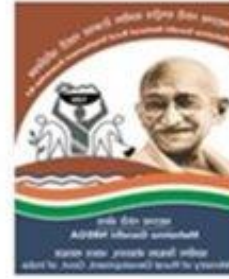




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Water Security Climate Adaptation- Tamil Nadu Third State Level Steering Committee Meeting

Progress Report, Action Plan

22 Sep 2020

Rural Development and Panchayat Raj Department

Government of Tamil Nadu

SLSC Steps in Presentation



1) WASCA – TN
STRATEGY



2) PROGRESS DURING
JUNE- SEP 2020:
RAMANATHAPURAM



3) PROGRESS JUNE-SEP:
TIRUVANNAMALAI



4) ACTION TAKEN
SECOND SLSC



5) DISCUSSION POINTS

1.1 Water Security and Climate Adaptation in Rural India (2019-22)

Objective

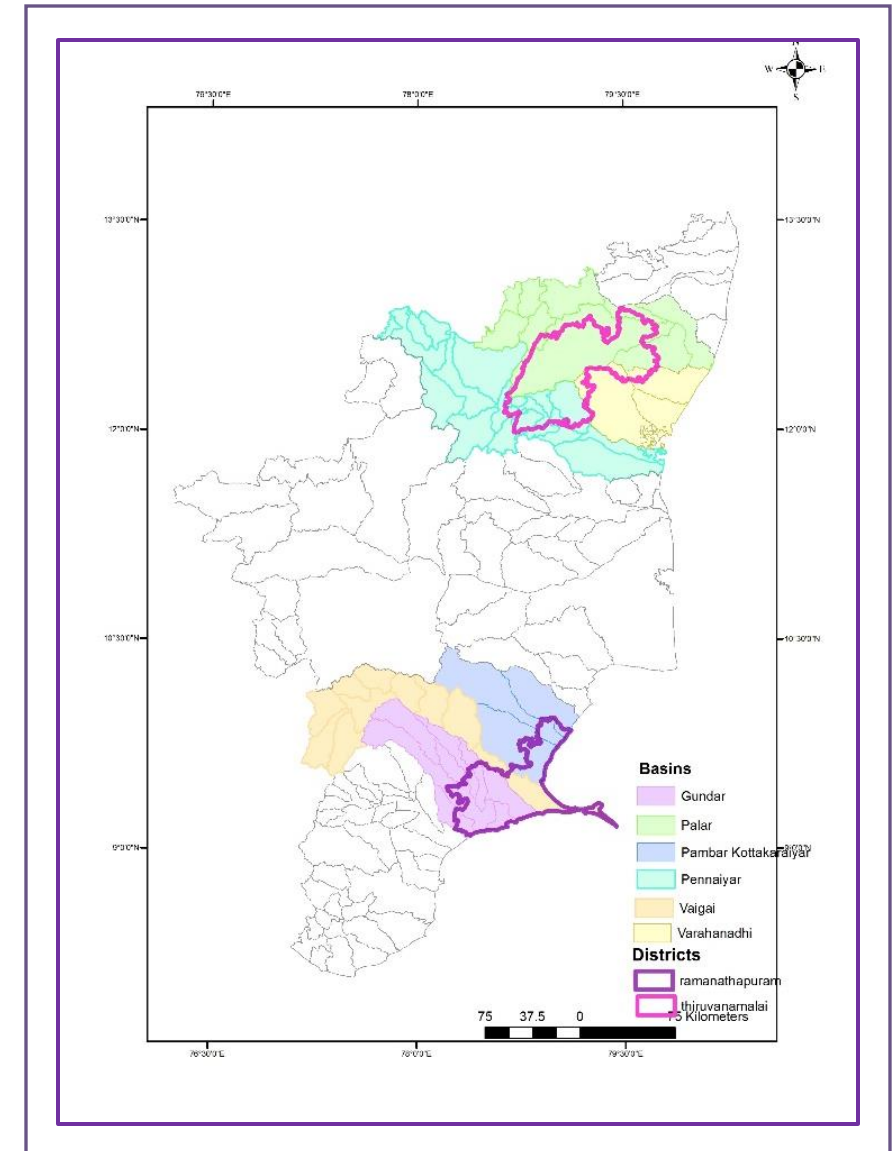
Water resource management is enhanced through an integrated approach at national, state and local level with regards to water security and climate adaptation in rural areas

Output 1: Improving existing **planning and financing** mechanisms

Output 2: Demonstrating **climate-resilient water management** measures

Output 3: Strengthening **cooperation with private sector**

WASCA Tamil Nadu Motto: Climate Resilience for Future Livelihoods



நிலையான நீர்வளம்

நீர்ப்பயன்பாட்டு மேலாண்மை மற்றும் கிராமப்புற வளர்ச்சி

Water #For SDGs #ForNature



நீர் செயல்திட்டம் 1
பாதிக்கப்பட்ட மற்றும் பொது நிலங்களைப் பண்படுத்துதல்

நீர் செயல்திட்டம் 2
வேளாண்மை மற்றும் வேளாண்சார் நிலங்களை விரிவுபடுத்துதல்

நீர் செயல்திட்டம் 3
கிராமப்புற சமுதாயம் மற்றும் குடும்பங்களின் பங்கேற்பு

நீர் செயல்திட்டம் 4
ஊரக தொழில்களின் நீர் பயன்பாடு

நீர் செயல்திட்டம் 5
காலநிலை மாற்றத்தை எதிர்கொள்ளும் மற்றும் ஏற்றுக்கொள்ளும் திறனை உருவாக்குதல்

காலநிலை மாற்றம், வாழ்வாதாரம் மற்றும் இயற்கை பாதுகாப்பு
Water Security and Climate Adaptation in Rural India (WASCA)
Composite Water Resources Management (CWRM)
An Indo-German initiative




1.2 WASCA TN: Climate Proofing for Future Livelihoods

1.3 Key Steps Taken Up under WASCA TN

01

Capacity Building

- Online Training
- Hands on working of GPs at District WASCA Resource Centers
- Orientation by GIS, MSSRF, EEs, Model GPs by AEs
- Preparing plans at WASCA Resource Centres

02

Composite Water Resource Management Plan

- Analysis of Non-Spatial Data and integration to GIS environment
- Data Collection (by MSSRF and DRDA)
- Bhuvan Thematic Layers (13 layers)
- Works Identification and transposing with GIS layers on Google Earth pro
- Generating Draft Action Plan

03

Steps for Verification and Approvals

- Field Verification by block level officers
- Technical Estimate Preparation
- Sanctions
- Implementation

04

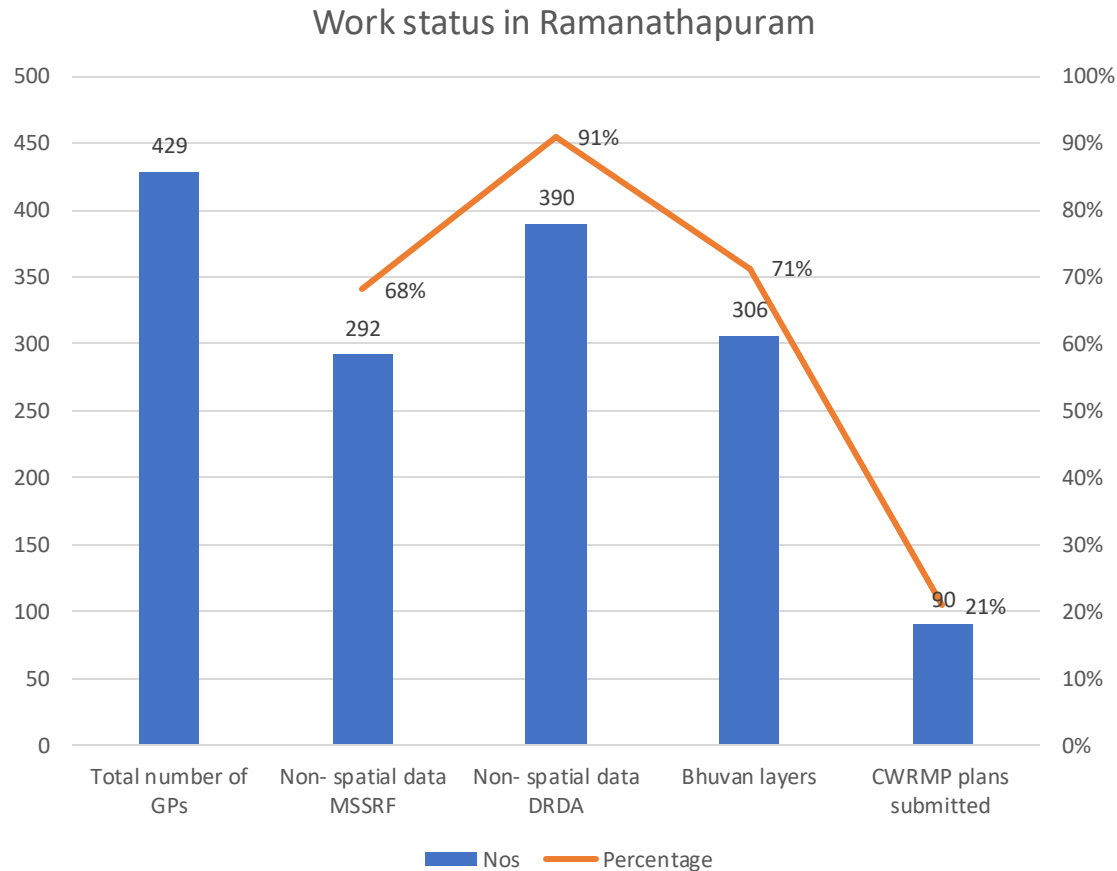
Climate Resilience Measures as Pilots

- Identification of measures
- Preparing policy notes
- Piloting

2) WASCA
Progress
Ramanathapuram
District



2 .1 Progress of WASCA: Composite Water Resource Management Plan (CWRMP) GP Level as on 16 September 2020



WASCA Work Status : CWRMP - Ramanathapuram

| Parameter | Nos | Percentage |
|------------------------------|-----------|------------|
| Total number of GPs | 429 | |
| Non- spatial data MSSRF | 292 | 68% |
| Non- spatial data DRDA | 390 | 91% |
| Bhuvan layers | 306 | 71% |
| CWRMP plans submitted | 90 | 21% |

2.2 Climate Analysis: Ramanathapuram District Profile

| Months | Minimum (°C) | Maximum (°C) | Difference in Day / Night Temp (oC) | Evapo Transpiration in mm | ET in mts | Water Loss due to ET in HaM | % of ET losses to total ET losses | Vol. Soil Moisture in % | Normal Rainfall (mm) | % Normal Rainfall (mm) | Normal Rainy days (No.) | Normal Rainy days (No.) | Average Intensity |
|--------------|--------------|--------------|-------------------------------------|---------------------------|-----------|-----------------------------|-----------------------------------|-------------------------|----------------------|------------------------|-------------------------|-------------------------|-------------------|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
| June-18 | 27.3 | 34.8 | 7.50 | 74.00 | 0.07 | 47.67 | 14% | 21.00 | 121.7 | 15% | 9 | 8% | 13.52 |
| July-18 | 27.5 | 36.3 | 8.80 | 52.00 | 0.05 | 33.50 | 10% | 19.00 | | | | | |
| August-18 | 26.3 | 35.3 | 9.00 | 52.00 | 0.05 | 33.50 | 10% | 25.00 | | | | | |
| September-18 | 26.2 | 35.2 | 9.00 | 34.00 | 0.03 | 21.90 | 7% | 38.00 | | | | | |
| October-18 | 25 | 31.9 | 6.90 | 83.00 | 0.08 | 53.46 | 16% | 37.00 | 507.4 | 63% | 84 | 79% | 6.04 |
| November-18 | 23.5 | 30.9 | 7.40 | 71.00 | 0.07 | 45.73 | 14% | 19.00 | | | | | |
| December-18 | 23.1 | 31.2 | 8.10 | 51.00 | 0.05 | 32.85 | 10% | 14.00 | | | | | |
| January-19 | 20.9 | 31.1 | 10.20 | 34.00 | 0.03 | 21.90 | 7% | 13.00 | 82.2 | 10% | 4 | 4% | 20.55 |
| February-19 | 24.8 | 33.5 | 8.70 | 32.00 | 0.03 | 20.61 | 6% | 1.00 | | | | | |
| March-19 | 26.6 | 35.6 | 9.00 | 17.00 | 0.02 | 10.95 | 3% | 6.00 | | | | | |
| April-19 | 28.1 | 36.9 | 8.80 | 9.00 | 0.01 | 5.80 | 2% | 3.00 | 95.5 | 12% | 10 | 9% | 9.55 |
| May-19 | 28.6 | 36.4 | 7.80 | 13.00 | 0.01 | 8.37 | 2% | 7.00 | | | | | |
| Total | | | | 522.00 | 0.52 | 336.24 | | | 806.8 | | 107 | | |
| Av Per Month | | | 8.43 | 43.50 | 0.04 | 28.02 | | 16.92 | 67.23 | | 9 | | |

