

**Workshop On Integrated Water Resource Management : Issues and Options  
( May 14-15 ,2015)**

***Proceedings***

The Centre for water and Land Resources (CWLR) ,NIRD&PR has organized the workshop on “Integrated Water Resources Management : Issues and Options“ during May 14-15, 2015. This workshop was sponsored by Ministry of Water Resources. The following are the objectives of the workshop.

**Objectives :**

1. To discuss the issues concerning the water resources in the country and identify suitable options
2. To analyse the training needs of the functionaries of water resource departments , based on the issues emerged in the workshop.

Considering the magnitude and importance of conserving the water resources and increasing their use efficiency, the presentations and discussions were organised on the following broad themes.

Technical Session – I : Surface Irrigation : Improving the efficiency

Technical session – II: Groundwater Management : Conservation and Development

Technical Session - III : Institutions : Delegation of Powers and sustenance

Technical Session – IV : Group Discussions

**Inaugural session**

The background paper of the workshop was presented by Dr.Ch.Radhika Rani. In her presentation she presented some of the concerns related to improving the efficiency of surface irrigation, conservation and development of groundwater and sustainability of the Institutions of water. The delegates have observed that reducing the water losses in conveyance systems and in the fields is a major challenge which could be addressed only through the adoption of scientific water management practices and water auditing in irrigation projects. Protection of Catchment Areas in the context of urbanization is another area of serious concern, expressed by the delegates. Dr. Siddayya in his presentation shared the salient features of National Water Mission (NWM) and emphasized the need for gearing up of all concerned functionaries for a coordinated effort to meet the objectives of NWM.

**Technical session – I : Surface Irrigation : Improving the Efficiency**

In this session four papers were presented highlighting the need for improving the surface water efficiency through integrated basin management, data base of water resources , stake holders participation and water auditing. The Session was chaired by Sri. Eswarappa (Retd) Chief Engineer, AP.

The session began with a presentation on “IWRM : A Way Forward – A Case of Karnataka “ by Dr.Raju from ICRISAT. While presenting the experiences of Karnataka in IWRM, he observed that an integrated river basin management is necessary which coordinates both surface and ground water on a foundation of data, information and knowledge management and stakeholder involvement.

Dr.Anil kumar T. Dandekar in his presentation viewed that catchment Area protection and management is equally important to improve the surface water availability. He presented some salient bio physical measurements that has to undertake in a catchment area. He observed that building check dams and low-cost gully control structures on the stream network (ex-situ practices) reduce peak discharge, reduce runoff velocity which helps to trap the sediment to protect the river ecosystem.

In another presentation on the same topic i.e “Catchment area protection with the use of technology” Dr. Keshava Rao from NIRDPR presented a case study on Bhima lift irrigation project using satellite remote sensing data , in which he explained the construction of Sediment Yield Index to prioritize the sub watersheds to prepare Catchment area treatment plan.

Dr. Devender Reddy in his presentation on “Tank Irrigation Systems” observed that the decline in tank-fed agriculture has become more rapid during the last three decades, severely affecting agricultural production in several places. The deteriorating tanks have forced the marginal and small farmers into a cycle of deprivation and debt and left them increasingly at the mercy of the vagaries of monsoon. He presented some of the technical reasons for low utilization of tanks and explained why system tanks are more efficient compared to the stand alone tanks.

Dr. Eswarappa who chaired the session made concluding remarks that the measurement of water is essential for calculation of water losses during conveyance in canal and distribution network and also during application in the field. Actual conveyance and field application losses and efficiencies of an irrigation system can be calculated from such records. These efficiencies are to be compared with the planned / achievable efficiencies to identify the scope of improvement. This requires adoption of scientific water management practices and adequate capacity building of all the functionaries from the source to the end.

### **Technical Session – II : Groundwater Management : Conservation and Development**

In this session three papers were presented highlighting the need for planning the ground water basin in a holistic manner, promoting groundwater institutions, developing social norms and regulations in conserving groundwater, focusing on quality aspects of irrigation water for improving the land productivity. The session was chaired by Dr. Y.R.S. Rao, Regional Director, NIH, Kakinada.

