

**Climate Resilient Development and Water Resources Management:
Empirical learnings from the field of Indo-
German bilateral Project 'Water Security and Climate Adaptation in Rural India'**

V.R. Sowmithri

P. Radha Priya

Krishan Tyagi

Jagdish Kumar Purohit

Rajeev Ahal

R. Nagarajan

R. Rengalakshmi

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Synopsis

Climate change is intensifying the hydrological cycle and water stress that adversely impacts the livelihoods, ecology, and economies in a variety of ways. Food security, ecology, human health, energy and economic development are primarily dependent on water resources and thus vulnerable to increasing climate risks. However, the management of water resources supports to address both adaptation and mitigation to climate crisis/change which is crucial for sustainable development. The UN report on World Water Development Report, 2020 reiterates the interconnectedness between water and climate change resilient development pathways for sustainable future. It is evident from the important global commitments for 2030 Agenda for Sustainable Development namely UN Sustainable Development Goals, UN Sendai Framework for Disaster Risk Reduction, UNFCCC's Paris agreement and Nationally Determined Contributions.

In this backdrop, Composite Water Resources Management tool under Indo- German bilateral Project, 'Water Security and Climate Adaptation in Rural India', embedded with social, climate, agriculture and water vulnerabilities has been piloted at the district scale (Ramanathapuram and Tiruvannamalai districts in the state of Tamil Nadu, India) to address the climate risks through innovative climate resilient pathways and strategies. The tool (<http://65.1.201.178/cwrwebapp/>) is designed to adopt bottom-up approach in planning, science-based inputs to identify water security risks, hazards and evolve locally relevant climate resilient development measures and participatory approach in the whole developmental process.

In addition, the climate monitoring tool is also developed to assess the impact of various climate resilient models on water resources. The piloted core climate resilient models that have an impact on water resources are restoring the cascade of tanks including drainage line treatments, different types of plantations suitable to the location like mini forests with diverse tree species, greening of hillocks and massive tree plantations, stabilizing the river bunds and sand dunes with vegetation, farm ponds, recharge shafts and other ground water recharging technologies, spring-sheds in the hilly terrains, restoring the fallow lands with agroforestry and silvi-pasture systems, river rejuvenation, community based grey water treatment for recycling and reuse of water and rainwater harvesting and storage structures. These models are identified by assessing potential climate risks at the decentralized scales

(gram panchayat and blocks as well as micro watersheds and sub-basins) and demonstrated at the field level. At the implementation level, key available government schemes and resources are mapped and mobilized for action adopting convergence approach. The paper will elaborate the innovative science-based tools for planning the climate resilient strategies and the process of implementation in the field and its impacts on the water resources management.

1. Technical Advisor, Water Security & Climate Adaptation in Rural India (WASCA), GIZ India
2. Technical Advisor, Water Security & Climate Adaptation in Rural India (WASCA-II), GIZ India
3. Project Manager, Water Security & Climate Adaptation in Rural India (WASCA- II), GIZ India
4. Technical Advisor, Water Security & Climate Adaptation in Rural India (WASCA- II), GIZ India
5. Director, Natural Resource Management and Agroecology, GIZ India
6. GIS Cell Head, M.S.Swaminathan Research Foundation, Chennai, India
7. Director Eco Technology, M.S.Swaminathan Research Foundation, Chennai, India