management of water resources that will benefit the State economy, society, farmer livelihoods and the environment and which integrates the issues of water, food and energy security.
- To integrate the management of surface water, groundwater, rainwater, waste/recycled water, water quality and quantity, and to take a long-term sustainability perspective.



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- Reform the state's water resources management approach from that of development and construction to one centered on management, performance, and service delivery.
 - To bring about a joint and synergistic working approach of departments, sectors and civil society with coherence in thinking, strategies and approaches.
 - To study and facilitate up-to-date institutional frameworks with clear responsibilities for policy, resource management, service delivery of water and user engagement.
 - To build knowledge and information systems and apply a scientific and evidence based approach to the management of resources.
 - To raise awareness and involve civil society and water users in the management of water and related resources.
 - ACIWRM will also work to further the National Water Resources Framework agenda in collaboration with national water agencies.



KEY AREAS

KARNATAKA WATER RESOURCES INFORMATION SYSTEM (KWRIS)

IWRM TRAINING AND CAPACITY BUILDING

RIVER BASIN PLANNING & MANAGEMENT

RIVER BASIN MODELLING

COMMUNICATION, AWARENESS RAISING AND PARTICIPATION

WATER USE EFFICIENCY, WATER ACCOUNTING AND WATER PRODUCTIVITY

STATE IWRM POLICY AND STRATEGY

SUSTAINABLE GROUNDWATER MANAGEMENT / ABHY

PARTICIPATIVE LAND AND WATER MANAGEMENT PLANS (LWMP)

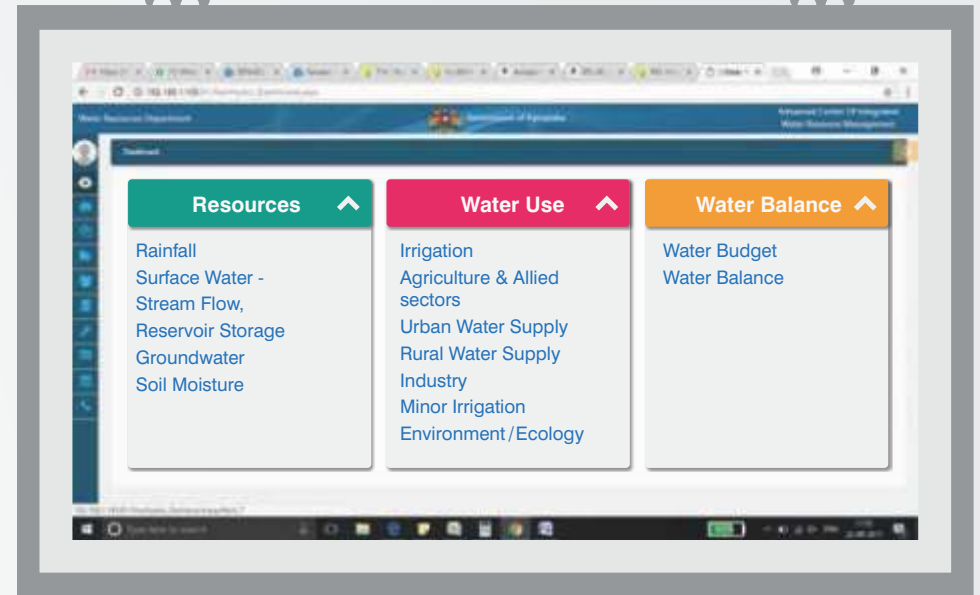
CLIMATE CHANGE / VARIABILITY / ADAPTABILITY FOR WATER SECTOR



KARNATAKA WATER RESOURCES INFORMATION SYSTEM (KWRIS)

The State is developing the Karnataka Water Resource Information System (KWRIS) with a strategy and plan for its on-going development and implementation. The KWRIS will comprise of a spatial system bringing together rainfall data, quantity-quality-condition aspects of surface water, groundwater and water dependent ecosystems. A decision support system with GIS and integrated river basin modelling approaches will be prepared and integrated to form part of the KWRIS system. This will be extensively used to support various activities of ACIWRM.

KWRIS hydro-met, groundwater and water quality data content, monitoring and data capture networks are being improved with the support from the GoK, the ADB, World Bank and other partners. The KWRIS will be used, in particular, to prepare a spatially based Inventory of River Basins in Karnataka, River basin and sub-basin plans, water policy studies, monitoring and reporting of water resource condition, research and studies.