Sri Ramamohan Rao shared his experiences of implementing the “ Sustainable Ground Water Management” (SuGWM) project in 11 villages in 6 GP’s of AP and Telangana funded by EU . He observed that major issue in ground water is the depletion and inefficient use which is further aggravating the inequalities in access to water. In this project they ensured source sustainability through borewell recharge besides implementing social norms and regulation through GP’s.

In her presentation on “Groundwater sustainability under different cropping systems in Wargal watershed” Dr. Mani opined that groundwater management has two dimensions. i.e hydrological and socio economic dimensions. Addressing both the dimensions are important from sustainable point of view. She opined that overcoming traditional institutional separation of surface water from groundwater and resulting fundamental communication barriers, is a major challenge in ground water management.

Dr. Sridevi from NGRI observed that groundwater quality often affect the management issues and based on the Hydrogeochemical study on ground water carried by her in the watersheds she observed that long term use of poor quality water will impact the soil fertility and suitability for different crops.

Dr. Y.R.S. Rao who chaired the session made the concluding remarks that strategies for ground water development for increasing the irrigation potential will vary considerably depending on the hydrological/hydro geological settings of the area. There is a need to formulate area-specific ground water development and management plans to help State Governments and other stakeholders to reorient their strategies for sustained development and management of ground water resources. He further remarked that enforcement of legislative measures for ground water regulation and management would be meaningful only when stakeholders are motivated through local self governing bodies and directly involved in the decision-making and enforcement process.

### **Technical Session – III : Institutions : Delegation of Powers and Sustenance**

In this session two papers were presented highlighting the need for promoting community based institutions in managing and surface water and ground water and the support systems these institutions

require for their sustenance. The session was chaired by Dr. S. S. P. Sharma Prof & Head (Retd),CWLR, NIRD&PR.

Dr.Sanjit Kumar Rout in his presentation on “Institutionalizing Groundwater Management: Exploratory study of three participatory groundwater models in AP” explored the possible options for groundwater management in the Indian context and tried to understand the functioning and efficiency of groundwater management institutions by comparing and contrasting three participatory groundwater models in AP, viz., the APFAMGS, WASSAN and CWS.All these three models have been initiated in the arid and semi-arid districts of AP, where the extent of groundwater development is quite high. He stated that focus on GW management is important rather than development and concluded the need for dispelling the notion of groundwater as private property and making it a common property which could be possible by interlinking existing wells so as to make it a common property.

Dr.U.Hemantha Kumar through his presentation on “Formalising of Irrigation Institutions: A Case of Water Users Associations” opined that reforms should be initiated to convert all forms of irrigation water into an economic good through introduction of cost-based pricing as per volume and use. He advocates the integration of Panchayati Raj Institutions into the reform process for sustaining the reforms in the long run.

Dr.S.S.P.Sharma in his concluding remarks as chair, observed that user’s participation in the development and management of water resources is essential to achieve the objectives of efficiency and equity in the use of available water resources and maximization of productivity.He further observed that lessons learned from past experiences in water management provide guidance for future project design. However, care should be taken that institutions should not be captured by social elite.

#### **Technical Session –IV &V**

In these session all the delegates were made into three groups and requested them to highlight the major issues and concerns in their respective areas. They were further requested to identify the capacity building (CB) requirements against the issues mentioned, so that future training programmes can be built around these CB requirements. Accordingly, all the delegates have come out with their respective group reports and presented in the last technical session.

The programme concluded with a common point that, there is a need to have such common platforms in future so that the functionaries belonging to different departments of water, can come together and share their views , for Integrated Water Resource Management in the country.

#### **Conclusion:**

Altogether 26 officers from different National Institutes, Universities, Department of water resources, Department of Panchayati Raj and NGOs specially, those who are all involved in management of water in different use in the country. Many issues which are bogging the surface irrigation in the country , the increase in efficiency of which, is important not only in the context of investments made but also in the context of agricultural production and food security. Keeping in this mind the some of the theme were thoroughly discussed in the two day deliberations such as surface irrigation for improving the efficiency, groundwater conservation and formation, development of institutions for sustenance of water resources in the country. The participants were exposed to suitable options of integrated water resource management.

**Workshop Team:**Dr.Ch.Radhika Ran, Dr.Siddayya, Dr.U.Hemantha Kumar , and Dr.Prabhakar.

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