2.3 Analysis of CWRMP Completed GPs (No of GPs-90)

| Land Classification | Area (ha) | Percentage | Surface Run Off Category & RO in Ham (CGWB: Strange Model) | % of Surface Run Off: Category wise |
|--|------------|----------------|--|---------------------------------------|
| Forest Area | 0 | 0.00 % | Good Run Off (3,575.08 Ha M) | Good Run Off 30.61 % |
| Area under Non-Agricultural Uses | 16, 096.88 | 18.72 % | | |
| Barren & Un-cultivable Land Area | 531.39 | 0.62% | | |
| Permanent Pastures and Other Grazing Land Area and Area under Tree Cover | 1, 680.15 | 1.95 % | Average Run Off (1,067.24 Ha M) | Average Run off 9.14 % |
| Culturable Waste Land Area | 586.78 | 0.68% | | |
| Fallows Land other than Current Fallows Area | 8092.55 | 9.41 % | | |
| Current Fallows Area | 11,378.71 | 13.23 % | Bad Run Off (7,038.86Ha M) | Bad Run-Off 60.26% |
| Total Unirrigated Land Area | 24, 368.71 | 28.34 % | | |
| Irrigated Land | 23, 265.83 | 27.01 % | | |
| Total Area of the GP | 86, 001 | 100 | 11,681 Ha M | |

2.4 Analysis of CWRMP Completed GPs

| S No | Parameter | Number | Percentage to total GP(90) |
|------|---|-----------|------------------------------|
| 1.1 | Ground Water: Over Exploited | 0 | 0% |
| 1.2 | Ground Water: Critical | 0 | 0% |
| 1.3 | G.W.: Semi-Critical | 0 | 0% |
| 1.4 | GW Safe / saline | 90/1 | 99% under safe and 1% saline |
| 2 | Active in MGNREGS workers (active job card holders) | 38,897 | 85.70 % |
| 3 | Annual Grey Water Generated (HaM) | 326.23 | |
| 4 | Irrigated Area (2018-19) (in Ha) (Tanks + Canals) | 16,632.11 | 41% |
| 5 | Rainfed Area (2018-19) in Ha) | 23,260.93 | 59 % |
| 6 | Livestock Population (Nos) | 1,43,085 | |
| 7 | Agriculture water met by Groundwater (HaM) | 28,261.18 | 69% |
| 8 | Water Demand in (Ha.M) | 40,742.32 | |
| 9 | Available Run-off for harvesting and recharge (in Ha.M) | 7618.50 | |

2.5.1 Works: Climate Proofing for Future Livelihoods

| S NO | Name of the Work | Number of Works |
|--|--|-----------------|
| CWRM- Water Action 1: Public & Common Lands Development | | |
| 1 | Afforestation (non-forest area) (in Ha) | 128 |
| 2 | Silvi Pasture Development (Ha) | 58 |
| 3 | Linear Plantation (Bund) | 48,848 |
| 4 | Avenue Plantation | 18,000 |
| 5 | Natural Drainage Lines treatment length in Mts | 3,25,768 |
| 6 | Total No of Tanks for Renovation | 926 |
| 7 | Water Courses Length | 5,26,153 |
| 8 | Check Dams/Gabbions | 2 |
| 9 | Water Absorption Trenches | 67,600 |
| 10 | Canal plantations | 2,58,591 |
| 11 | Potential Area for Agro-Forestry (Community in Ha) | 3,360 |

2.5.2 Works: Climate Proofing for Future Livelihoods

| S NO | Name of the Work | Number of Works |
|---|---|-----------------|
| CWRM - Water Action 2: Productivity Enhancement (Agri & Allied Sector) | | |
| 1 | Fallow Land Development (Area in Ha) | 2,844 |
| 2 | Land Development (Area in Ha) | 2,000 |
| 3 | Composting (No of Farmers) | 2,639 |
| 4 | Farm Bunding with trenches (No of Farmers) | 3, 481 |
| 5 | No of Farm Ponds (No of Farmers) | 2, 654 |
| 6 | Potential Area for Agroforestry (Individual) (area in Ha) | 1,192 |
| CWRM - Water Action 3: Rural Water Management | | |
| 1 | Soak Pits (Indv and Community) | Saturation Mode |
| 2 | Roof Water Harvesting | 94 |
| 3 | Community Tanka (Rajasthan Model) | 2 |

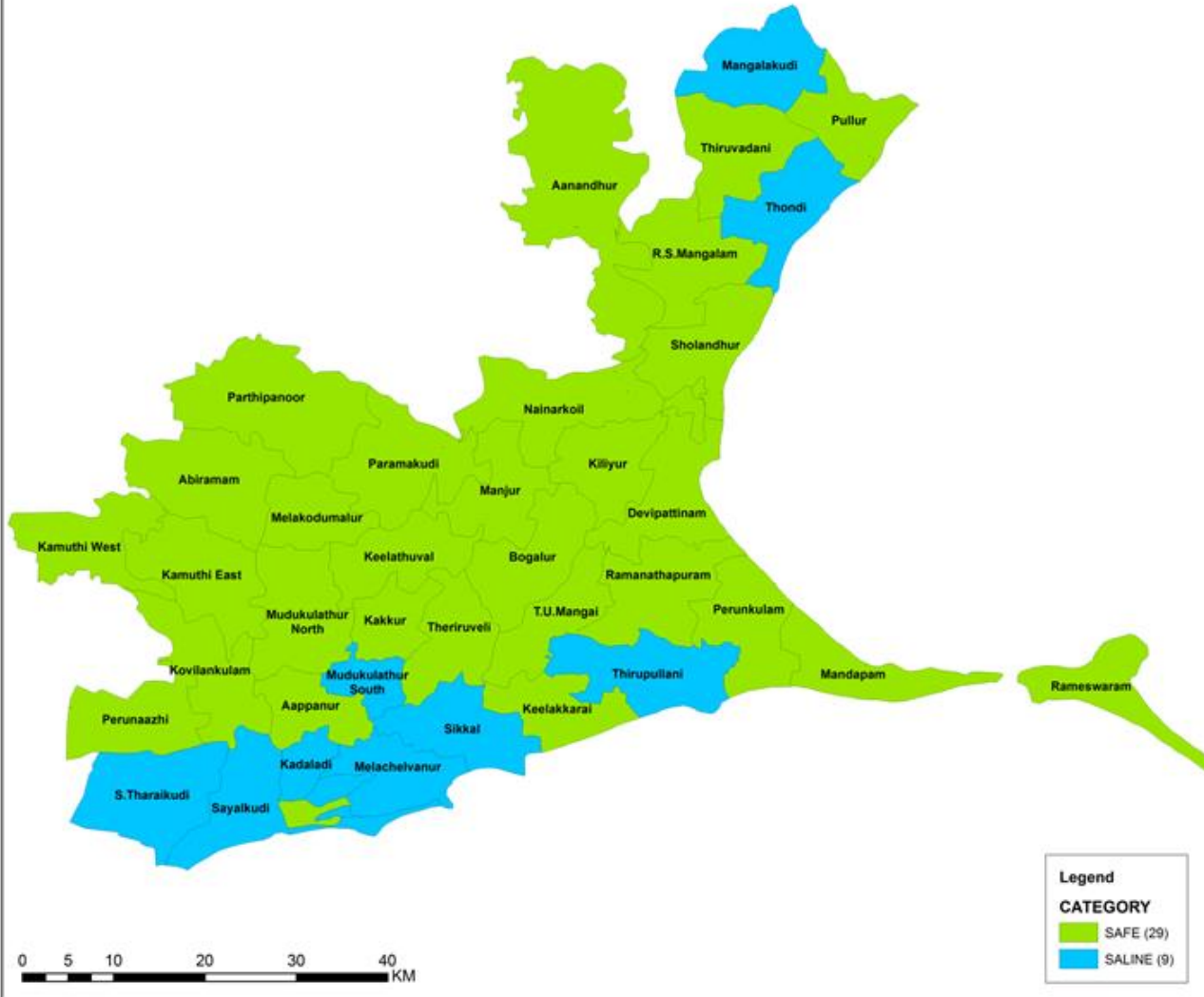
2.5.3 Water Action" Climate Resilient Measures: Ramanathapuram District

| S NO | Climate Resilient Measure | Location | Progress / status |
|------|---|--|--|
| 1 | Coastal Watersheds | Set of GPs in Kadaladi, Mandapam, Ramanathapuram and Thirupullani blocks | Three Pilot Areas identified; One pilot area draft plan prepared; |
| 2 | Riverbank Stabilization through Mini Forests | Vendoni, Paramakudi block | Plantations taken up 2019-20; Nursery raising also taken up |
| 3 | Drinking Water Assurance (Saline areas) - Catch the Rain | Chithurvadi,RS Mangalam block and Thilaiyenthal pt Thiruppullani block | Two Community Tankas constructed as pilot; High Demand for Roof Water Harvesting Storage |
| 4 | Cascade Tanks Development | R.S. Mangalam | River sub-basin and watershed mapping carried out; Tanks exclusively for re-charge purposes identified (Field Verification to be carried out) |
| 5 | Degraded land developmet – Horticulture Parks – different models | One GP in 11 Blocks | Every Block has taken up One unique Model of various income generating Agro-Forestry aspects taken up with agri+Horti+Silvi+ Livestock development |

Studies

- **Reducing Sea Water Intrusion and Salinity:**
 - To map vulnerability of the groundwater quality in aquifers, extent of seawater intrusion in the aquifers of Ramanathapuram District
 - To estimate annual rate of sea water intrusion.
 - To develop effective plan, suitable methodology for the sustainable management for arresting/reducing seawater intrusion in Ramanathapuram district (with Climate Adaptation).
- **Ground Water Assessment: Started 22 August 2020;**
 - Convergence with CWRM and G.W. Budget
 - Artificial recharge structure,
 - River rejuvenation:,
 - subsurface dams / Recharge shafts