KWRIS dashboard



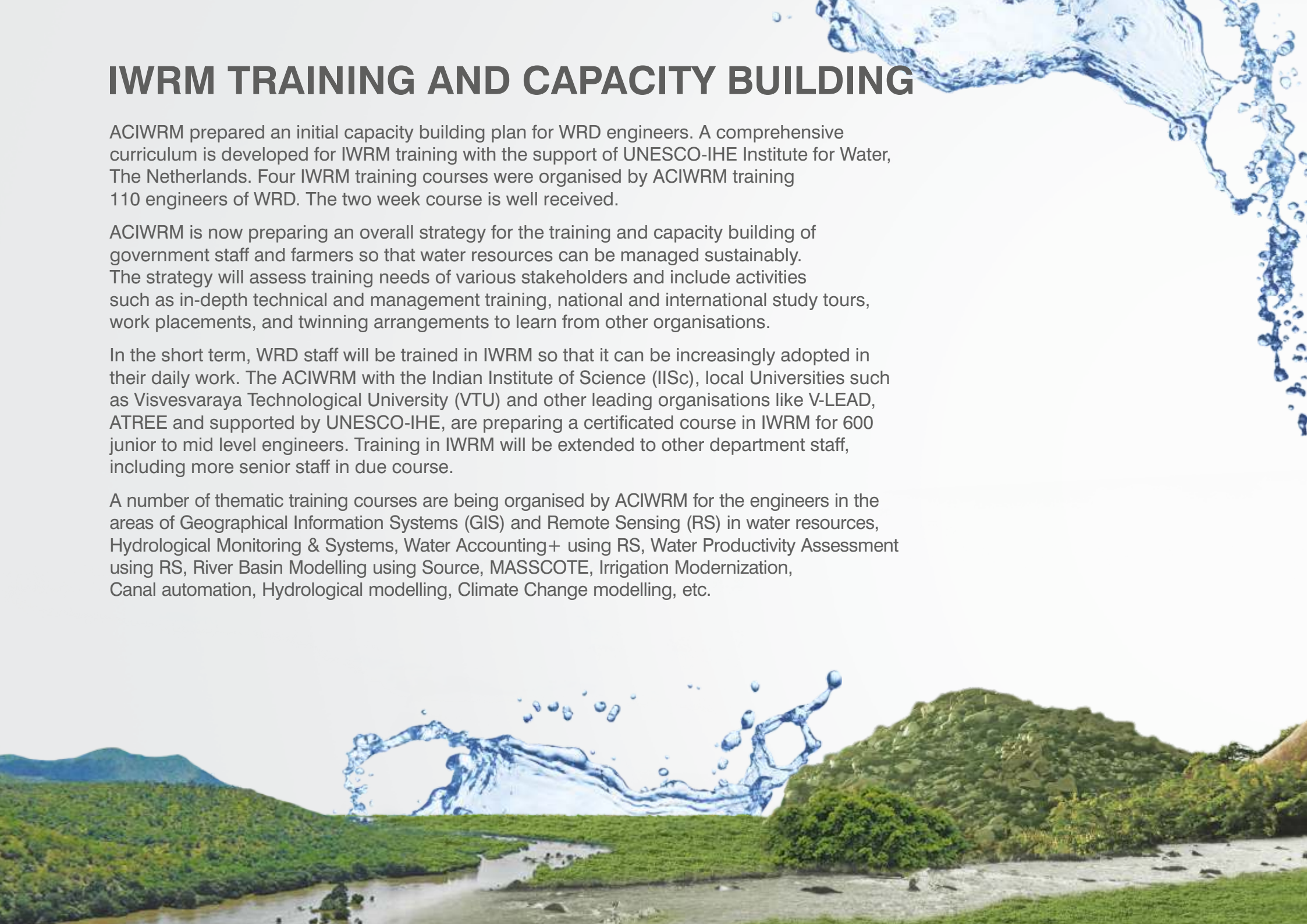
IWRM TRAINING AND CAPACITY BUILDING

ACIWRM prepared an initial capacity building plan for WRD engineers. A comprehensive curriculum is developed for IWRM training with the support of UNESCO-IHE Institute for Water, The Netherlands. Four IWRM training courses were organised by ACIWRM training 110 engineers of WRD. The two week course is well received.

