PF-5 · SESSION ON BEST PRACTICES · NATIONAL WATER MISSION

Impact of Climate Change on Water Resources and Their Management

Best Practices from Jogulamba Gadwal District, Telangana

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District Collector & District Magistrate, Jogulamba Gadwal

24 September 2026

Where the Krishna meets the Tungabhadra

SETTING THE CONTEXT

A River District in a Drought-Prone Belt

Bounded by two major rivers of the Krishna basin, the district's water security depends on managing river flows, reservoir storage and groundwater together.

Agriculture-based economy anchored on the Priyadarshini Jurala Project (PJP), the Rajolibanda Diversion Scheme (RDS), lift-irrigation schemes and a dense network of traditional tanks (kuntas/cheruvus) and community water management works

Hot semi-arid climate with frequent moisture stress — Confluent Border district-AP,Karnataka,Telangana

-Is selected in Top 100 back ward agriculture districts under PMDDKY and also has Ghattu Aspirational Block

80 km
Krishna river length in the district

58 km
Tungabhadra along the TG–AP border

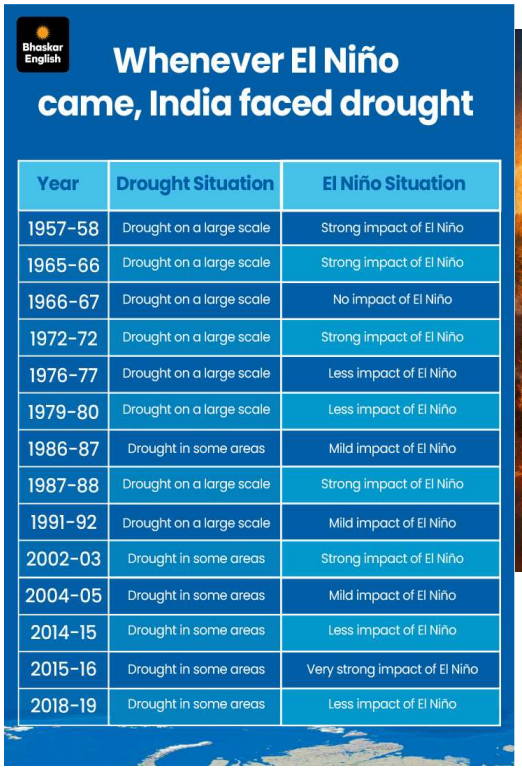
13
Mandals

255
Gram Panchayats

562
Minor Irrigation tanks

IMPACT OF CLIMATE CHANGE

What Climate Change Looks Like on the Ground



Year	Drought Situation	El Niño Situation
1957-58	Drought on a large scale	Strong impact of El Niño
1965-66	Drought on a large scale	Strong impact of El Niño
1966-67	Drought on a large scale	No impact of El Niño
1972-72	Drought on a large scale	Strong impact of El Niño
1976-77	Drought on a large scale	Less impact of El Niño
1979-80	Drought on a large scale	Less impact of El Niño
1986-87	Drought in some areas	Mild impact of El Niño
1987-88	Drought on a large scale	Strong impact of El Niño
1991-92	Drought on a large scale	Mild impact of El Niño
2002-03	Drought in some areas	Strong impact of El Niño
2004-05	Drought in some areas	Mild impact of El Niño
2014-15	Drought in some areas	Less impact of El Niño
2015-16	Drought in some areas	Very strong impact of El Niño
2018-19	Drought in some areas	Less impact of El Niño



Rising heat

Higher evaporation from tanks and reservoirs; higher crop water demand in peak summer.

Erratic monsoon & dry spells

Long breaks in Kharif rains; El Niño advisory issued to farmers for Kharif 2026; rain-fed pockets away from the rivers most exposed.