GROUND WATER ASSESSMENT STATUS AND POTENTIAL IN RAMANATHAPURAM DISTRICT AS ON MARCH 2017

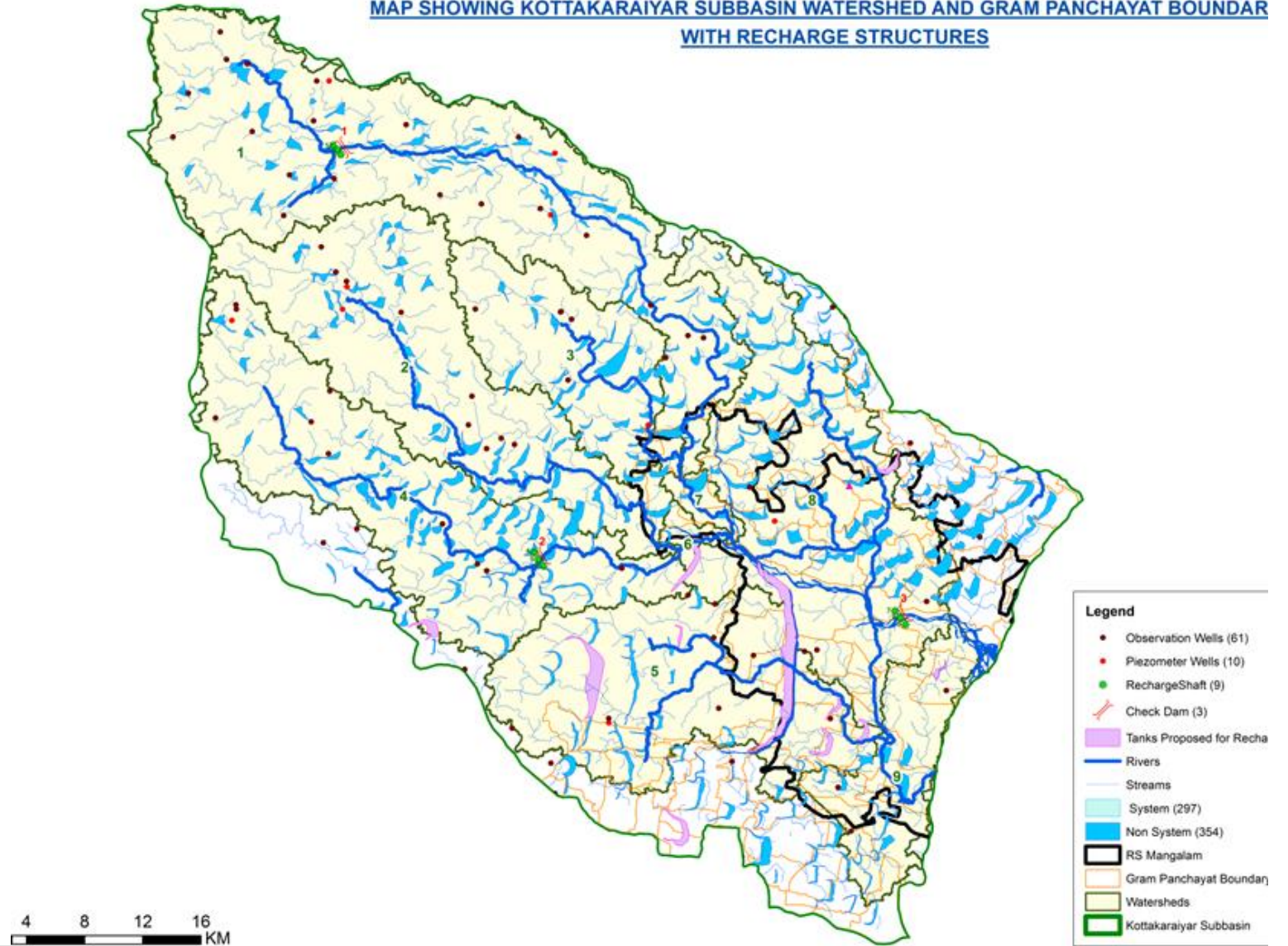


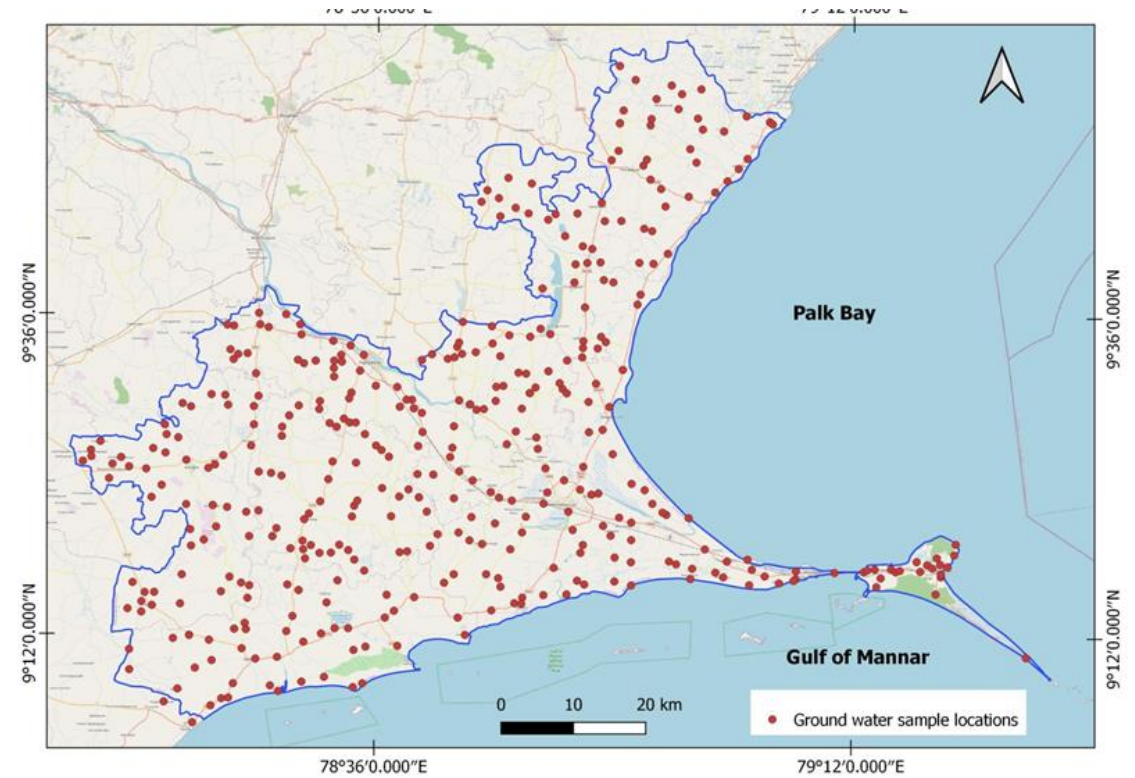
| Firka Name | Net GW Availability | Stage of Development | CATEGORY |
|--------------------|---------------------|----------------------|----------|
| Aanandhur | 1905.933 | 3.118 | SAFE |
| Aappanur | 1713.262 | 7.603 | SAFE |
| Abiramam | 2169.834 | 17.425 | SAFE |
| Bogalur | 2184.029 | 13.694 | SAFE |
| Devipattinam | 2495.623 | 6.358 | SAFE |
| Kadaladi | 0.000 | 0.000 | SALINE |
| Kakkur | 1051.056 | 6.590 | SAFE |
| Kamuthi East | 1262.696 | 8.785 | SAFE |
| Kamuthi West | 1755.712 | 23.116 | SAFE |
| Keelakkurai | 1274.593 | 36.210 | SAFE |
| Keelathuvai | 1147.926 | 13.016 | SAFE |
| Killyur | 1998.823 | 7.877 | SAFE |
| Kovilankulam | 1379.087 | 33.967 | SAFE |
| Mandapam | 1175.600 | 66.529 | SAFE |
| Mangalakudi | 0.000 | 0.000 | SALINE |
| Manjur | 1795.805 | 9.105 | SAFE |
| Melachelvanur | 0.000 | 0.000 | SALINE |
| Melakodumalur | 1122.277 | 5.511 | SAFE |
| Mudukulathur North | 1588.835 | 4.015 | SAFE |
| Mudukulathur South | 0.000 | 0.000 | SALINE |
| Nainarkoil | 2367.759 | 7.619 | SAFE |
| Paramakudi | 2233.816 | 13.799 | SAFE |
| Parthipanoor | 4018.724 | 8.568 | SAFE |
| Perunaazhi | 877.343 | 13.581 | SAFE |
| Perunkulam | 1399.175 | 77.557 | SAFE |
| Pullur | 2443.845 | 3.621 | SAFE |
| R.S.Mangalam | 2176.633 | 3.088 | SAFE |
| Ramanathapuram | 1517.691 | 18.294 | SAFE |
| Rameswaram | 586.438 | 49.674 | SAFE |
| S.Tharaikudi | 0.000 | 0.000 | SALINE |
| Sayalkudi | 0.000 | 0.000 | SALINE |
| Sholandhur | 2969.475 | 2.808 | SAFE |
| Sikkal | 0.000 | 0.000 | SALINE |
| T.U.Mangai | 1918.583 | 20.573 | SAFE |
| Theriruvelli | 1286.869 | 7.595 | SAFE |
| Thirupullani | 0.000 | 0.000 | SALINE |
| Thiruvadani | 2141.073 | 3.591 | SAFE |
| Thondi | 0.000 | 0.000 | SALINE |

Ground Water Assessment, Status and potential of in Ramanathapuram District

Kottakaraiyar
Subbasin
Watershed - GP
Boundaries
Recharge Structure
-
Ramanathapuram

MAP SHOWING KOTTAKARAIYAR SUBBASIN WATERSHED AND GRAM PANCHAYAT BOUNDAR WITH RECHARGE STRUCTURES





Sea Water Intrusion, Salinity Study, Sample Collection

- Collection of Pre-monsoon ground water samples (378 samples)
- Phase I sampling (15th to 18th July 2020) - 221 samples
- Phase II sampling (18th to 21st August 2020) - 157 samples
- Map Showing Collection of samples

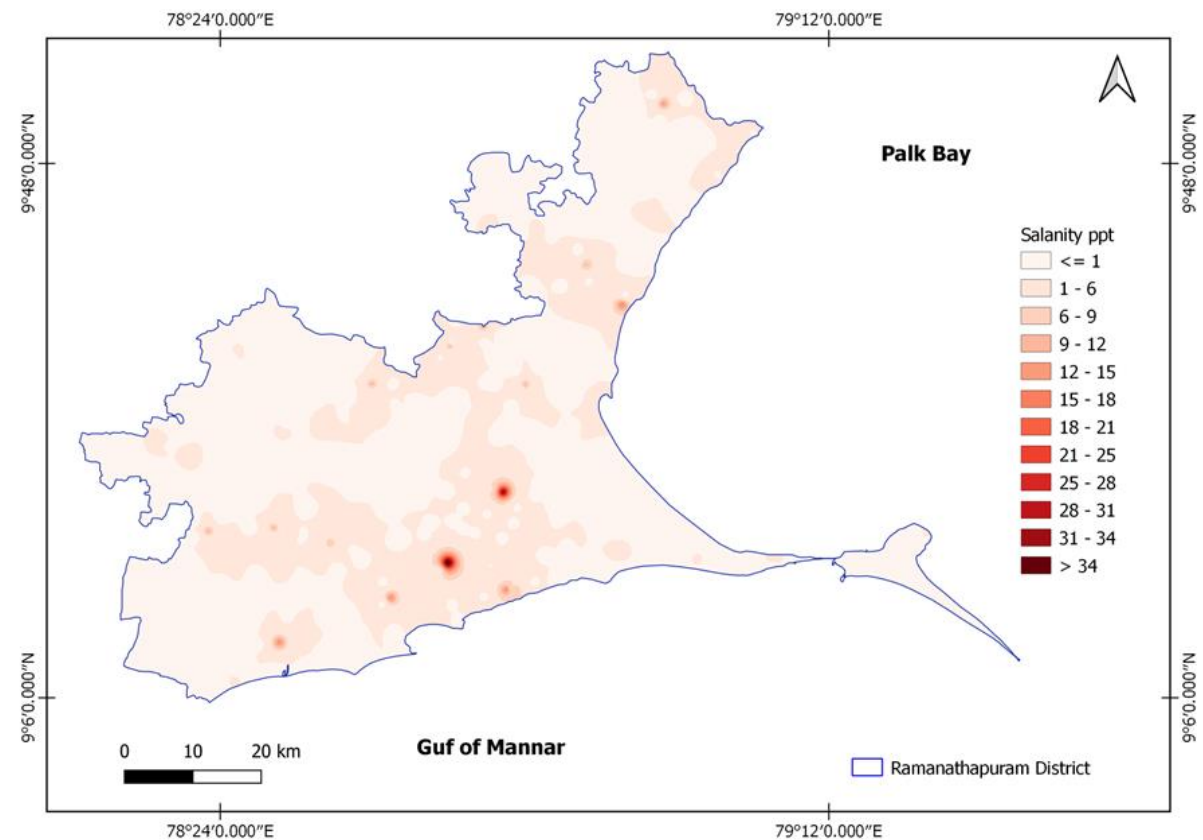
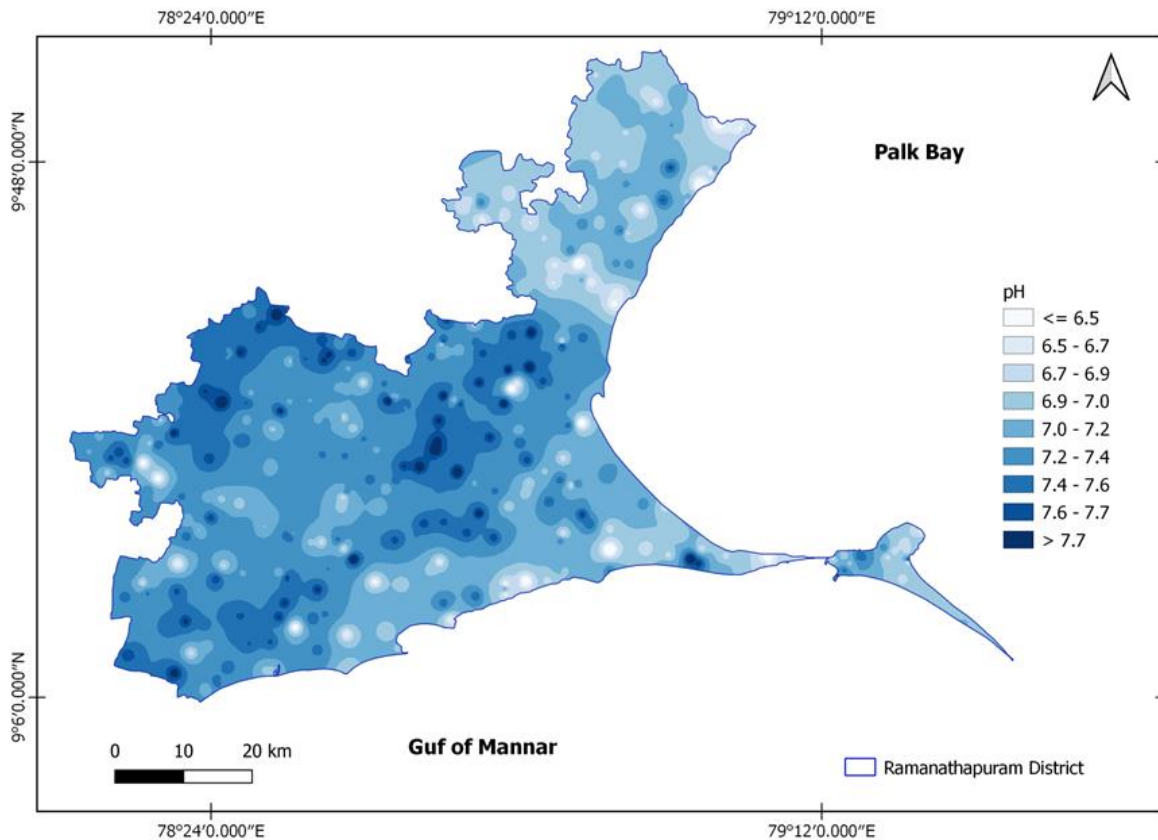
Sample Collection