ACIWRM is now preparing an overall strategy for the training and capacity building of government staff and farmers so that water resources can be managed sustainably. The strategy will assess training needs of various stakeholders and include activities such as in-depth technical and management training, national and international study tours, work placements, and twinning arrangements to learn from other organisations.

In the short term, WRD staff will be trained in IWRM so that it can be increasingly adopted in their daily work. The ACIWRM with the Indian Institute of Science (IISc), local Universities such as Visvesvaraya Technological University (VTU) and other leading organisations like V-LEAD, ATREE and supported by UNESCO-IHE, are preparing a certificated course in IWRM for 600 junior to mid level engineers. Training in IWRM will be extended to other department staff, including more senior staff in due course.

A number of thematic training courses are being organised by ACIWRM for the engineers in the areas of Geographical Information Systems (GIS) and Remote Sensing (RS) in water resources, Hydrological Monitoring & Systems, Water Accounting+ using RS, Water Productivity Assessment using RS, River Basin Modelling using Source, MASSCOTE, Irrigation Modernization, Canal automation, Hydrological modelling, Climate Change modelling, etc.



RIVER BASIN PLANNING AND MANAGEMENT

ACIWRM is preparing River Basin Plans for priority basins commencing with Tungabhadra sub-basin. A river basin profile is developed first to fully understand and prioritise the challenges in the basin. The core focus of the plan is expected to be water sharing and security under conditions of water scarcity. The profile and plan will be developed participatively, including with an interim RBO, and use the KWRIS and decision support system. Once endorsed by government, agreed components will commence implementation. A priority subset of this task will be to assess water availability and the impacts of irrigation modernisation projects.

RIVER BASIN MODELLING

In order to develop river basin plans and to plan the operation of water infrastructure, ACIWRM is using basin modelling as an essential exercise to understand the river basin water balance, supply & demand, resources assessment, options for further development and management. The Centre in its efforts to identify appropriate modelling software that are efficient in developing river basin modelling, identified, the eWater Source model which is found to be widely accepted and used intensively by water managers in Australia for river basin planning as well as the day to day regulation of water resources.

Several expert modelling groups are being established within ACIWRM and also in Zone offices of Nigama's to support basin planning and IWRM activities. To further this activity, the river basin modelling training using Source is being carried out to identified engineers of WRD at eWater Solutions, Canberra, Australia. ACIWRM will attempt to model the different approaches to water governance.



COMMUNICATION, AWARENESS RAISING AND PARTICIPATION

Stakeholders participation in water resources management has ample scope and a number of ways to be strengthened so that communities (rural and urban) understand and provide feedback on local issues and are involved in local management.

Stakeholders consultation, especially other departments / agencies in the government, supports many aspects, especially irrigation modernisation, LWMPs and river basin plans, and IWRM policy development, which have a need for community participation and consideration of social impacts.

The WUCS approach is relatively well appreciated and conceptually developed however there needs to be greater strength of adoption and linkages of WUCS into government decision making and management of irrigation systems. ACIWRM recognizes that WUCS play an important role in improving local water management.

Education, awareness raising, communication and capacity building of communities and individuals and conducting campaigns such as, river care, drought resilience, groundwater watch, etc. on relevant water sector issues will be undertaken.

