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ZERO HUNGER



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CLEAN WATER AND SANITATION



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CLIMATE ACTION



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LIFE ON LAND



# Bundelkhand: From Water Stressed to Water Secure ...through integrated water management

## BUNDELKHAND

The region is made up of 14 districts of Madhya Pradesh and Uttar Pradesh. Amidst poverty, droughts and floods, this remains one of the most underdeveloped regions in central India with poor human development indices. 70% of the population rely on agriculture, but the inadequate water resources, both surface and ground water, and lack of access to infrastructure and technology has led to worsening of the socio-economic instability. Over the past few decades, water stress and land degradation has become imminent in Bundelkhand.

## THE CHALLENGES

The issue that plagues this region is not just the lack of water availability, but poor management leading to human-induced water stress. Bundelkhand has witnessed a downward trend in rainfall in the last 30 years (by 7-8% from mean 1980 levels) and the average surface temperature is increasing and predicted to be higher, in the range of 2 to 3.5° C by mid-century\*. The region also suffers from a 32% reduction in precipitation rate - 2013-2018 (IMD). Six consecutive drought years since 2013, has now moved the region from situation of meteorological drought to hydrological drought and onto agricultural drought. Additionally, 70% of tanks, ponds and reservoirs are dried due to fall in surface and groundwater. Due to climate change some regions receive less rainfall and others receive most of their annual rainfall in a short duration as a few heavy storms resulting in high run-off, instead of replenishing the ground water. Bundelkhand has borne witness to the huge tanks of Bundelas, Chandelas and Peshwas, but today the surface water bodies have been encroached upon and vanished. Neglect of traditional water systems and lack of use of modern technologies for management has pushed Bundelkhand towards water scarcity.

## THE OPPORTUNITIES

With a lack of effective mitigation strategies and inadequate water management approaches, the vulnerability of socio-ecological systems, poverty, inequality, and subsequent starvation, migration are on the rise. Though there are several government schemes to tackle this grave issue, they are currently working in silos. To create a change for the land and the people of Bundelkhand, there is a need for an integrated water management approach based on the inclusion and participation of community members. The solution for the water woes lies in the revival of traditional knowledge, the use of modern technologies, training and capacity building, and ensuring a community-based approach for sustainable development.

\*Source: IITM, Pune, India, Second National Communication to The United Nations Framework Convention on Climate Change, MoEF, Government of India, 2002.

Source: 'Climate Resilient Development in Bundelkhand', Swiss Agency for Development and Cooperation, and Development Alternatives

Incidents of droughts have increased by nearly

7 times

6 Drought in 100 years

19<sup>th</sup> Century

7 Drought in 19 years

21<sup>st</sup> Century

Tikamgarh received **51%** more than the average rainfall

Jhansi received

**11%** less than the average rainfall

Due to climate change, some regions are rain-deficit while others receive heavy storms, and the lack of management leads to water crisis.



65% of people are migrating

50-90% water bodies have dried up



Women are walking upto average 6 kms to fetch water

More than 70% of farmers have sustained production loss during kharif season



40% of farmers are facing food security crisis

70%-90% of Handpumps have dried up



# Development Alternatives

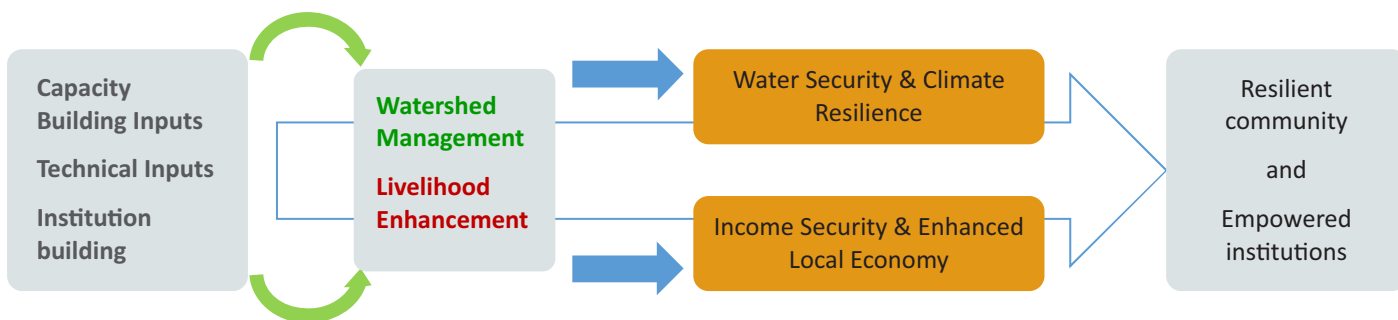
## Ensuring Access to Water for Livelihood Enhancement in Bundelkhand

### TOWARDS WATER SECURITY

Development Alternatives has a unique approach for tackling the ever-growing water crisis in Bundelkhand. It is a combination of re-establishing traditional land and water management techniques used by Bundela Kingdom 600 years ago, and modern scientific planning tools such as satellite imagery for mapping topography and land use, vegetation assessment and hydrological science for mapping aquifers. Thus, sustainable solutions are designed with the community by analysing the socio-economic and cultural systems.



### OUR APPROACH



#### INTEGRATED WATER MANAGEMENT

Rivers and streams have replenished through ridge-to-valley watershed management approach, which focuses on community-led construction of check dams, tanks, farm ponds, field bunding, gabions, gully plugs and reservoirs. This has recharged the shallow and deep aquifers leading to improved ground water tables and enhanced soil moisture.



#### COMMUNITY PARTICIPATION

Water user societies, watershed committees and Self Help Groups have been enabled to take charge of planning, implementation and management of the infrastructure leading to increased ownership. Women are at the forefront of managing water resources through the Locally Owned Community Operated (LOCO) models.



#### CAPACITY BUILDING

Farmers are trained for productivity enhancement through climate change adaption techniques for agricultural resilience. This ensures sustainability and food security, leading to poverty alleviation and consequent decrease in migration for sustainable livelihoods.

### OUR IMPACT IN THE LAST 25 YEARS

- **293 check dams** constructed in Bundelkhand
- Over **1,50,000 cubic metres** of water conserved every year
- **18,000+ hectares** of land treated
- **70% reduction** in water runoff leading to reduced soil erosion
- Cropping intensity raised by **50%** for most farms in this initiatives
- **30%** increase in agricultural productivity resulting in reduced migrations



- **5000 farmers** directly trained on sustainable land and water management
- **15,000 farmers' households** benefited through access to water for meeting the critical irrigation needs
- Daily drudgery of women reduced by **2 hours** due to increase in water availability
- Investment per hectare of farmland is only **INR 10,000**

