

**Virtual Workshop on Frameworks for “Drought proofing Agriculture” and “for Achieving Water Security in catchments”**

*Date/Time: 8 October 2021 (10:00- 13:00 hrs IST)*

*Facilitator: IWMI – India*

*Number of participants: 150*

As part of IWMI – ITC knowledge partnership, Virtual workshop on “**Drought Proofing Agriculture and Water Security in Catchments”** was organized to present the drought and water security frameworks, engage stakeholders and collect feedback and recommendations.

*Dr Alok Sikka* (Country Representative – IWMI) started by welcoming the stakeholders and provided brief overview about the IWMI – ITC knowledge partnership and followed a brief on drought and water security. *Dr. Kushvinder Vohra* (Member – CWC) gave the opening addresses and *Sh. Sivakumar S* (Head – Agri & IT Business, Chairperson – ITC’s Social Investments Programme) gave the key note address. *Sh. Vijay Vardhan* (General Manager – ITC Social Investments Programme) gave overview about ITC’s *“Water Stewardship Programme”.*

*Sh. Faiz Alam* (Researcher – IWMI) presented the overview of drought proofing framework and tool, methodology and process flow, how the tool is applied by various stakeholders on field level to design interventions for the watershed. *Dr. Upali Amarsinghe* (Senior Researcher – IWMI) presented the overview of the water security framework and a Case study for a factory location in which the water security framework was applied. *Ms. Amber Farid* (Joint Director – Agriculture, WDD Karnataka) and *Sh. Harish Babu* (Programme Manager – ITC) presented application of drought tool on field level.

The presentations were followed by panel discussion on the presented drought and water security framework. Dr Shilp Verma (Senior Researcher – IWMI) moderated the panel discussion on drought and Dr Alok Sikka moderated the panel discussion on water security.

The Workshop was attended by ~150 participants/experts and they included senior officials/experts from Central Water Commission, Central Groundwater Board, National Rainfed Authority of India and Indian Council of Agricultural Research, NITI Aayog, NGOs, donors, private sector, research institutes. The outcome of the workshop was very positive, and all the participants showed keen interest on the frameworks and tool and was looking forward for more such collaborative workshops.

**Dr Kushvinder Vohra (Member – CWC), in his special remarks made the following Key points:**

* Drought and water security are interrelated issues and will be of great relevance for India’s present and future. CWC and MoJS are working on various water related activities with Drought and Water security at the core of all the activities.
* Till the end of the 21st century, rainfall is going to increase or at least remain stable, but the key concern is that there will be more variability in rainfall in terms of time and space.
* Water security is of great importance and relevance, because India has one of the largest agricultural area (~180 M ha) out of which the net irrigated area is 140 Mha. The challenge lies whether we can provide irrigation to all the irrigated area. So, it is pertinent to focus on water security, as challenge’s pertinent to water security are going to there in the present as well as the future even if we develop our irrigation facilities.
* IWMI – ITC’s active partnership to work on drought and water security is very welcoming and it is very much necessary for the current agriculture scenario.
* Drought and Water security framework is a broad idea and can be defined in many ways. Water security framework can be defined as development of systems by which availability and acceptable quantity and quality of water for health, livelihoods, ecosystem and economic activities can be ensured.
* Complete and fair evaluation of resources and sustainability at all parts of hydrological cycle and equitable and cooperative sharing of water resources should be part of any successful framework. A water security framework can be built successfully only if it can address the issue of non-availability of requisite water at the micro level.
* The Water security issues are at micro level not at the macro level as India receives 1200 mm rainfall on average which is sufficient enough to meet the demands.
* Emphasised the importance of considering drought proofing as part of water security and drought proofing of an area is defined as the “local, natural, and human developed resource base can provide desirable amount of food, fuel, fodder, drinking water and livelihood resources to the people.
* Drought proofing can’t be done alone during the drought year, as Drought proofing is a continuous process that spans across lean as well as normal rainfall years, although nature of drought proofing works and activities during the lean and normal rainfall years might be different.
* Water use pattern during a normal rainfall year can increase or decrease an areas vulnerability to drought. Excessive withdrawal during normal rainfall years might increase the vulnerability during the dry spells.
* Water availability, water use efficiency and entitlement are the three basic elements for comprehensive drought proofing.
* Effective participation of stakeholders is also necessary for comprehensive management of drought, which depends on urgency, willingness for change, literacy level, training and capacity building, leadership, etc.
* Numerous success stories for managing drought in India such as*, Ralegan Sidhi, Thembu lift irrigation scheme* in MH.
* Many drought mitigation Programmes are conducted by various ministries. “*PM Krishi Sinchayee Yojna”* is one such example.
* CWC is continuously monitoring various indices on drought such as monitoring live storage capacity of 133 reservoirs in the country with a capacity of 172 M cu.m (66% of total storage capacity in the country)
* IWMI – ITC to look into “*Jalyukt – Shivar”* in Maharashtra, where drought proofing is done for 20,000 villages. NWM is also helping the states in preparing the water security plans.
* IWMI – ITC together with various government Programmes can create convergence among various aspects and plan for success management of drought and water security.