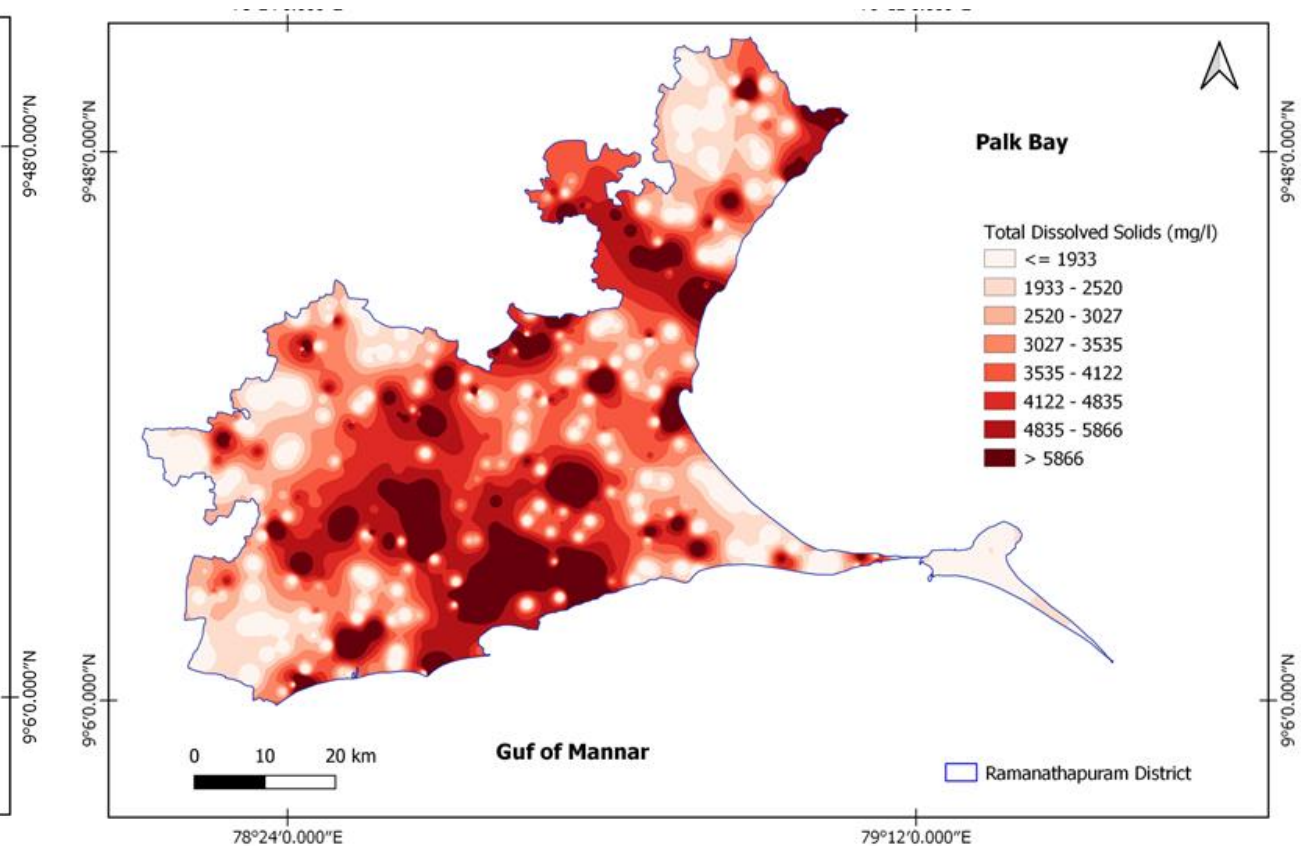
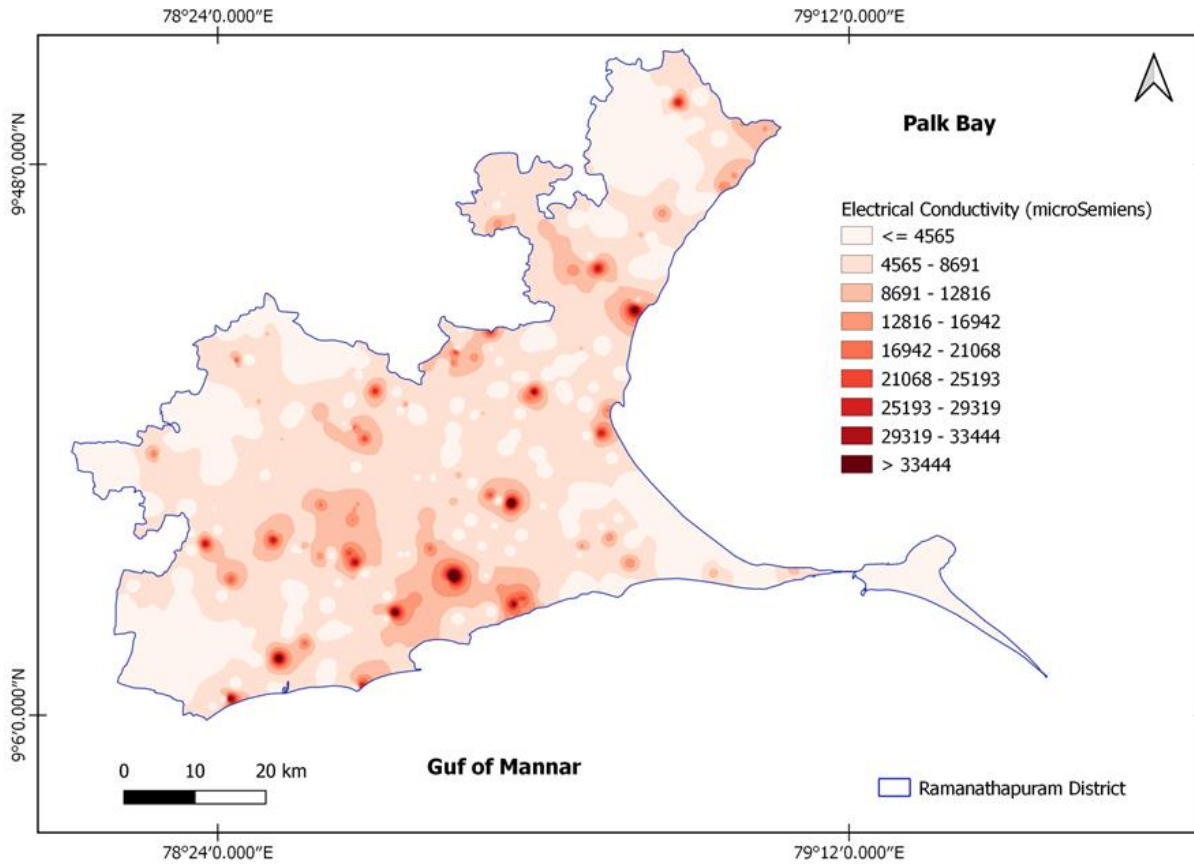
Preliminary results

| SNo | Parameter | Study Results Range | Vulnerable GP Example |
|-----|------------|-------------------------|---|
| 1 | pH | 6.1 to 8.1 | Tharaikudi - 8.1 |
| 2 | Salinity: | 0 to 40ppt | Mariyarayapuram - 40 ppt |
| 3 | EC | 377 to 53900 μ S/cm | nearly 50% of the samples are having higher EC (2200 μ S/cm). This may be due to the intrusion of sea water Or also may be due to rock-water interaction.; Mariyarayapuram - 53900 μ S/cm |
| 4 | TDS | 214 to 32020mg/l | nearly 50% of the samples are having higher TDS (2000 mg/l), which may be due to the intrusion of sea water and also may be due to rock-water interaction. Mariyarayapuram - 32020mg/l |
| 5 | Alkalinity | 220 to 481 mg/l | Raghunthapuram - 220 mg/l Tharaikudi - 481 mg/l |
| 6 | Hardness | 45 to 6425 mg/l | Mariyarayapuram (Calcium, Magnesium) |

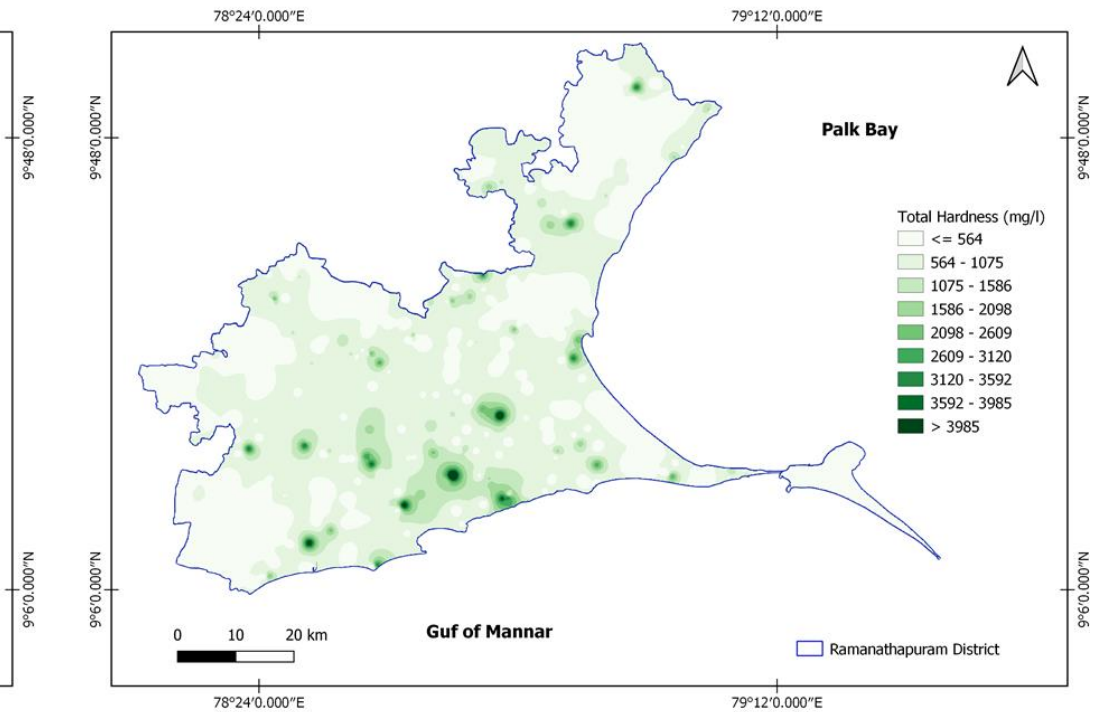
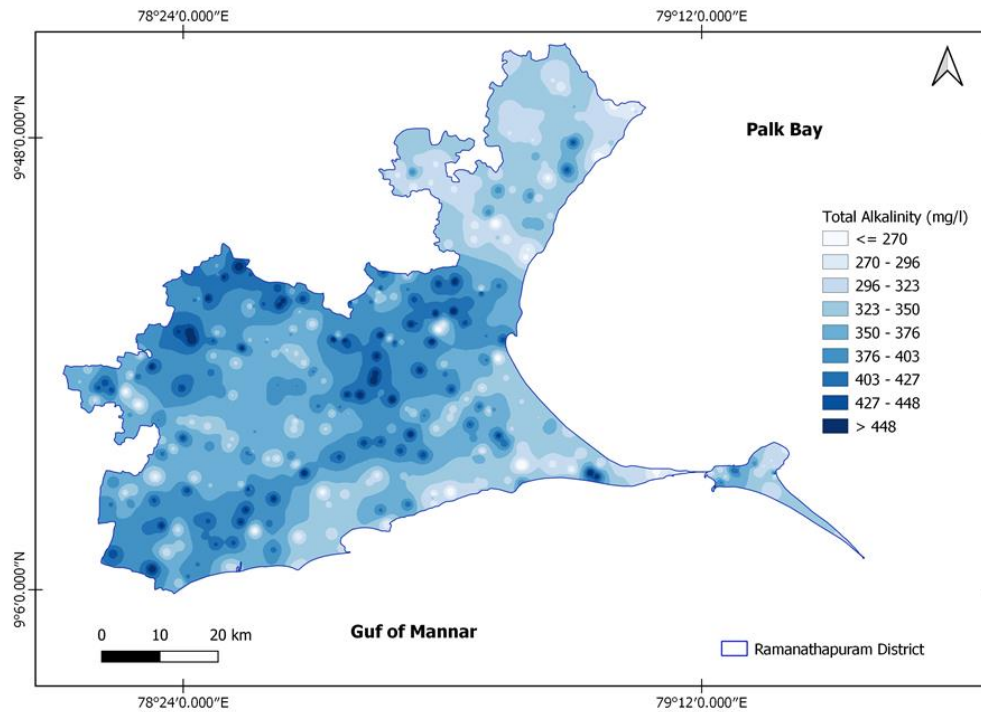
pH and Salinity status of Ramanathpuram District