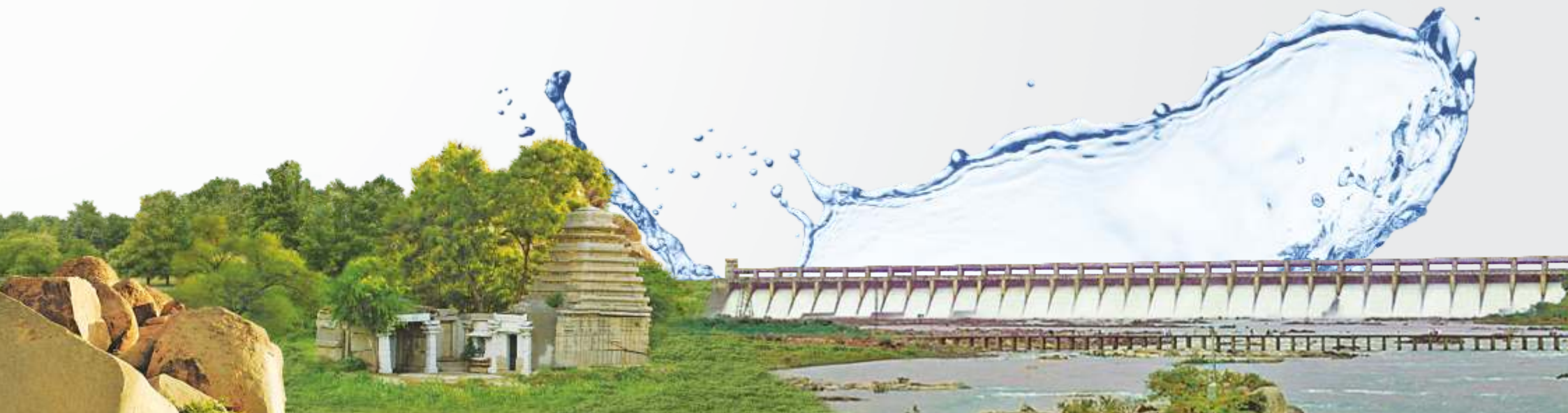


WATER USE EFFICIENCY, WATER ACCOUNTING AND WATER PRODUCTIVITY

The key goal of improving water efficiency and productivity is to improve farmer incomes without worsening environmental conditions further. A particular need is to mitigate the impacts of drought and likely over allocation of water, especially groundwater.

This activity will develop the concepts and build understanding of water productivity, water use efficiency, crop and agricultural productivity and their practical application to water resources management at a range of scales from river basin to farm. ACIWRM is also piloting remote sensing of water consumption, WUE and water productivity at river basin scales in order to make assessments of WUE and WUP as well as to support river basin planning and management.

ACIWRM has been active in introducing international practices for irrigation system modernisation and automation. It is training WRD staff to use FAO MASSCOTE methodology for the modernisation of irrigation systems.



STATE IWRM POLICY AND STRATEGY

The State IWRM Policy and Strategy will be developed participatively, following assessment of the policy and institutional arrangements for water resources management in Karnataka including national level strategies and programs. This will be assessed in relation to international approaches and IWRM and a proposed policy and strategy taken to government for consideration.

The policy and strategy is expected to address issues such as integrated management of water resources; institutional arrangements; river basin and sub-basin management; water allocation, entitlements and the sharing of water to support economic sectors and maintain the environment; a move from development and construction to system management-operation-maintenance; farmer and water user participation; water quality and ecosystem maintenance; information and knowledge sharing and management; and, management of drought, floods and climate change. As part of this, interim RBO arrangements for the Tungabhadra River Basin Organization will be piloted.

This will result in strong and sustainable water resources management including aware and involved communities; allocation and sharing of water between users and uses; water moving to high value uses over time; droughts, floods and climate change that are managed proactively; Nigams that move from basically construction agencies to water service providers focussed on operations and maintenance and with a service orientation; and conservation of the water environment.



SUSTAINABLE GROUNDWATER MANAGEMENT / ABHY

The groundwater resources play significant role in all spheres of development and require adequate attention in the context of IWRM. ACIWRM is engaged in groundwater policy review, analysis of time series data, diagnosing the reasons for current status, water and energy nexus, evolving plan and programs and capacity building of concerned agencies for the sustainability of ground water resources through following strategies;

- Participatory water security plan development at Gram Panchayat level & compilation at sub-watershed and taluk level.
- Community based demand side management.
- Strengthening of groundwater monitoring system for water levels and water quality and public disclosure of information.
- Capacity building of various stakeholders on availability, efficient use, management, control and regulation of groundwater resources.
- Institutionalization of groundwater management, control & regulation.
- Promotion of less water consuming livelihoods – livestock rearing coupled with tree based farming system.
- Supply (GW recharge) & Demand (Water use efficiency) side interventions through convergence approach with different line depts.
- Strengthening of Groundwater Directorate (GWD).
- Facilitating enforcement of the Karnataka state GW Act-2011 and rules-2012.
- Metering of borewells and quality supply of power for limited hours.

ACIWRM under the aegis of Water Resources Department is selected as Nodal Agency for “Atal Bhujal Yojana (ABHY)” a National Groundwater Management Improvement Scheme in Karnataka.