**Sh. Sivakumar S (Head – Agri & IT Business, Chairperson – Social Investments Programme), in his special remarks made the following Key points:**

* Gave a brief overview of ITC’s past work and future plan to tackle various water related problems. ITC with a structed effort and the objective of water security for factory premises and agricultural supply chains, started the involving with various aspects of development.
* Building social capital and governance capacities of the communities is absolutely critical for proper watershed management.
* Even though ITC achieved water positive along with carbon and waste positive, but it was not enough on the larger perspective. Moreover, global water management is fragmented and inadequate and that’s the reason the situation continues to deteriorate despite the world being aware and taking so may initiative. Based on this context, ITC developed its *“Water Stewardship Programme”* to bridge the gap and create a more comprehensive and holistic set of intervention to deal with fragmented and inadequate approach.
* “Water Stewardship Programme” is designed to undertake activities on larger scale and not limiting to ITC’s factory locations. In addition to undertaking tradition water harvesting efforts, ITC is also undertaking activities to improve biomass, agronomic practices and biodiversity conservation.
* A holistic approach is adopted for the ITC’s Programme where supply and demand side management are complemented with the market linkages.
* Economic values need to be demonstrated to the framers so that adaptation is taken up on larger scale.
* Highlighted the need of collaborative efforts and inputs to overcome the fragmented water management approach and upscale the learnings to see the desired outcomes.
* Scale of work taken up has to be at river basin or sub-basin level covering all the dependents. ITC scaling up is done at 3 steps, Step 1 is the rolling out a prototype for workability testing at individual intervention level, next is scaling up with pilot Programmes and integrate multiple relevant interventions and the final next is scaling up to basin level or state level. Same approach is adopted for the IWMI – ITC partnership.

**Sh. Vijay Vardhan (General Manger – Social Investments Programme, ITC), in his overview about the *“Water stewardship Programme”* made the following Key points:**