Extreme rain & floods

Krishna–Tungabhadra floods inundated Alampur; intense spells cause runoff loss, erosion and tank siltation

Groundwater swings

District average swings between ~4.5 m (post-monsoon) and ~6 m bgl (pre-monsoon);

IMPACT OF CLIMATE CHANGE

From Climate Stress to Water Stress

- Rising temperatures
- Rainfall variability & dry spells
- Extreme rainfall events
- El Niño years

→

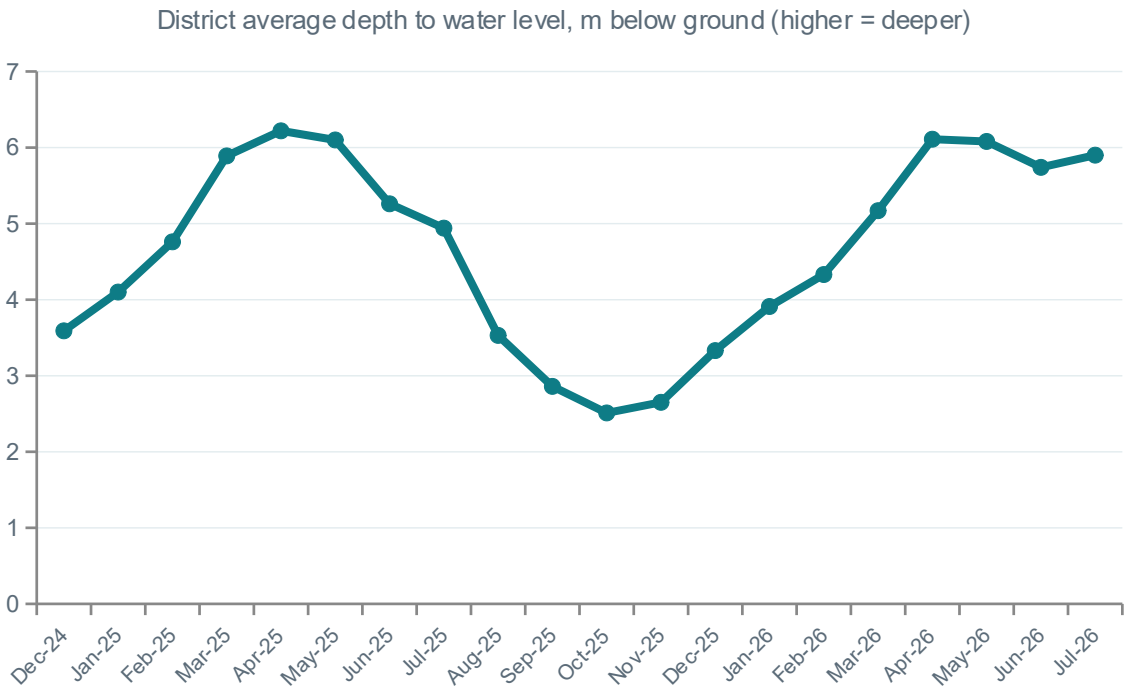
- Higher evaporation & crop water demand
- Uncertain inflows at Jurala & RDS (upstream dependence)
- Faster siltation of tanks
- Pre-monsoon groundwater decline

→

- Moisture stress & yield risk for farmers
- Summer drinking-water pressure
- Risk to fisher & farm livelihoods
- Pressure towards distress migration
- Effect to Small & Marginal farmers worsens

IMPACT OF CLIMATE CHANGE · EVIDENCE

The Monsoon Is Our Recharge Engine & Inter state





MANAGEMENT RESPONSE

Our Core: STORAGE BUFFER*

Our answer: build buffers at every level — household, village, tank, reservoir and aquifer.

BALANCING RESERVOIRS-

1.Balancing reservoirs — the Gudemdoddi (Lift-I, 1.19 TMC, ayacut 64,000 acres) & Relampadu (Lift-II, 2.00 TMC, ayacut 1,36,000 acres) have been developed to regulate flows, reduce flood season wastage of Krishna and Tungabhadra water