PARTICIPATIVE LAND AND WATER MANAGEMENT PLANS

Community based Land and Water Management Plans (LWMP) and other farmer based approaches will be trialed to improve local land and water conditions including extremely urgent issues such as preparing for and better managing the impacts of drought. LWMP would utilize assessments and be prioritized based on the river basin plan and the WUE and Irrigation Systems activities. Evolving partnerships with the State Agricultural Universities and Nigam's divisions is being pursued by ACIWRM.

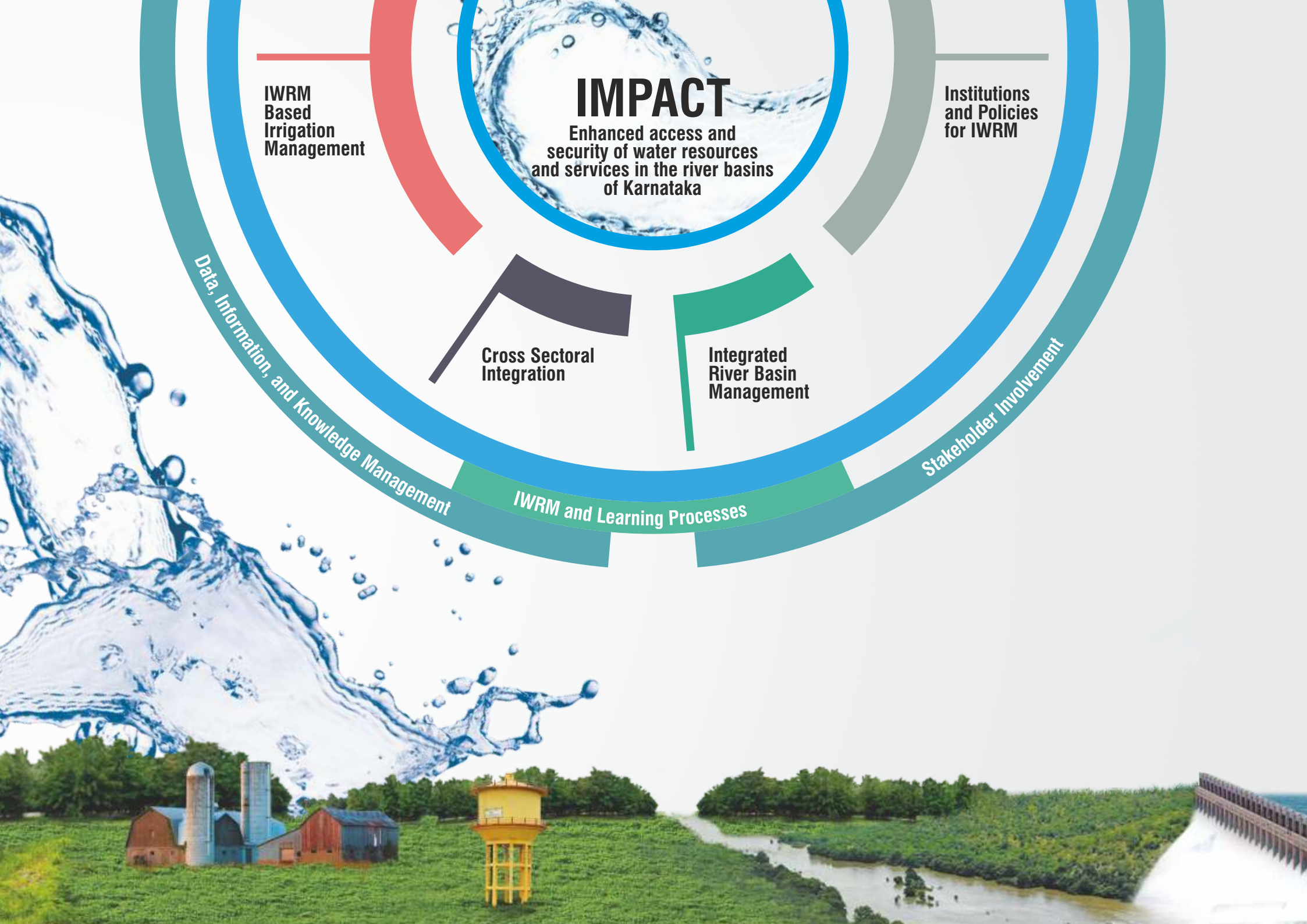
CLIMATE CHANGE / VARIABILITY / ADAPTABILITY FOR WATER SECTOR

ACIWRM initiated assessment of climate change impacts on precipitation and stream flow in Tungabhadra sub-basin in partnership with Indian Institute of Science, Bengaluru which include climate change modelling at sub basin level.