* Echoed the key points emphasised during the opening remarks and key note address that strengthening the partnership with various stakeholders is important.
* ITC is the only company in the world of its size to achieve to carbon, water and solid waste recycling positive for more than a decade.
* Objective of the water stewardship approach is to ensure “Water for all” for today and tomorrow by working on drought proofing agriculture and achieve positive water balance in the catchments.
* ITC’s approach to *“water Stewardship Programme”*: Technical planning – water balance estimation of watershed/ basin. Based on the planning, achieve positive water balance through supply and demand management.
* ITC’s approach to *“Water Stewardship Programme”*: Partnership with government, institutions NGO’s and communities – for scale, solutions and sustainability.
  + PPP’s for scale with government – 50 PPP’s in 7 states – 17 lakh acres MGNREGS, IWMI, state departments, forest department & NABARD.
  + Knowledge partnerships with – CGIAR, IWMI, WWF, IUCN, TNAU, VSI & KVK’s.
  + Execution partnerships with NGO’s – Around 40 prominent & grassroot NGO’s
  + Empowering village institutions – 3,500 water user groups
  + Ownership through contribution – INR 25 crores of community contribution
* ITC’s approach to *“water Stewardship Programme”*: Supply augmentation and demand management activities implemented at field level.
* Supply augmentation activities include –
  + Catchment treatment & rainwater harvesting – 12 lakh acres, 43 mcm of water storage through 19,700 structures.
  + Managed aquifer recharge (MAR) – 2200 groundwater recharge structure till date
  + Improve Biomass and Biodiversity conservation as water tool – 44,000 acres till date
* Demand Management activities include –
  + Promoting crop water use efficiency in major irrigated crops – implemented in 3 lakh acres and in turn saved 208 mcm water in last year alone.
  + equal focus on agronomic practices and micro irrigation.
* ITC currently covering 4 sub-basin – Kolans (Bhopal Lake), Murreru (Godavari), Ghod (Krishna river) and Bhavani (Cauvery) – 14 lakh acres
* Presented the case study of ITC’s Ghod river water security Programme, where ITC’s work on water security resulted in basin achieving water positive for the first time in 5 years.

**Sh. Faiz Alam (Researcher – IWMI), presented the overview of the drought proofing framework and tool –**

* Defining drought proofing, developed conceptual framework and indicators and defining interventions required to achieve drought proofing and assessing ongoing activities in terms of their drought proofing ability.
* Process behind operationalizing the drought proofing framework in the form of tool.
* Gave brief on the developed tool, such as system requirements, data inputs required, inbuilt details, developing different scenarios, interpreting the results and designing different interventions to achieve drought proofing. Overview of tool capabilities and limitations.
* Brief video demo of the tool was presented to the participants.

**Dr. Upali Amarasinghe (Senior Researcher – IWMI), presented the overview of the water security framework and a case study for Upper Bhavani sub-basin, and made the following key points –**

* Defining water security, developed conceptual framework and indicators.
* The “Water Security Framework” would help understand how water security for unit ITC factory location and all co-dependents using same water source might get affected
* Key aspects of the water security framework are.
  + Find the current status and gaps in water security using the framework
  + Assess requirements for all changing climate and socio-economic environments
  + Captures the dynamic nature of water security with framework indexing water security on a scale of 0 to 1
  + Suggest interventions to improve water security
  + Delineate Focus area and co-dependants for unit factory locations taking into account “*local*” co-dependents *on the same water source*
* Water security has two key components such as scarcity and risks.
* Standard operating procedures (8 SOP’s) for operationalizing the water security framework was presented. SOP’s include delineation of study area, identifying co-dependents followed by assessing rainfall, e-flows, utilizable water supply, utilizable storage, consumptive water use, assessing scarcity and risks and in turn finally assessing water security.
* Presented the case study in which Water security framework was applied to ITC’s factory catchment in Upper Bhavani basin and discussed how to interpret the results and design interventions.

**Ms. Ambar Farid (Joint Director – Agriculture, WDD – Karnataka), while presenting the application of drought tool made the following key points:**

* Watershed development approach is widely acknowledged as an effective solution to address the needs of the rainfed agriculture.
* Karnataka is the first state to create watershed development Department (WDD) in India with multi-disciplinary team to function in an integrated and coordinated manner.
* So far WDD has treated 60 lakh hectares of watershed treatment using conventional and another 30 lakh hectares is currently under treatment. Remaining area of about 52.5 lakh hectare is available for treatment and needs to be taken up.
* Rainwater harvesting Programmes are taken exclusively with appropriate structures for recharging groundwater and storing surplus water for providing supplementary irrigation to crop growth. WDD is also looking into in-situ soil and moisture conservation activities.
* WDD is following a distinct approach in participation of community in planning, implementation and post project maintenance. Involving various universities, NGOS and other community organizations played an integral part in successful implementation of projects.
* Concurrent project monitoring and impact evaluation is undertaken by external agencies to account for proper implementation at field level.
* Site specific scientific advisories is undertaken as part of world bank supported project