Enhanced Gudemdoddi to 15 TMC and Relampadu to 4TMC recently

2,RAJOLIBANDA DIVERSION SCHEME:- BUILDING A RESERVOIR ENHANCED TO 2.05 TMC recently

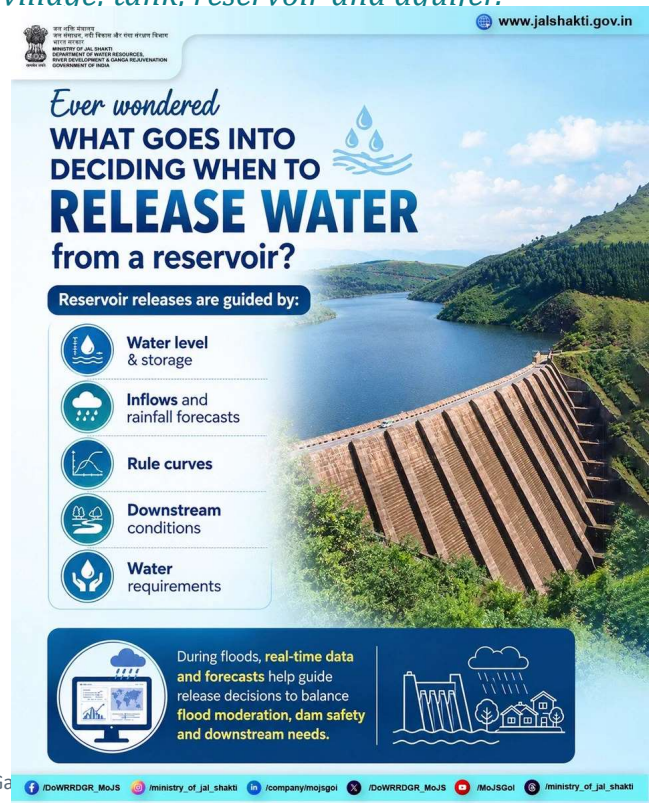
INTERLINKING CANAL & TANK NETWORK

REACH THE UNCONNECTED PATHWAYS AND FEASIBLE CRITICAL HABITATIONS

O&M ASPECTS

DESILT AND TAKEUP BEFORE RELEASE

REALTIME RELEASE



Jogulamba Ga

MANAGEMENT RESPONSE

Our Strategy: Six Pillars of Water Resilience

Capture – Store – Recharge – Use wisely – Protect – Participate

01

Catch every drop

JALASIRI & JSJB: 32,731 geo-tagged works

02

Revive water bodies

562 MI tanks mapped; community ponds desilted

03

Store as insurance

PJP, RDS & balancing reservoirs; conjunctive use

04

Climate-smart farming

Crop diversification with micro-irrigation

05

Protect rivers & quality

Sand-mining regime, STP, industrial stewardship

06

Green cover & people

Afforestation and a people's movement

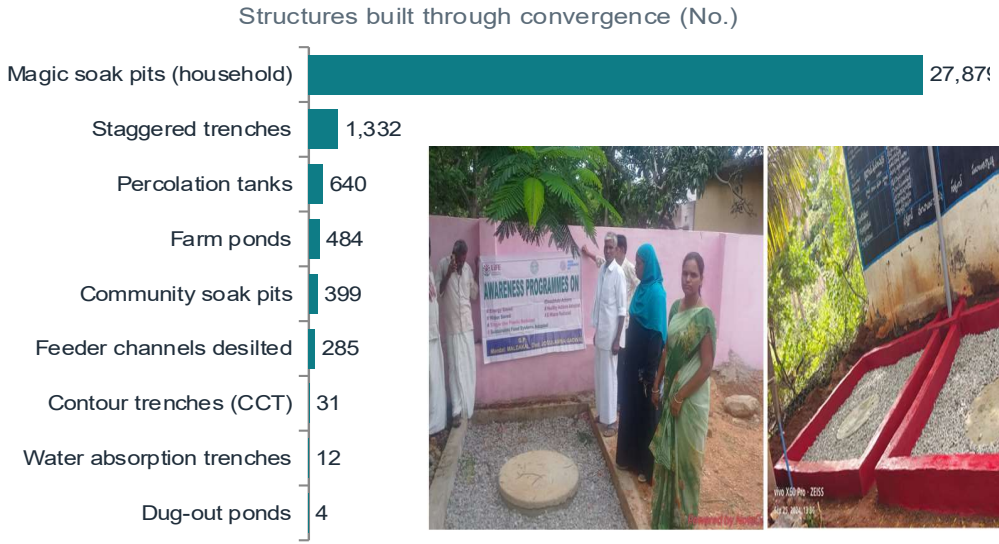
BEST PRACTICE 1 · JALASIRI & JAL SHAKTI JAN BHAGIDARI

32,731 Works: Catch the Rain at Scale

32,731