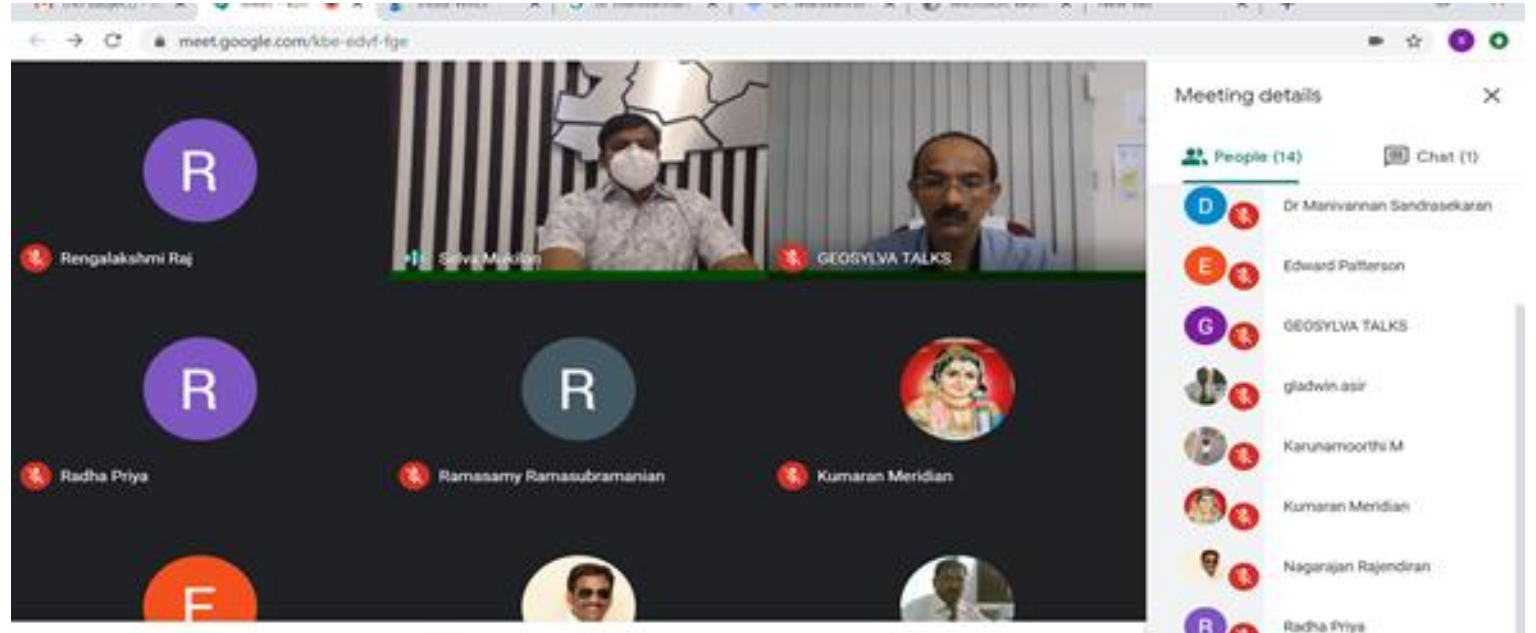


Electrical conductivity and Total Dissolved salts status

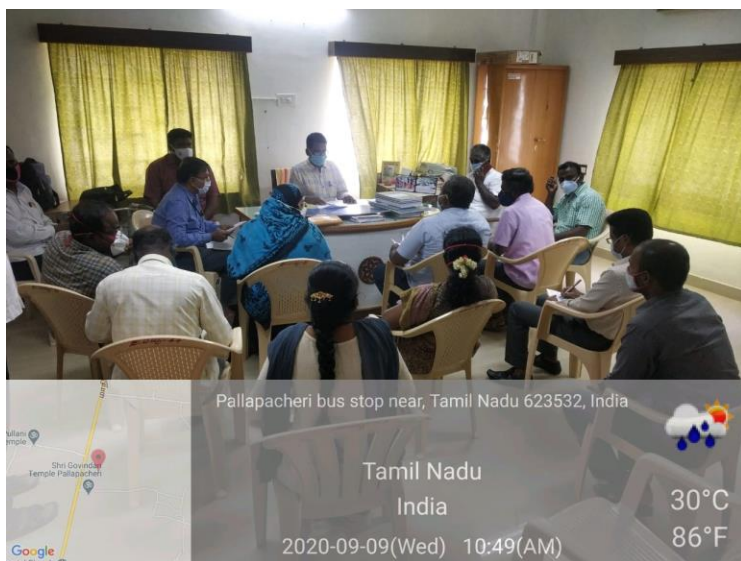


Total Alkalinity and Hardness





Third District Level Steering Committee meeting: Ramanathapuram district -24th Aug 2020



Field verification CWRM Plans and Line Department convergence GP Level Meetings- Ramanathapuram

Coastal Watersheds of Ramanathapuram



| Coastal Watershed: Ramanathapuram District | | |
|--|--|----------|
| SNo | Description | Number |
| 1 | Total No of Blocks | 11 |
| 2 | Coastal Blocks | 6 |
| 3 | Coastal Gram Panchayats | 45 |
| 4 | Coastal Blocks Area in Ha | 2,18,233 |
| 5 | Coastal Population (2011 census) | 5,70,012 |
| 6 | Coastal Area No of Households | 1,34,858 |
| 7 | Coastal Micro Watersheds (Nos) | 253 |
| 7a | Inner Coastal Watershed Systems (Nos) | 189 |
| 7b | Outer Coastal Watershed Systems (Nos) | 64 |
| 8 | Total Area of Coastal Watershed in (Ha) | 1,75,200 |
| 9 | Average Rainfall Coastal Area (in mm) | 821 |
| 10 | Coastal GPs having Mud flats and Mangroves | 16 |
| 11 | Coast Line Length (in KMs) | 271 |
| 12 | Name of marine biosphere in ha | 277.26 |

Mangroves and Wetlands of Ramanathapuram



| Sno | Coastal Resources | Water and Land Measures | Vegetative Measures | Fish & Aqua culture Measures |
|-----|------------------------------|---|--|---|
| 1 | Water bodies | <ul style="list-style-type: none"> Restoration of Tanks and Ooranis (System and non-system tanks) | <ul style="list-style-type: none"> Plantation to prevent erosion | <ul style="list-style-type: none"> Fish tanks/ ponds |
| 2 | Streams and Creeks | <ul style="list-style-type: none"> Stream bank treatment for 3rd and 4th order streams, check dams across graded stretches, Check dams along graded stretches of streams Protection and restoration of creeks | <ul style="list-style-type: none"> Stream bank plantations (Palmyra; Neem; Pongamia) Mangroves | <ul style="list-style-type: none"> |
| 3 | Wetlands | <ul style="list-style-type: none"> Bund Strengthening Eco-parks Mini Forest, Plantations Inlets and Outlets management Aquifer Mapping | <ul style="list-style-type: none"> Water Lilly; | <ul style="list-style-type: none"> Fish culture |
| 4 | lands under invasive species | <ul style="list-style-type: none"> Land development Mini Forest Agroforestry and Plantations with local species | <ul style="list-style-type: none"> Neem; Pongamia | <ul style="list-style-type: none"> |
| 5 | Farmlands | <ul style="list-style-type: none"> Contour bunding, Land development for water spreading over paddy fields | <ul style="list-style-type: none"> Coconut and palmyra plantation, Mango or horticulture plantation Fodder development | |
| 6 | Drinking water & Sanitation | <ul style="list-style-type: none"> Roof Water Harvesting for storage Pucka drains for grey water Re-cycle of Grey Water IHHL models which are coastal eco system friendly | <ul style="list-style-type: none"> Homestead Nutri gardens | |
| 7 | Mud flats & Mangroves | <ul style="list-style-type: none"> Fish bone technique for tidal and freshwater main canal and side canals for mangroves Open shore planting | <ul style="list-style-type: none"> protection of mangrove forest Afforestation of mangroves on revenue land & reserve forest land wherever possible. | Improving fishing grounds |
| 8 | Coastline & Sea shore | Erosion Control Measure | Mangroves; Shelterbelts | |



Three Pilot Areas:
Coastal Watershed

Pilot 1: Coastal Watershed:

Creeks- Mangroves-Agriculture land- Coastline

Pilot 2-Coastal Watershed:

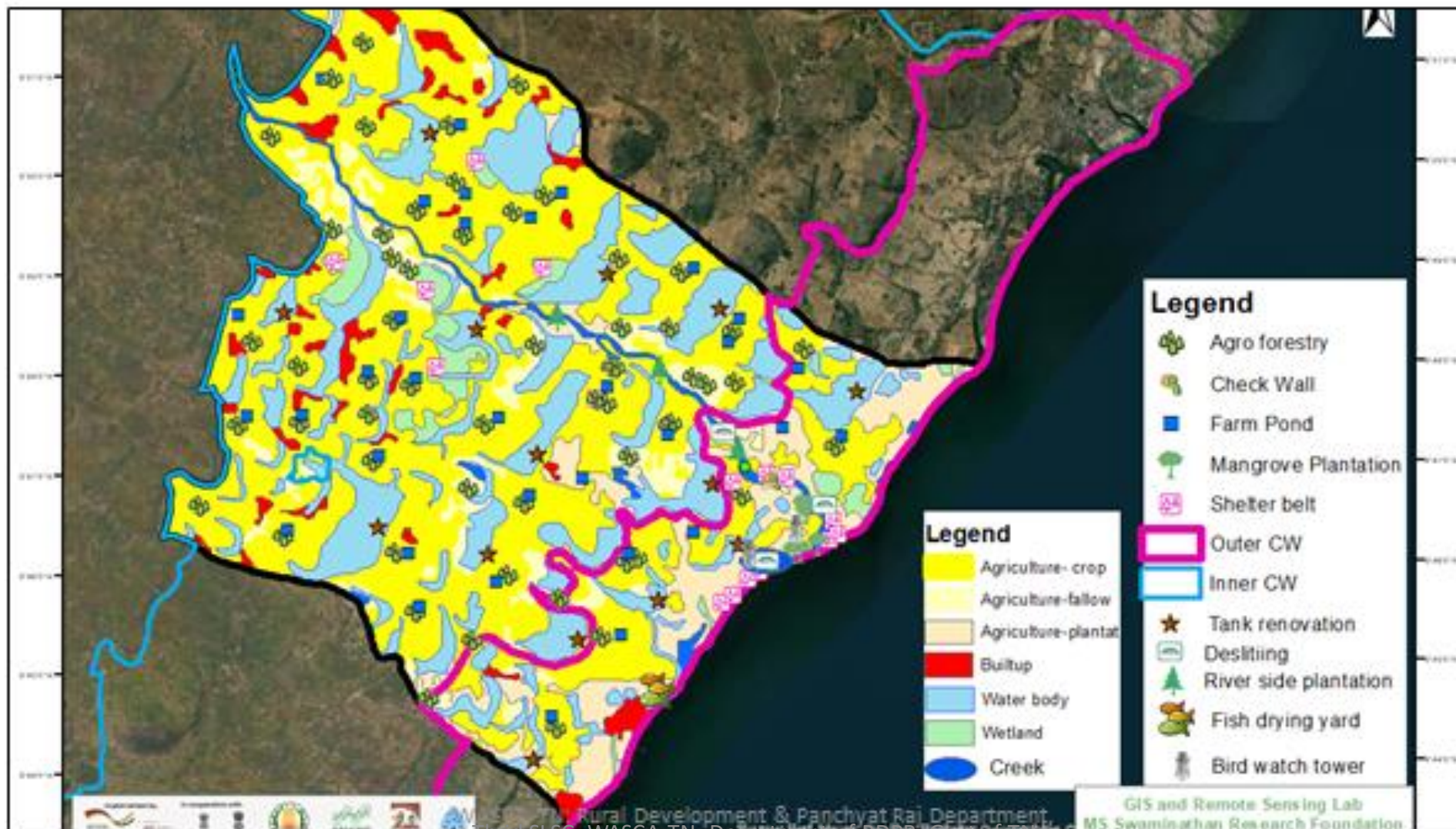
Agriculture Land – Wetland Coastline

Pilot 3- Coastal Watershed:

Agriculture land – Coastline- sand-dunes

Draft Action Plan: Coastal Watershed

Category 1 : Agriculture land+ Creek –River +Mangrove+ Coast line





இராமநாதபுரம் மாவட்டம், பரமக்குடி ஊராட்சி ஒன்றியம், நெல்மடு ஊராட்சி, நல்லூர் கிராமத்தில் மகாத்மாகாந்தி தேசிய ஊரக வாழ்வாதார இயக்கம் திட்டத்தின் கீழ் மேற்கொள்ளப்பட்டு வரும் குறுங்காடுகள் வளர்ப்பு திட்டப் பணிகளை மாவட்ட ஆட்சித் தலைவர் திரு.கொ.வீர ராகவ ராஜ்.இ.ஆ.ய., அவர்கள் இன்று (10.06.2020) நேரில் சென்று பார்வையிட்டார்.