**Sh. Harish Babu (Programme Manager – ITC), presented the use of Drought proofing tool at field level.** Watershed Development Department of Karnataka is using the developed [drought](https://www.linkedin.com/feed/hashtag/?keywords=drought&highlightedUpdateUrns=urn%3Ali%3Aactivity%3A6853981284629282816) proofing tool for actively planning interventions in 100 watersheds in 1.16 million acres of land in 29 districts in Karnataka. ITC is also providing recharge zone maps for 100 watersheds in Karnataka which will help in prioritizing the works based on LRI. GIS based mobile application are also in the works to identify recharge zones in the field. Emphasised the importance of PPP with ITC.

**Finally, the presentations were followed by panel discussion on the presented drought and water security framework. Shilp Verma moderated the panel discussion on drought and Dr Alok Sikka moderated the panel discussion on water security.**

All the panellist gave positive feedback on drought framework and tool, and were keen to use the framework and tool.

During the panel discussion on drought, the panellists gave their key insights on various key question that needs to be addressed in drought. Key points during the panel discussion are –

**Especially in the context of climate change, drought is a disaster, given that frequency and severity is increasing over the years. So how do we look at the disaster management chamber and how can that help us in understanding the drought?**

**Prof. Anil Gupta (Professor – NIDM),** stated that for quite a long time we have been looking at drought in isolation with other regards. Important lesson from disaster risk management side, at many fronts drought is a matter of development or water resource management or land use management. Drought has to be seen from more multi hazard perspective, because what we witnessed in the past 15 years, many of the flood prone areas have become drought prone areas and many of the drought prone areas have also become multi hazard prone area, so water related hazards and climate related hazards should also be seen. From disaster management perspective, emphasis should be given to interaction between various components from risk and vulnerability side.

**Especially from the rainfed area perspective, drought becomes even more critical, because dependence on rainfall is higher and with climate change and change in frequency of rainfall, how do you see drought management?**

**Dr B Rath (Technical Expert – NRAA),** stated that drought is a critical issue and a challenge to the rainfed community and NRAA is working on bringing resilience and water security to rainfed area. NRAA analysis on Natural resource index and Livelihood index showed the priority areas that needs to be focussed, that is managing drought and ensuring water security. Government advisory committee suggested to look into 150 most critical districts and what should be the planning and development to minimize drought and bring resilience. NRAA developed a comprehensive development plan for 24 districts with support of ICAR and CRIDA and the plan is being discussed at state level. Calculation of resources that is available and to what extent each intervention can accommodate resilience or deficit both in demand side and supply side management and to what extent drought proofing can be achieved. Brining synergies at field level is important. Drought tool developed by IWMI – ITC can have a very useful application and can be used for planning process for NRAA pilot Programmes in selected districts and villages. Activities undertaken under IWMI – ITC partnership is very relevant and in sync with mandates and activities with various government agencies.

**There are some examples of drought proofing at village level that are widely known, but very little in scaling it up. There are several state level Programmes such as “*Jalyukt – Shivar”* in Maharashtra and other such Programmes in Gujarat, Rajasthan and Telangana, almost every state had a drought proofing Programme but very little success in scaling it up. What is the way forward in achieving scale from the small pilots?**