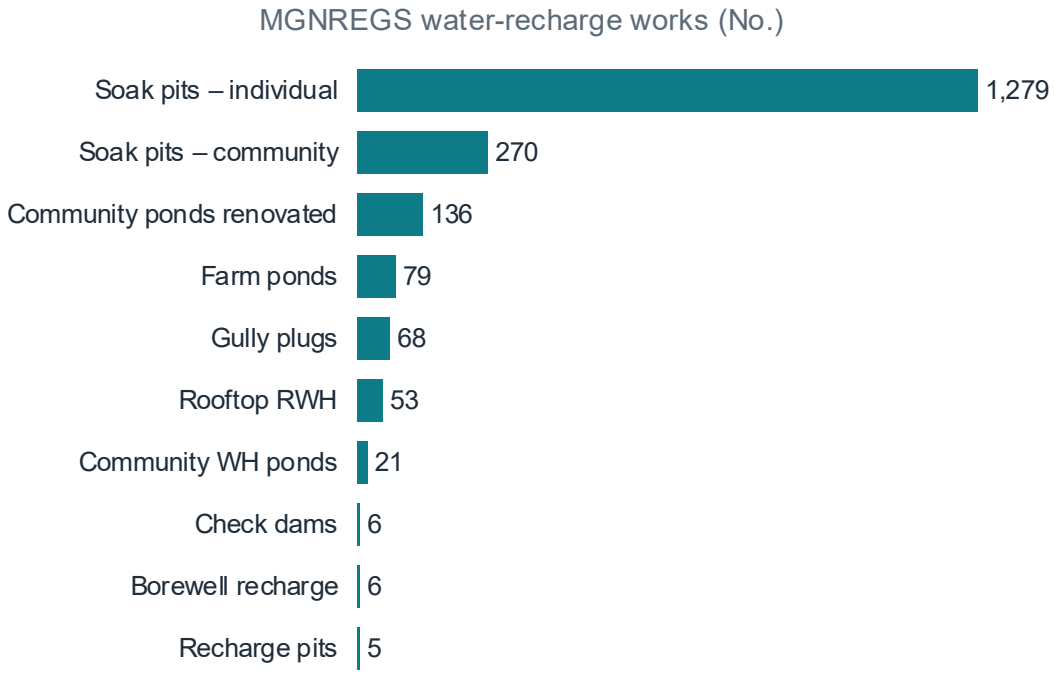
₹500–850
cost of a JALASIRI magic soak pit, built with local resources

19,500
existing structures repaired and rejuvenated



BEST PRACTICE 1 · MGNREGS CORE WORKS

1,923 VB-GRAM G Recharge Works in All 13 Mandals



₹8.48 Cr

54.75 lakh L/day
Percolated by soak pits alone

Two-thirds of all works are household soak pits — water conservation has moved from a government scheme to a household habit.

BEST PRACTICE 1 · ON THE GROUND

Catch the Rain — Works in the Field



Farm pond works, Chinna Tandrapadu (Ieeja)


Farm pond holding rainwater, Chinna Tandrapadu


Check dam, Chinna Pothulapadu (Manopad)


Magic soak pit, Aragidda (Ghattu)


School RWH pit, PM SHRI ZPHS Jallapur


Gully plugs, Nethuvanipalli (Maldakal)

BEST PRACTICE 2 · REVIVE TRADITIONAL WATER BODIES

Tanks Are Our First Line of Defence



Amrut Sarovar tank renovation (MGNREGS)



Sluice-gate restoration under tank O&M

562
MI tanks geo-tagged with unique IDs

1.83 TMC
storage · 23,182 acres ayacut

136 + 77
ponds renovated (MGNREGS) + tanks desilted (JSA)