Similarly in partnership with Visvesvaraya Technological University, Belagavi ACIWRM is assessing the climate change impacts in the K2, K3, K4 & K6 sub-basins of Krishna basin.

A status report on water resources is prepared for the State and ACIWRM will prepare State Specific Action Plan for Climate Change for Water sector.





IMPACT

Enhanced access and security of water resources and services in the river basins of Karnataka

IWRM Based Irrigation Management

Institutions and Policies for IWRM

Cross Sectoral Integration

Integrated River Basin Management

Data, Information, and Knowledge Management

IWRM and Learning Processes

Stakeholder Involvement

GOVERNANCE

Governing Body

The ACIWRM, is guided by the Governing Body consisting of the Hon. Chief Minister as the Chair Person, Hon. Minister for Water Resources as the Co-Chair Person, Hon. Minister for Agriculture, Hon. Minister for Rural Development & Panchayath Raj, Hon. Minister for Urban Development, Hon. Minister for Minor Irrigation and Hon. Minister for Forest, Ecology & Environment as members, various Stakeholders in the water sector, Farmers, Representatives of water users, etc. as invitee members. Principal Secretary, Water Resources Department who is ex-officio the Director General of the ACIWRM is the Member Secretary.

Executive Committee

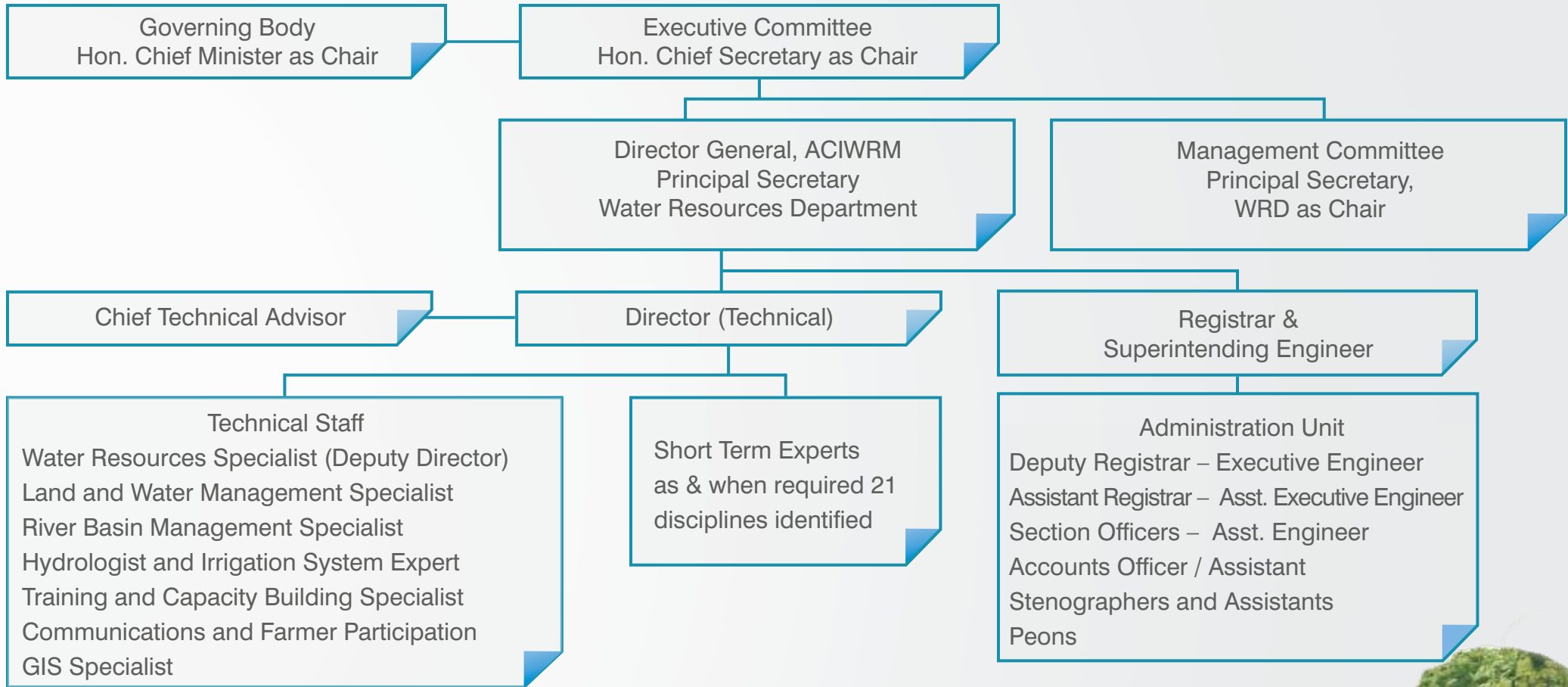
The Executive Committee consists of the Chief Secretary to Government of Karnataka as the Chair Person, the Principal Secretaries of Departments of Finance; Planning, Program Monitoring and Statistics; Rural Development and Panchayath Raj; the Secretaries of Agriculture; Urban Development; Ecology and Environment; Minor Irrigation; Water Resources and Commissioner of Agriculture as Members. Principal Secretary, Water Resources Department who is ex-officio the Director General of the ACIWRM is the Member Secretary. Representatives of donor agencies, multilateral institutions, international agencies and UN agencies will be Invitee Members for a specific meeting.