2) Mini-Forest and Nursery – Ramanathapuram- Vendoni GP, Paramakudi Block

3)Tanka Model Work progress in 2 GPs Ramanathapuram



5) Horticulture Park at Ramanathapuram district



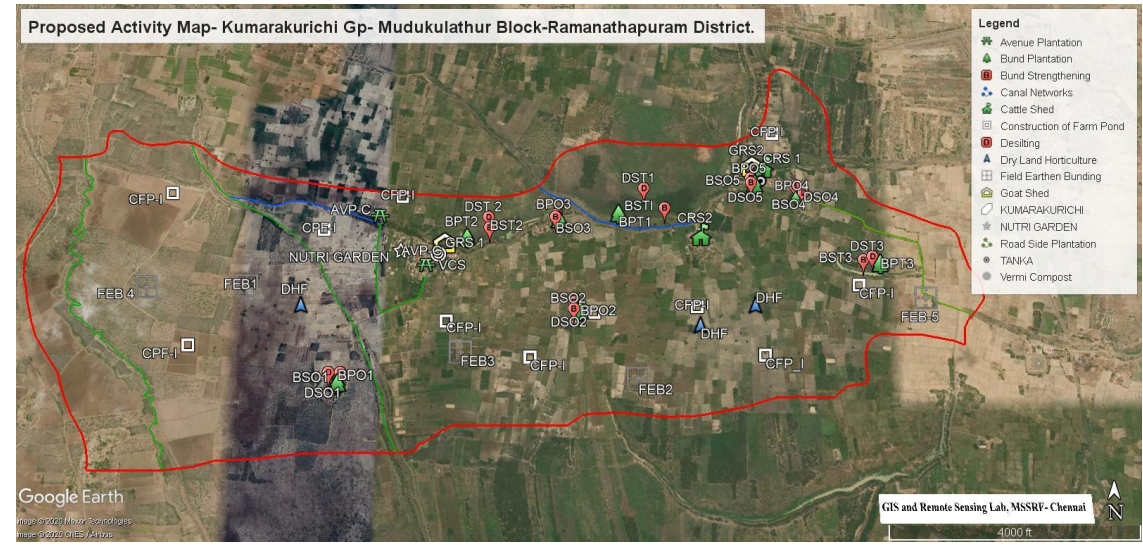
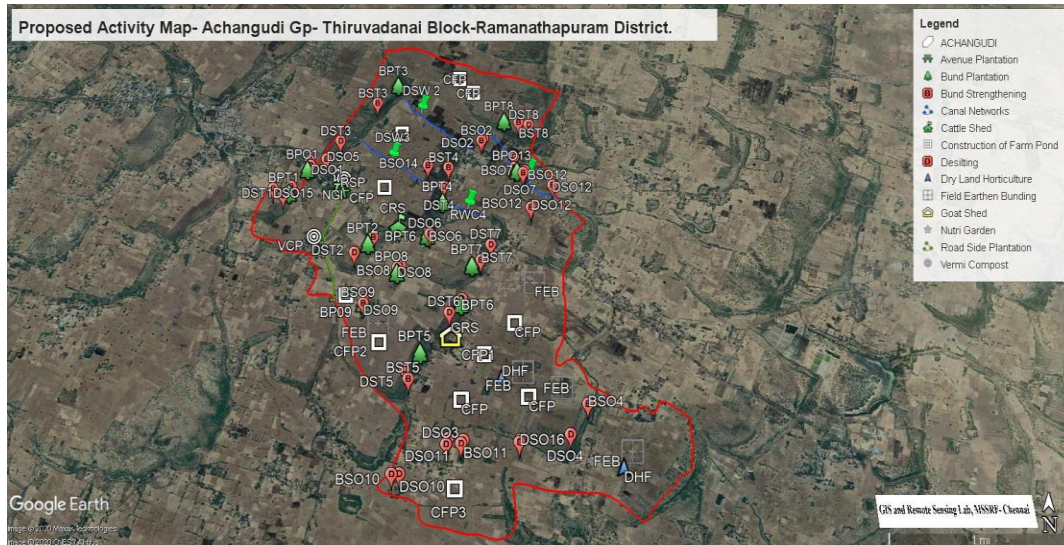
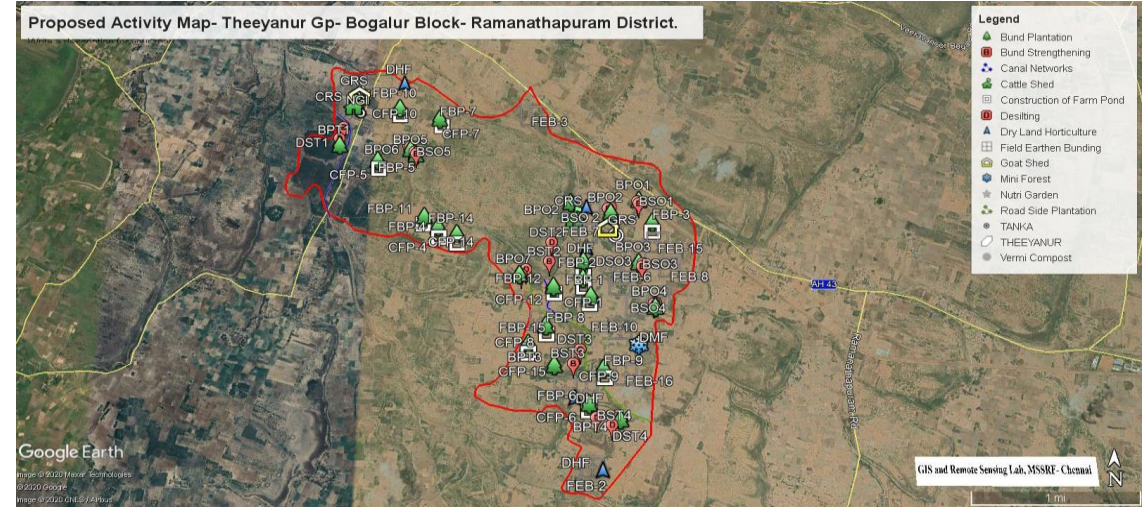
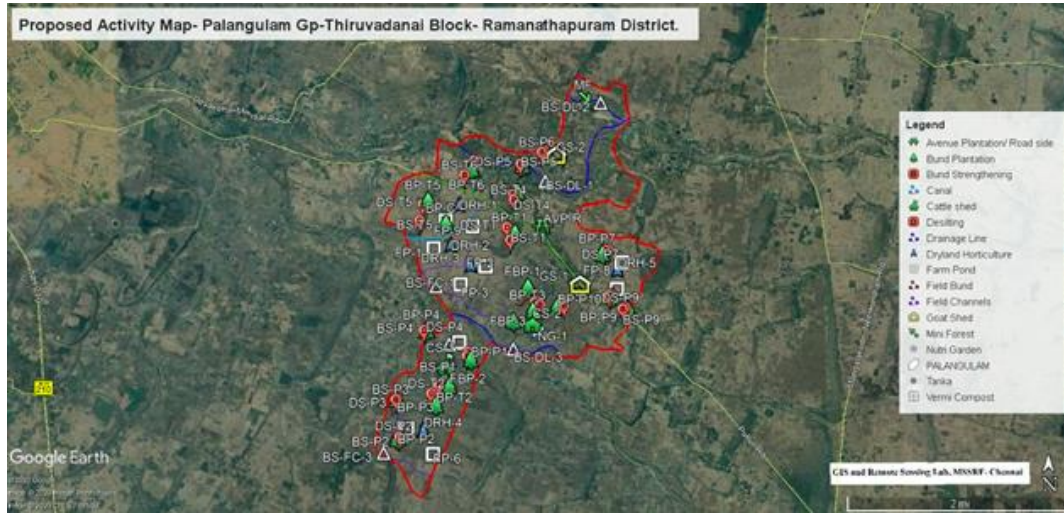


5) Horticulture models – Degraded land development – Public Land



Livelihood Activity at Ramanathapuram Chicken, Goat, Cow shelter

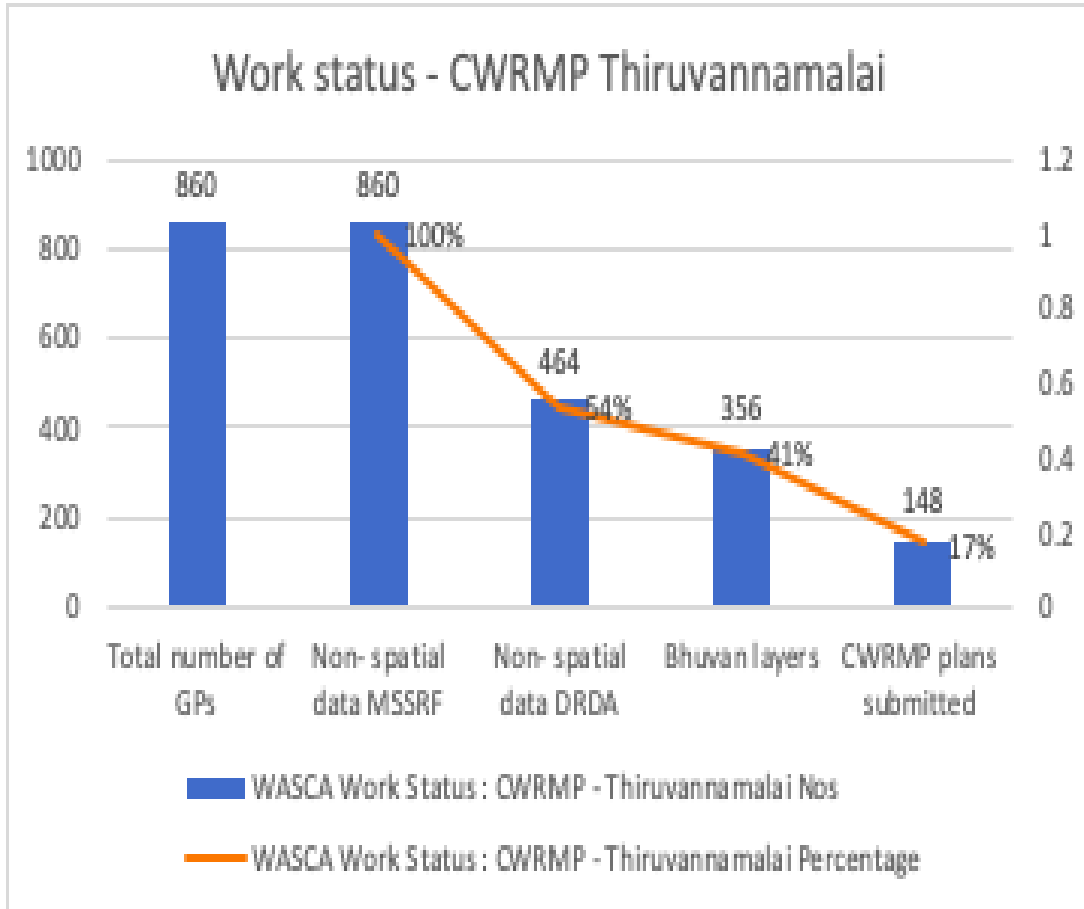
Model GPs KMZ (four GPs)



4) WASCA
Progress
Tiruvannamalai
District



3.1 Progress of WASCA: CWRMP: Tiruvannamalai District



| WASCA Work Status : CWRMP - Tiruvannamalai | | |
|--|------------|-------------|
| Parameter | Nos | Percentage |
| Total number of GPs | 860 | |
| Non-spatial data MSSRF | 860 | 100% |
| Non-spatial data DRDA | 464 | 54% |
| Bhuvan layers | 356 | 41% |
| CWRMP plans submitted | 148 | 19% |

3.2 Climate Analysis: Tiruvannamalai: District Profile

| Climate Table | Minimum (°C) | Maximum (°C) | Diff D/N Temp | ET expressed in mm | ET Loss in HaM | Volumetric Soil Moisture (%) | Normal Rainfall (mm) | % of Normal Rainfall (mm) | Normal Rainy days (No.) | % Normal Rainy days (No.) |
|-----------------|--------------|--------------|---------------|--------------------|----------------|------------------------------|----------------------|---------------------------|-------------------------|---------------------------|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
| June-19 | 26.4 | 35 | 8.6 | 110 | 34.41 | 31 | 465.8 | 45% | 89 | 52% |
| July-19 | 27.5 | 36 | 8.5 | 112 | 34.41 | 42 | | | | |
| August-19 | 27.3 | 34.5 | 7.2 | 100 | 31.29 | 30 | | | | |
| September-19 | 26.7 | 33.7 | 7 | 95 | 31.29 | 25 | | | | |
| October-19 | 26.1 | 32.8 | 6.7 | 84 | 25.03 | 34 | 439.8 | 42% | 72 | 42% |
| November-19 | 25.7 | 32.8 | 6.7 | 60 | 18.77 | 20 | | | | |
| December-19 | 24.5 | 30.9 | 7.1 | 54 | 15.64 | 16 | | | | |
| January-20 | 23 | 28.6 | 5.6 | 57 | 18.77 | 16 | 45.8 | 4% | 0 | 0% |
| February-20 | 22 | 27.6 | 5.6 | 45 | 15.64 | 4 | | | | |
| March-20 | 21.1 | 28.5 | 7.4 | 13 | 3.13 | 14 | | | | |
| April-20 | 22.2 | 30.3 | 8.1 | 17 | 6.26 | 15 | 95.2 | 9% | 11 | 6% |
| May-20 | 23.8 | 33.1 | 9.3 | 57 | 18.77 | 32 | | | | |
| Average / Total | | | 7.32 | 67.00 | 253.41 | 23.25 | 1046.60 | | 172 | |

3.3 Analysis of CWRMP Completed GPs (No of GPs 148)

| Land Classification | Area (ha) | Percentage | Surface Run Off Category and RO in Ham | % of Surface Run Off/ Range |
|--|-----------|---------------|--|-----------------------------|
| Forest Area | 57.42 | 0.08% | Good Run Off (6983.7 Ha M) | 40.03 % |
| Area under Non-Agricultural Uses | 15783.92 | 21.44% | | |
| Barren & Un-cultivable Land Area | 2780.49 | 3.78% | | |
| Permanent Pastures and Other Grazing Land Area and Area under Tree Cover | 724.83 | 0.98% | Average Run Off (526.9 Ha M) | 3.02 % |
| Culturable Waste Land Area | 867.81 | 1.18% | | |
| Fallows Land other than Current Fallows Area | 4369.53 | 5.93% | Bad Run Off (17448.30 Ha M) | 56.96 % |
| Current Fallows Area | 17761.06 | 24.12% | | |
| Total Unirrigated Land Area | 9533.61 | 12.95% | | |
| Irrigated Land | 21752.33 | 29.54% | | |
| Total Area of the GP | 73631.00 | | 17448.3 Ha M | 100% |

3.4 Analysis of CWRMP Completed GPs (148)

| S No | Parameter | Number | Percentage to total GP(148) |
|------|---|------------|-----------------------------|
| 1.1 | Ground Water: Over Exploited | 118 | 80% |
| 1.2 | Ground Water: Critical | 26 | 18.50 % |
| 1.3 | G.W.: Semi-Critical | 4 | 2.70 % |
| 1.4 | GW Safe / saline | 0 | 0% |
| 2. | Active in MGNREGS workers (active job card holders) | 69, 166 | 88.50 % |
| 3 | Annual Grey Water Generated (HaM) | 529.80 | |
| 4 | Irrigated Area (2018-19) (in Ha) (Tanks, Wells, Canals, Bore-wells) | 16, 998.58 | 83% |
| 5 | Rainfed Area (2018-19) in Ha) | 3, 460.06 | 17% |
| 6 | Livestock Population (Nos) | 1,84,310 | |
| 7 | Agriculture water met by Groundwater (HaM) | 22,314.25 | 89% |
| 8 | Water Demand in (Ha.M) | 25,051.98 | |
| 9 | Available Run-off for harvesting and recharge (in Ha.M) | 15, 872.60 | |