₹11.35 Cr
2 Mini Tank Bunds: Sangala & Bingidoddi

BEST PRACTICE 3 · STORE AS CLIMATE INSURANCE

Large Storage + Conjunctive Use Buffers Variability

PJP (Jurala)

Designed for 1.05 lakh acres — now serves 4.35 lakh acres through lifts; 234 MW power

RDS

15.90 TMC

KWDT allocation (9.39 river + 6.51 TB Dam); 87,500 acres ayacut

Reservoirs

11.07 TMC

2 balancing (Gudemdoddi, Relampadu) + 5 off-line reservoirs

Thummilla LIS

55,600 ac

RDS supplementation; Mallammakunta reservoir (1.02 TMC)

Why it matters for climate: canal releases recharge shallow aquifers — mandals in the RDS/Tungabhadra influence zone show the sharpest post-monsoon recovery. Surface and ground water are managed as one system.

BEST PRACTICE 3 · CLIMATE-READY INFRASTRUCTURE

Keeping Dams and Canals Flood-Ready



PJP radial crest gates: sand-blasting & repair



New gates, Jammulamma BR



Revetment at PJP Right Main Canal head regulator

PJP gates

Wire ropes & turnbuckles replaced on 6 radial crest gates; rollers and rubber seals renewed

Reservoir gates

Head-regulator gates of Relampadu BR repaired; new outfall gates and hoist platform at Jammulamma BR

Canals

44 km desilted and 40 km lined; 462 canals desilted under Mission Kakatiya

Rivers & streams

16.5 km of stream network revived; encroachments cleared and bund land turned into public spaces

BEST PRACTICE 4 · CLIMATE-SMART AGRICULTURE

More Crop per Drop: Shift to Water-Wise Crops

Shifting from	Towards	Method
Paddy	Pulses, sorghum, maize, groundnut	Sprinkler / furrow / rain-fed
Cotton	Pulses, vegetables, papaya, drumstick, orchards	Drip fertigation

- **~2,516 acres** horticulture added in 2023-26, almost all under drip/sprinkler
- **Groundnut · ODOP** designated One District One Product — water-efficient cash crop
- **Millets via FPCs** foxtail millet & maize procurement builds a market for hardy crops



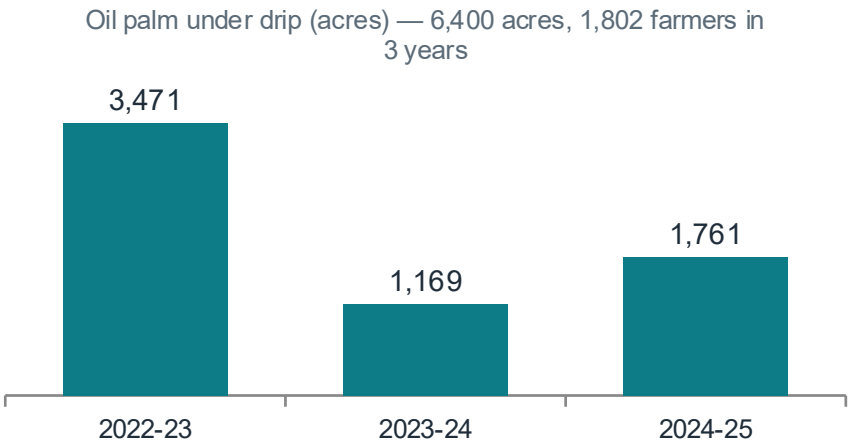
Dragon fruit under drip, Kothapalli (Gadwal mandal)

BEST PRACTICE 4 · MICRO-IRRIGATION

Drip Saves Water and Raises Incomes

24,610 ac

8,148
farmers benefited



Parameter	Flood irrigation	Micro-irrigation
Water-use efficiency	35–50%	**90–95%**
Water saving	—	**30–60%**
Fertiliser-use efficiency	Moderate	**20–40% higher**
Crop yield	Baseline	**+20–50%**
Net farm income	Baseline	**+25–60%**