Management Committee

The Management Committee consists of the Principal Secretary, Water Resources Department as the Chairman for day to day management of the ACIWRM and has the Secretary, Department of Water Resources, Managing Director, KNNL, Managing Director, KUWSDB, Commissioner, KRWSSD, Member Secretary, KSPCB, Director, Groundwater Directorate, Director of Agriculture, Chief Engineer, CWC Monitoring (South), Chief Engineer, CMO, Principal, ESC- KERS, and other nominees as authorized by the Executive Committee and Registrar & Superintending Engineer, ACIWRM as Member Secretary.



ORGANOGRAM







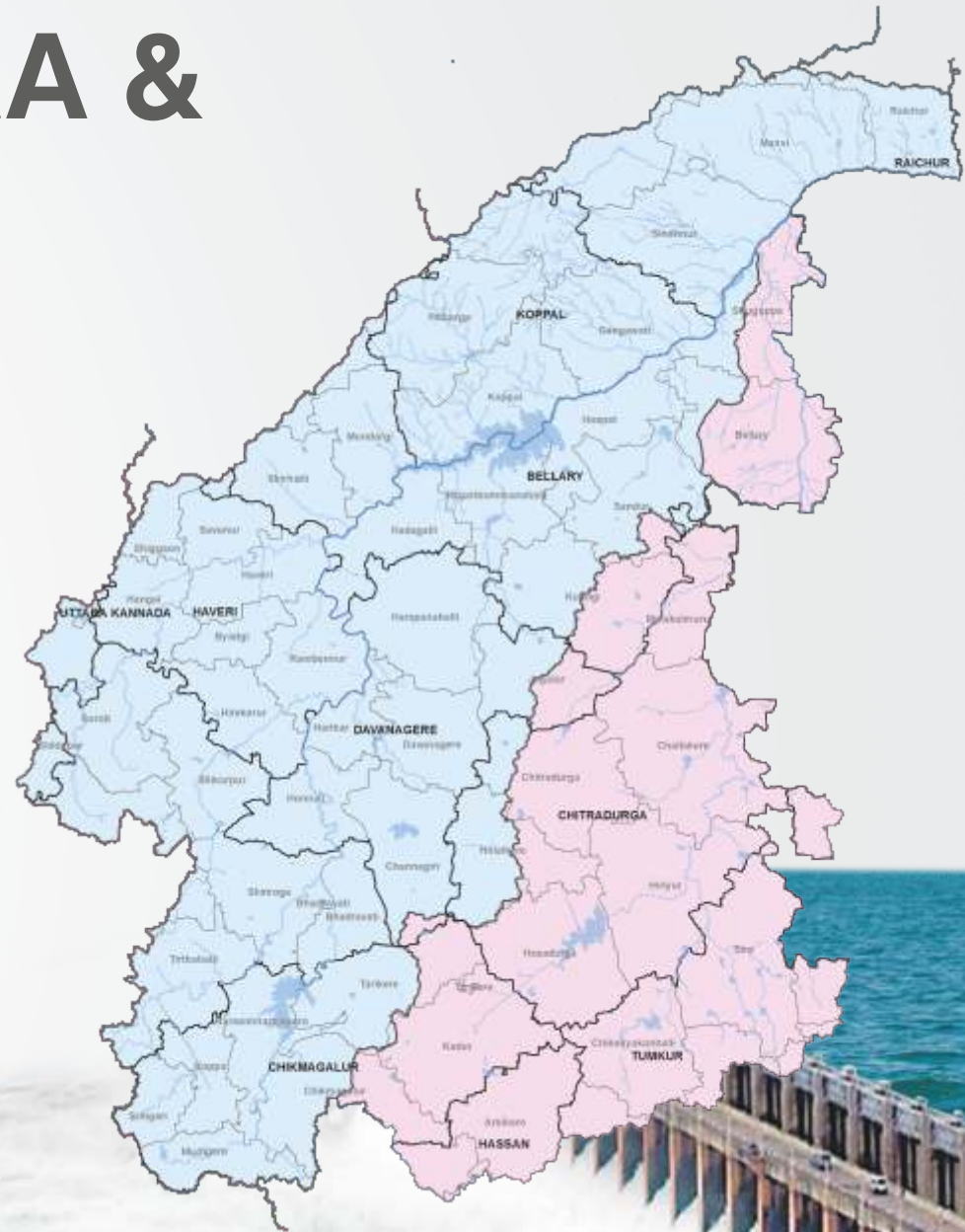
PARTNERS

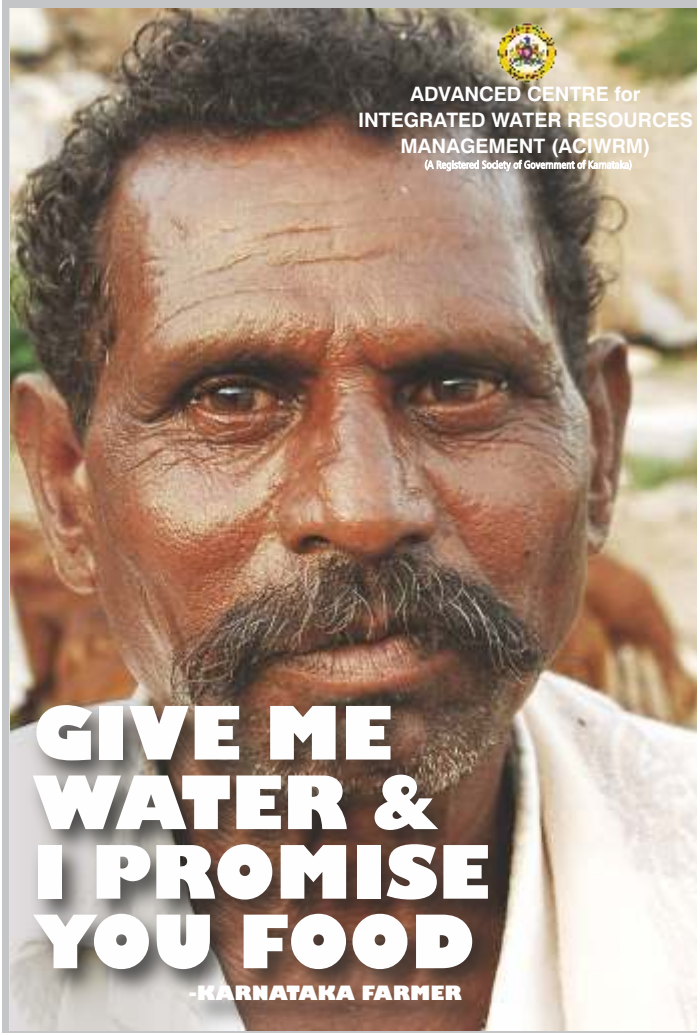


TUNGABHADRA & VEDAVATHI SUB-BASINS

Legend

-  Waterbody
-  Taluk
-  District
-  Tungabhadra
-  Vedavathi





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MANAGEMENT (ACIWRM)
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**GIVE ME
WATER &
I PROMISE
YOU FOOD**

-KARNATAKA FARMER



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