3.5.1 Works: Climate Proofing for Future Livelihoods

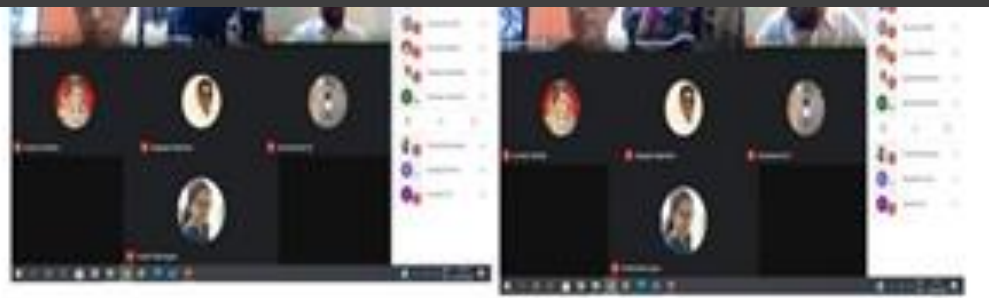
| S NO | Name of the Work | Number of Works |
|---|---|-----------------|
| CWRM - Water Action 1: Public & Common Lands Development | | |
| 1 | Afforestation (Ha) and block plantations (non forest area) | 625.70 |
| 2 | Silvi Pasture Development (Ha) | 165 |
| 3 | Linear Plantation (Bund) | 20,160 |
| 4 | Avenue Plantation (numbers) | 10, 359 |
| 5 | Natural Drainage Lines treatment length in Mts | 5, 50,578 |
| 6 | Renovation of Tanks & Ooranis (Nos) | 504 |
| 7 | Desilting, widening Water Courses Length (RMT) | 2,17,596 |
| 8 | Check Dams/Gabbions | 30 |
| 9 | Water Absorption Trenches | 12 GPs |
| 10 | Canal plantations | 1,020 |
| 11 | Potential Area for Agro-Forestry (Community) - (Area in Ha) | 2,917 |

3.5.2 Works: Climate Proofing for Future Livelihoods

| S NO | Name of the Work | Number of Works |
|---|--|-----------------|
| CWRM - Water Action 2: Productivity Enhancement (Agri & Allied Sector) | | |
| 1 | Fallow Land Development (Area in Ha) | 2,844 |
| 2 | Land Development (Area in Ha) | 880 |
| 3 | Composting (no of Farmers) | 1152 |
| 4 | Farm Bunding with trenches (no of Farmers) | 3335 |
| 5 | No of Farm Ponds (No of Farmers) | 1394 |
| 6 | Potential Area for Agroforestry - Individual- (Area in Ha) | 3958 |
| CWRM - Water Action 3: Rural Water Management | | |
| 1 | Soak Pits | 3, 334 |
| 2 | Roof Water Harvesting | 278 |
| 3 | Community Tanka (Rajasthan Model) | 2 |

3.5.3 Water Action" Climate Resilient Measures: Tiruvannamalai

| S NO | Climate Resilient Measure | Location | Progress / status |
|------|--------------------------------------|--|--|
| 1 | Greening of Hillocks | West Arani | 6000 samplings planted to rejuvenate Hillocks with local species (Pongam, Tamarind, Neem, naval, ponnavarai, seetapal, etc are taken up) |
| 2 | River Rejuvenation | Kamandalar - River Sub basin- | Watershed Approach (Four Water Concept) |
| 3 | Cascade Tanks Development | Same as above | River sub-basin and watershed mapping carried out; Tanks exclusively for re-charge purposes identified (Field Verification to be carried out) (FROM PM AGENCY) |
| 4 | Silvi-Pasture Development | Every GP 2 -5 Ha | Identification of Block Level Nursery to raise requirement for Agro-Silvi Pasture Development; One Block works commenced |
| 5 | Agro-Forestry (Private lands) | Every GP 15- 25 % of Fallow lands / Dry land farmers | <ul style="list-style-type: none"> • Improving dryland farming through farm bunds, boundary Plantations • Dry land Horticulture (WADI model) • Water and Energy efficiency in farmlands |



Third District Level Steering committee meeting Tiruvannamalai district 28th Aug 2020