Source: District Horticulture Department

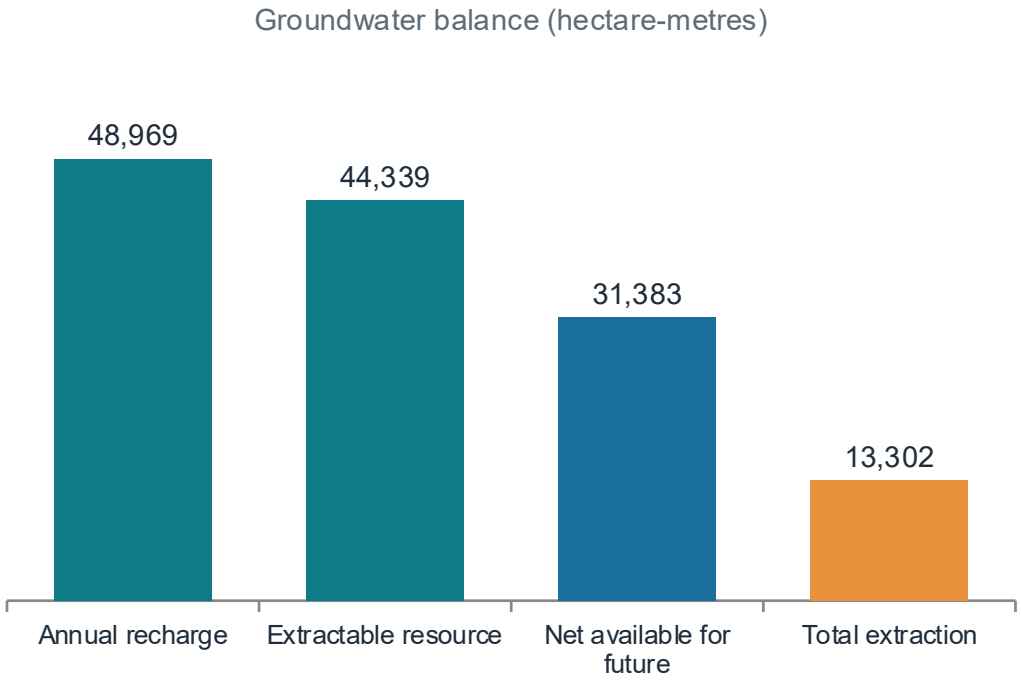
The same water irrigates a larger area — and returns stay stable in drought years.

OUTCOME · GROUNDWATER STATUS (GWRA-2025)

Groundwater Held in the ‘Safe’ Zone

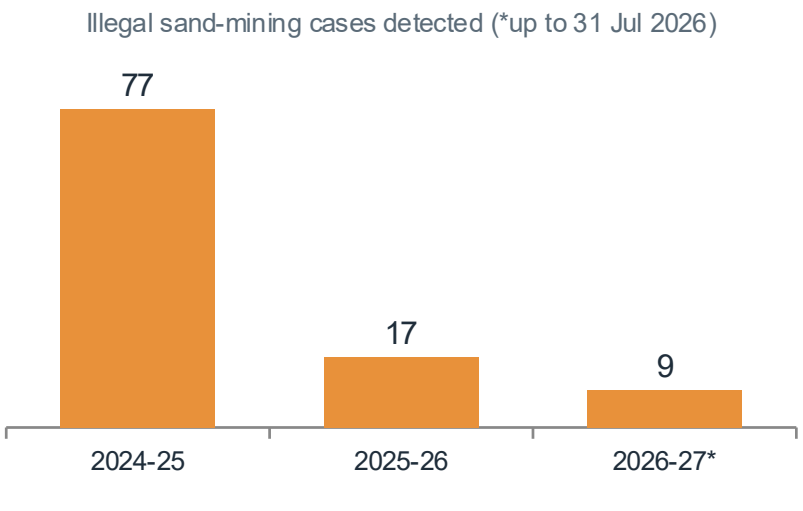
30%

12 of 13
mandals Safe; K.T. Doddi (72%) Semi-Critical — our focus mandal



BEST PRACTICE 5 · PROTECT THE RIVERS

River Beds Protected: Enforcement That Works



ENFORCEMENT & SAFEGUARDS

- Preventive Detention (Goonda Act) invoked against a sand-mafia leader — a first in the State
- GPS-tracked sand transport through the Mana Isuka Vahanam app
- No extraction within 500 m of bridges, dams or weirs; depth capped at 2 m
- District Sand Committee chaired by the Collector; joint inspections by 6 departments
- MANA ISUKA MANA VAHANAM App only for sand Purchase