**Dr Tushaar Shah (Emeritus scientist – IWMI),** stated that IWMI – ITC work on drought looks very promising. It would be very useful in the future work to contrast the drought proofing impacts in states which have pursued a trans basin drought proofing drought proofing strategy versus the states which have pursued an intra basin strategy. Gujarat is a great state which have pursued a trans basin strategy of water governance. Saurashtra which is one of the most drought prone areas, in the recent years the state has been able to insulate from drought, not only because of local village level water harvesting systems but also due to large Investments by state governments in inter basin water transfer. But on the other hand, in Maharashtra the focus has been entirely on intra basin, slowly over time the state can overcome drought by combining micro level Investments with trans basin Investments in getting overall water balance. In context of variability of rainfall in terms of space and time, the emphasis put on IWMI – ITC’s tool on managed aquifer recharge (MAR) is very critical, because ultimately groundwater is the only source that provide inter year water storage. In context of climate change and increased variability in rainfall, we also need to think in terms of water banking like in Australia and California. In years of good rainfall and when surface storage is full, we should actively consider using a portion of surface storage to ramp up aquifer storage which can be later used in drought years.

**How IWMI – ITC’s work on drought can link to CRIDA’s objectives?**

**Dr V K Singh (Director, ICAR-CRIDA),** state that CRIDA with NRAA is working on drought proofing in 24 districts especially in Rajasthan and Karnataka. IWMI – ITC’s work on drought proofing is very welcoming and would be great opportunity for CRIDA to work with. Dry land Programme is spread over 52% of net cultivated area. In recent study and assessment of 33 vulnerability indices by CRIDA showed that 310 districts are under very high- and high-risk prone districts. In those districts, CRIDA is focussing on flagship Programme of NICRA by implementing various interventions. CRIDA is focusing on moisture management, since it is the key for drought management. Further, enhancing the water use efficiency of stored water is also key for drought management. Climate resilient crop varieties can cope up with different drought situation (early, mid or late season drought). The overarching message is the integrated use of resources and IWMI – ITC’s work on drought proofing is in sync with CRIDA’s activities and objectives. Utilizing micro irrigation is also an option for effectively utilizing water. Utilizing the IWMI – ITC’s drought tool together with the information available can be used to upscale the work on drought proofing.

**During the panel discussion on water security framework, the panellists gave their key insights on various key questions. Key points during the panel discussion are** –

**Feedback and What is required to be added to the water security framework?   
Dr D K Singh (Principal Researcher – WTC, IARI),** stated that they have done similar works with the concept of agri-catchment in the past and welcomed the work done in the IWMI – ITC’s water security framework. The water security framework is technically sound and all the key components are covered inside the framework.

**Dr Poonam Sharma (Superintending Hydrogeologist & PS to Chairman – CGGWB),** stated that the drought framework/tool and water security framework by IWMI – ITC is very comprehensive. Pointed out few activates and initiatives by CGWB on drought proofing such as National Aquifer Mapping Programme (NAMP), 16 out of 24 lakhs sq.km mappable area in India is already mapped.

**Sh. Prabhakar L (EVP – Social invest Programme, ITC) delivered the closing remarks made the following Key points**

* Since fragmentation is a challenge, so whatever solution we take forward, focus has to be at micro level.
* Looking at the range of participants, it is a very promising state to be in, in terms of capabilities, desire and passion for different stakeholders to make a difference.
* Drought tool can act as a common language, that can be used across length, and a language that can be spoken by all stakeholder in unison, and that is the power of this tool. It’s not just a tool, it’s a creation of a framework and a common language that we can adopt as a country.
* How to leverage lot of information and data from various government departments, and if the tool can wheel in that also, it will not only enable acceleration, amplification but it also provides validation of the tool.
* Finally emphasised the importance of working together, involving stakeholders and making the tool more robust.

**The overarching message is that IWMI – ITC’s work on drought proofing and water security is in sync with mandates and activities with various government initiative. In short, based on deliberations and discussion it is obvious that there is a very strong support for the developed frameworks and tool and stakeholders including government has shown keen interest in collaborating and adopting the developed frameworks and tool.**