9
regulated reaches on Tungabhadra (8 for local use)

564 CBM
seized sand given to Indiramma houses

₹34.96 L
penalties collected in 3 years

BEST PRACTICE 6 · SAFE DRINKING WATER

From Jurala to Every Home: Mission Bhagiratha

Source	Treat	Deliver	Every home
Jurala reservoir · 1.20 TMC raw water a year	70 MLD WTP (84 MLD overload) + 21 MLD WTP revived Feb 2025	2,524 km of pipelines · 349 new OHSRs	1,36,509 tap connections · 321 habitations · 100 LPCD

QUALITY & EFFICIENCY

- Pre- and post-chlorination (5 ppm / 2 ppm); PAC for turbidity
- 14 registers incl. daily quality, bacteriological tests, water audit
- Leakages restored within 24 hours; ~73 MLD clear water daily

WHY TREATED SURFACE WATER MATTERS

291 groundwater samples tested in 2025 (pre- & post-monsoon): **fluoride above 1.5 mg/L in 12–16%** and **nitrate above 45 mg/L in over half** of wells. Piped, treated Jurala water protects households from this risk — and frees groundwater for recharge.

BEST PRACTICE 7 · URBAN & INDUSTRIAL STEWARDSHIP

Towns and Industries Share the Responsibility

Municipality

- **₹5.74 Cr** SBR-technology STP (1.00 MLD) and pumping stations under SBM 2.0 — tender in progress
- **Reuse** treated wastewater to be reused as per guidelines once restored
- Crematoriums,Dumping yards are built and new SWM rules are implemented
- **Riverfront** sanitation along the Tungabhadra to keep the river clean

Industries (TG-iPASS)

- **591 KLD** total groundwater permitted — clearance only after Ground Water Dept. assessment
- **Less than asked** e.g. Dodla Dairy, Pullur: 84 KLD permitted against 176 KLD sought
- **Water-Smart plan** metering, water audits, leak repair, rooftop RWH & recharge in premises
- **ETP/STP reuse** treated water for greenbelt, washing, flushing, dust suppression

BEST PRACTICE 8 · GREEN COVER AS A CLIMATE BUFFER

Above Target, Three Years Running

33.64

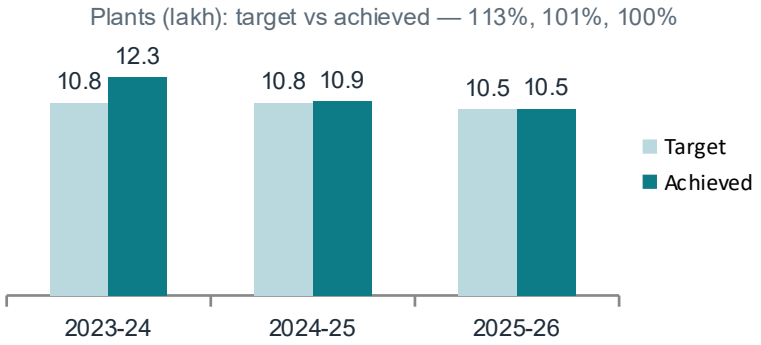
lakh plants planted, 2023-24 to 2025-26

296 Palle Prakruthi Vanams
6,11,027 plants in village nature parks

255 Gram Panchayat nurseries
12.75 lakh fresh plants raised in 2025-26

Why it matters
Tree cover cools, cuts runoff and improves infiltration and soil moisture


Palle Prakruthi Vanam, Kondair (Itikyal)



BEST PRACTICE 9 · WATER BODIES AS LIVELIHOODS

Healthy Tanks, Thriving Fisher Families

288
water bodies used for fisheries

56
fisher co-operative societies

5,674
society members

1.82 Cr
fish seed stocked (2025-26)

5,467 t
fish produced

₹27.3 Cr

Water-body health

- 9 reservoirs, 34 perennial and 245 seasonal tanks stocked
- ~6 crore fish seed released in 3 years (Blue Revolution)
- Fishers remove aquatic weeds by hand during NREGS desilting — no chemicals
- No eutrophicated water bodies reported
- ~1,000 acres of semi-intensive aquaculture on river water

When a tank feeds a family, the community guards the tank — livelihoods turn water bodies into protected, well-kept assets.

BEST PRACTICE 10 · A PEOPLE'S MOVEMENT

From Public Works to Public Ownership



Rooftop RWH & awareness, Adiviravula Cheruvu (Maldakal)



Eco-Club students in a plantation drive

Village Water & Sanitation Committees active in all 255 GPs; Gram Sabhas held before every rollout

SHGs, Rytu Sanghas and local opinion-leaders demonstrated magic soak pits to build confidence

Children as ambassadors: Eco-Clubs in 542 NGC schools and 22 PM SHRI schools; ‘Selfie with Plant’

56 fisher co-operatives (5,674 members) manage 288 water bodies — water bodies as livelihoods

MANAGEMENT · COLLECTOR-LED CONVERGENCE

15 Departments, One Evidence-Based Water Plan

District review chaired by the Collector very –Monthly JJM meeting,Sand Committee meeting,PMDDKY coordination meeting,Agriculture & Horticulture review meeting,Wetlands protection meetings,Water conservation VBGRAM review meetings,Land Acquistion and Water management meeting etc.

THE EVIDENCE CHAIN EVERY DEPARTMENT FOLLOWS

1 Data → 2 Initiative → 3 Intervention → 4 Before / After → 5 Measurable Impact → 6 Evidence → 7 Photographs → 8 Best Achievement

DEPARTMENTS IN CONVERGENCE

Irrigation	Ground Water	DRDA / Watershed	Forest	Mission Bhagiratha
DPO / Panchayat Raj	Agriculture	Horticulture	Fisheries	Revenue & Mining
Municipalities	Education	Industries & PCB	I & PR	SHGs / Community

MANAGEMENT · DATA AND DIGITAL TOOLS

Every Structure Counted, Every Drop Tracked

Geo-tagged assets

All 562 MI tanks with unique IDs; all 32,731 JSJB works geo-tagged on the portal

Clean land records

Irrigation and canal lands 100% updated in Bhubharati

Aquifer watch

Monthly piezometer readings in all 13 mandals; 291 water-quality samples a year

Metered supply

Mission Bhagiratha: mandal-wise water budgeting with electronic meters and village registers

Daily reporting

Daily Sanitation Report app used by all Panchayat Secretaries

Ridge-to-valley plan

JALASIRI water action plan with net planning to saturate every acre

IMPACT AT A GLANCE

What the District Has Achieved

30%
GW extraction — Safe

32,731
JSJB works, geo-tagged

562
MI tanks geo-tagged

4.35 L ac
Irrigation from PJP system

33.64 L
Plants in 3 years

1,36,509
Household tap connections

24,610 ac
Under micro-irrigation

₹27.3 Cr
Fisheries income

A drought-prone district, kept water-secure through conservation at every scale — household, village, tank, reservoir and aquifer.

LESSONS & WAY FORWARD

What Can Be Replicated — and What Comes Next

1. Saturate at household scale — soak pits scale faster than big works
2. Treat tanks, canals and aquifers as one connected system
3. Make water bodies earn livelihoods so communities guard them
4. Monitor monthly, review publicly, target the weakest mandal & Semi critical

1. Climate-informed contingency crop plans; MSP & credit for millets, pulses, oilseeds
2. Manage & Monitor the SHG & Community led water Conservation works
3. Involve the Public representatives in Planning at VBGRAM and GPDP meetings and include water conservations as main subject
4. Improvise PMDDKY objectives,Aspirational block to Inspirational block

Thank You



Every drop conserved today is resilience secured for tomorrow.

District Administration, Jogulamba Gadwal, Telangana

PF-5 Session on Best Practices · National Water Mission, Ministry of Jal Shakti