Field Verification of CWRM Plans: Tiruvannamalai





Climate Resilience Measure
1) Greening of Hillocks, West Arni, Tiruvannamalai

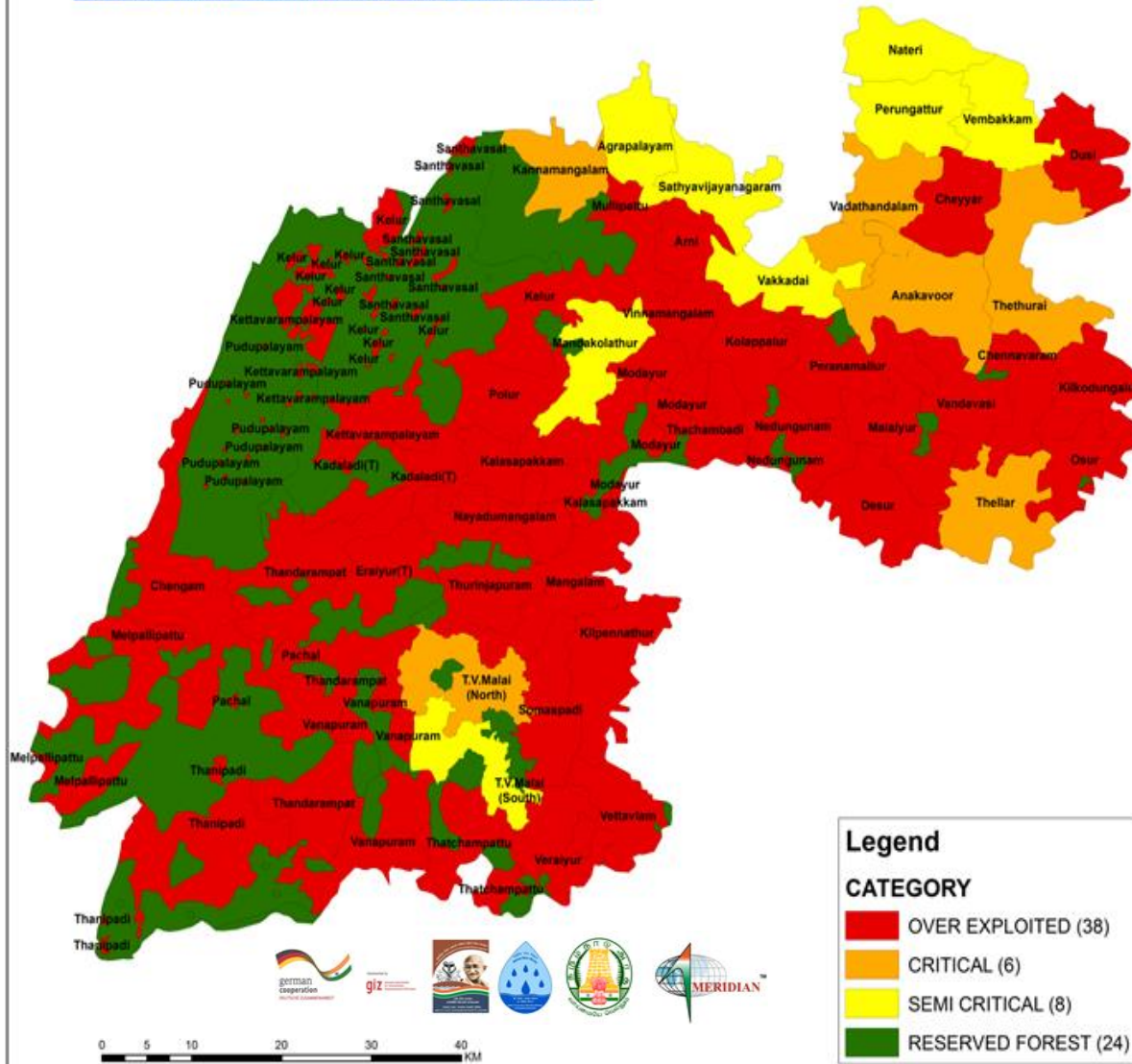


2) Thuringipuram Block Level Nursery Development Tiruvannamalai

Latitude: 12.286417

Time: 09-09-2020 12:41
Note: valluvagai nursery

**GROUND WATER ASSESSMENT STATUS AND POTENTIAL
IN TIRUVANAMALAI DISTRICT AS ON MARCH 2017**

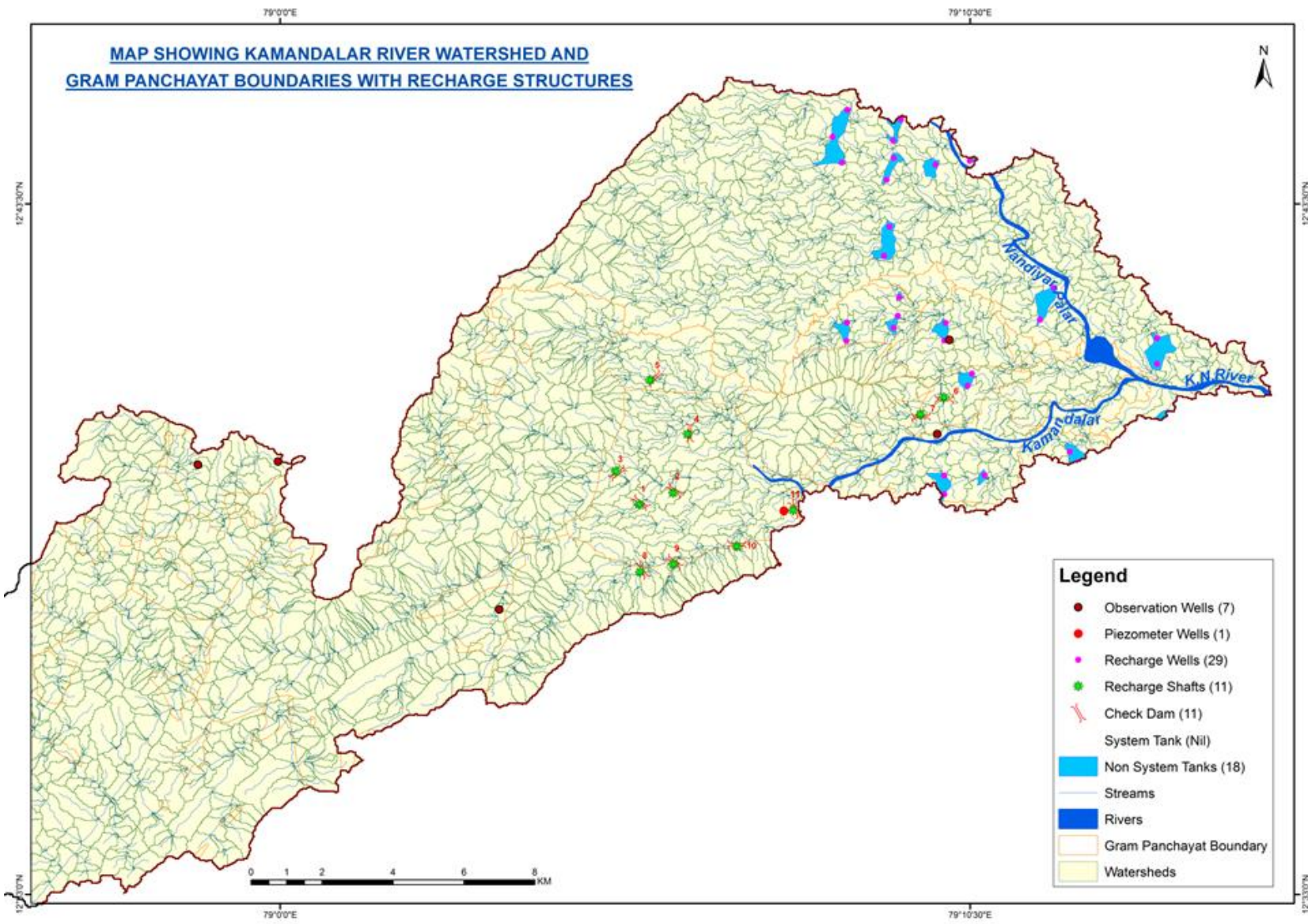


| Pirka Name | Net GW Availability | Stage of Development | CATEGORY |
|---------------------|---------------------|----------------------|----------------|
| Agrapalayam | 1765.058 | 73.397 | SEMI CRITICAL |
| Anakavoor | 3104.636 | 82.798 | CRITICAL |
| Chengam | 2965.031 | 306.796 | OVER EXPLOITED |
| Chennavaram | 1834.530 | 95.267 | OVER EXPLOITED |
| Cheyyar | 1522.947 | 308.188 | OVER EXPLOITED |
| Desur | 2438.846 | 93.856 | OVER EXPLOITED |
| Durai | 1914.323 | 84.871 | OVER EXPLOITED |
| Erariyur(T) | 3089.991 | 97.447 | OVER EXPLOITED |
| Kadaladi(T) | 1899.803 | 84.435 | OVER EXPLOITED |
| Kalasappakam | 2228.924 | 86.054 | OVER EXPLOITED |
| Kannamangalam | 1672.724 | 86.869 | CRITICAL |
| Kelur | 2001.929 | 94.617 | OVER EXPLOITED |
| Kattavarampalayam | 3199.438 | 92.404 | OVER EXPLOITED |
| Kikkodungalur | 2362.559 | 95.780 | OVER EXPLOITED |
| Kilpenmathur | 2305.203 | 134.232 | OVER EXPLOITED |
| Kolappalur | 1886.300 | 98.872 | OVER EXPLOITED |
| Malayur | 1848.068 | 101.635 | OVER EXPLOITED |
| Mandakolathur | 2046.894 | 85.313 | SEMI CRITICAL |
| Mangalam | 2884.350 | 84.093 | OVER EXPLOITED |
| Melpalpathu | 2068.006 | 134.080 | OVER EXPLOITED |
| Modayur | 2618.388 | 72.111 | OVER EXPLOITED |
| Mullapattu | 1475.037 | 83.126 | OVER EXPLOITED |
| Nateri | 1530.417 | 73.798 | SEMI CRITICAL |
| Nayabumangalam | 2363.042 | 95.820 | OVER EXPLOITED |
| Nedunungum | 1527.005 | 93.780 | OVER EXPLOITED |
| Osur | 1844.033 | 102.275 | OVER EXPLOITED |
| Pachal | 2098.697 | 102.047 | OVER EXPLOITED |
| Peranamallur | 1546.574 | 98.366 | OVER EXPLOITED |
| Perungattur | 2085.177 | 69.380 | SEMI CRITICAL |
| Polur | 2138.282 | 85.402 | OVER EXPLOITED |
| Pudupalayam | 3449.684 | 102.387 | OVER EXPLOITED |
| Arani | 1002.863 | 59.510 | OVER EXPLOITED |
| Santhavasal | 3254.834 | 98.747 | OVER EXPLOITED |
| Sathyavijayanagaram | 1665.083 | 52.045 | SEMI CRITICAL |
| Somasapadi | 1947.624 | 103.627 | OVER EXPLOITED |
| T.V.Malai (South) | 1864.638 | 86.301 | SEMI CRITICAL |
| T.V.Malai (North) | 1948.138 | 83.873 | CRITICAL |
| Thachambadi | 1621.487 | 92.489 | OVER EXPLOITED |
| Thanderampat | 2642.895 | 106.863 | OVER EXPLOITED |
| Thangadi | 2647.116 | 96.888 | OVER EXPLOITED |
| Thatchampattu | 2032.747 | 94.918 | OVER EXPLOITED |
| Theilar | 2901.104 | 82.278 | CRITICAL |
| Thethurai | 3044.645 | 70.798 | CRITICAL |
| Thurinjapuram | 2017.853 | 117.776 | OVER EXPLOITED |
| Vadathandalam | 2124.415 | 95.176 | CRITICAL |
| Vakkadal | 1797.909 | 88.463 | SEMI CRITICAL |
| Vannapuram | 3183.039 | 93.945 | OVER EXPLOITED |
| Vandavasi | 1735.809 | 104.342 | OVER EXPLOITED |
| Vembakkam | 2043.191 | 68.813 | SEMI CRITICAL |
| Verariyur | 1675.882 | 119.663 | OVER EXPLOITED |
| Vettaviam | 1992.542 | 87.332 | OVER EXPLOITED |
| Vinnamangalam | 1330.489 | 81.782 | OVER EXPLOITED |

Ground Water Assessment, Status and potential in Tiruvannamalai District



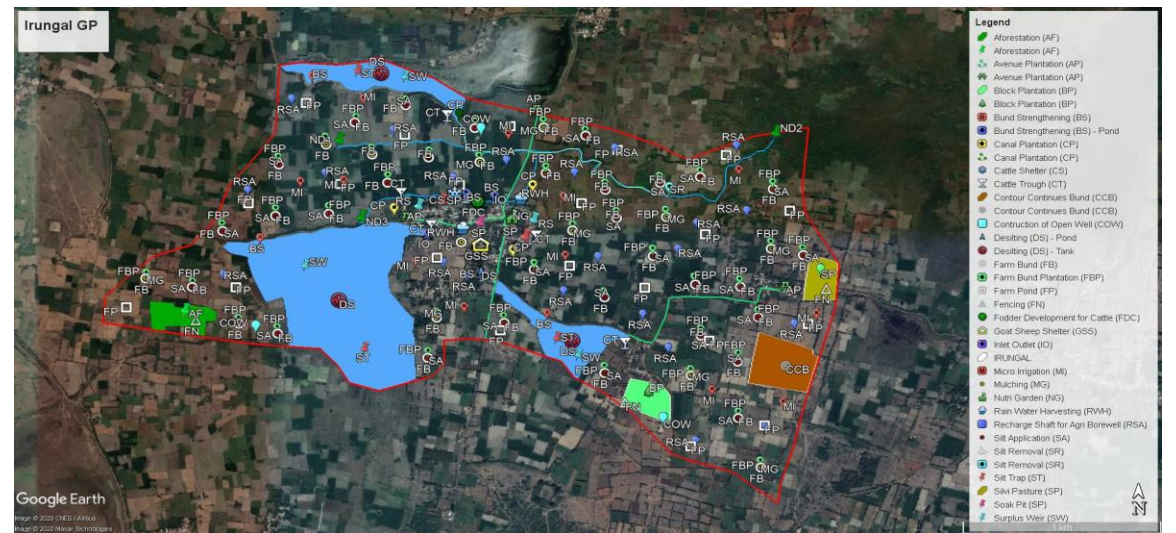
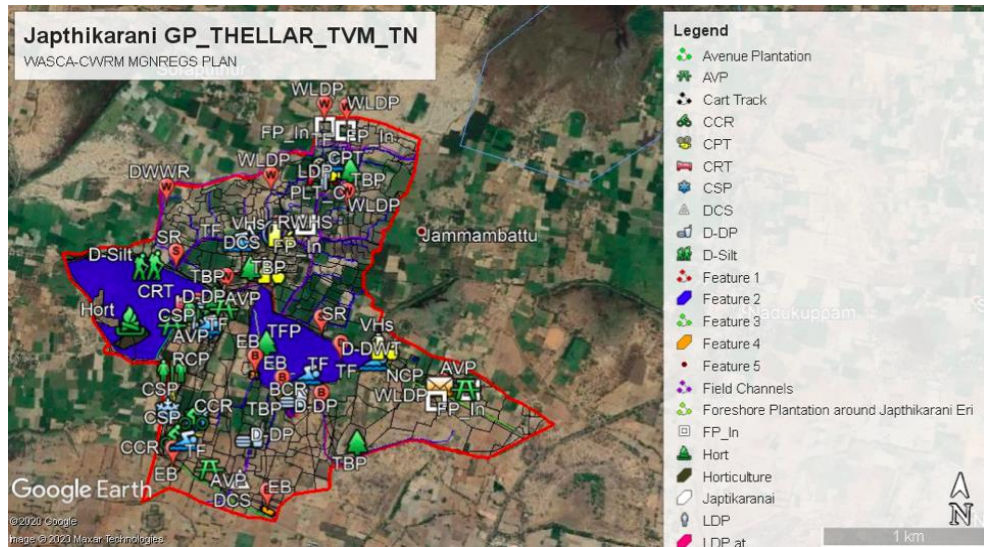
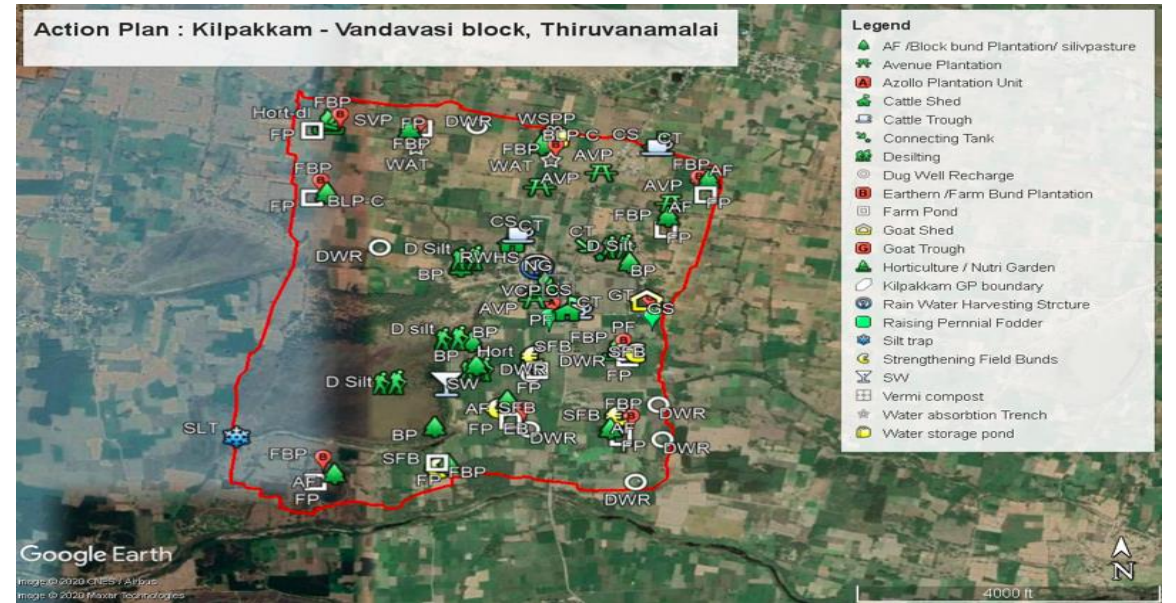
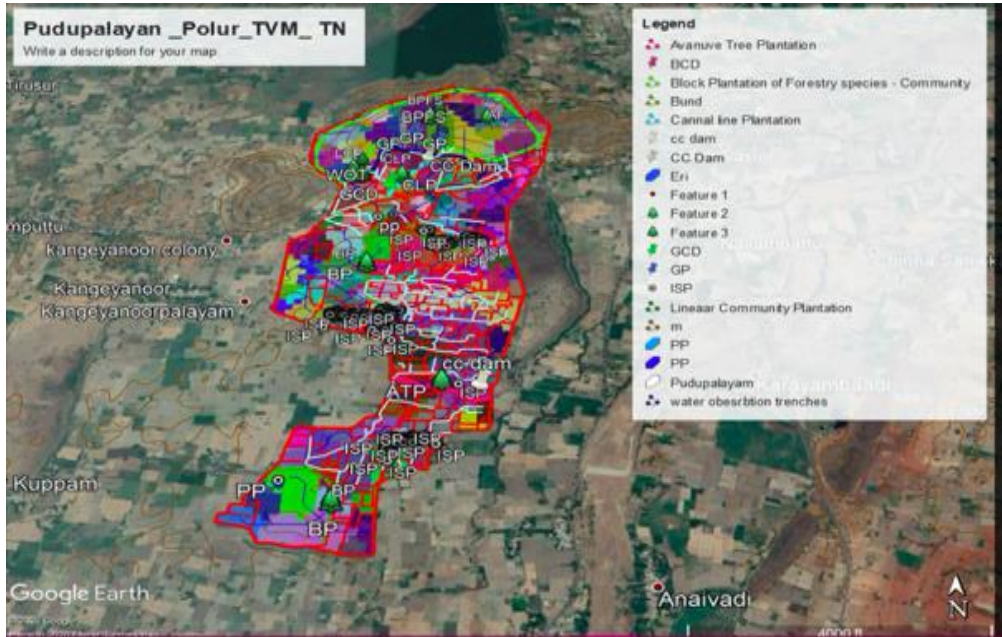
4) Kamandalar - River Sub basin- Watershed and GP Boundaries with Recharge Stru cture - Tiruvannamalai



5) Grey water management, Arni Block



Model GPs KMZ (four GPs)



4) Action Taken Report & 5) Points for Discussion

4.1 Actions Taken on 2nd SLSC Meeting: 1

| S No | Recommendation of 2 nd SLSC | Action Taken |
|------|--|---|
| 1 | Works identified for implementation in current season | 90 GPs in Ramanathapuram & 148 GPs in Tiruvannamalai submitted for verification |
| 2 | GPs CWRM plan Approval | Teams of line departments, EE, AE formed for verification |
| 3 | CWRMP plans to be done at GP level, but the analysis and assessment of data can be done at revenue village. | Gram Panchayats falling under Type 2, Type3, Type4 and Type 5 data is collected as per this guideline, planning started |
| 4 | Focus on water conservation works, traditional water bodies restoration and supply channels, natural drainage lines to be brought under soil and water conservation works. | CWRMP priority is given for identification of these works in all GPs |
| 5 | Necessary support from revenue department through district collector orders for removal of encroachment of water body courses | To be taken up at the district level with the support of District Collector |

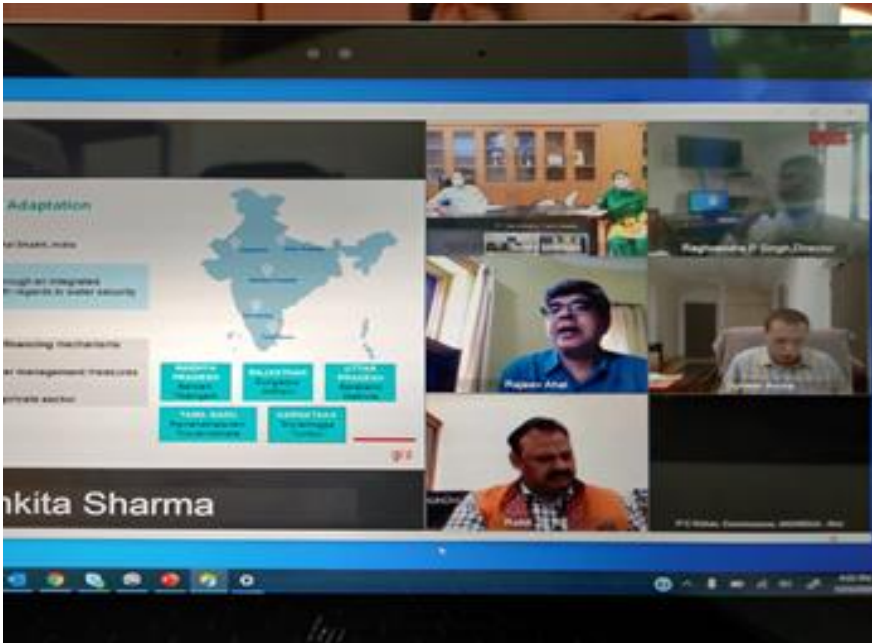
4.2 Actions Taken on 2nd SLSC Meeting: 2

| S No | Recommendation of 2 nd SLSC | Action Taken |
|------|--|---|
| 6 | All Line departments share their plan of action and area of intervention so that convergence will be done | Ramanathapuram joint teams are formed to verify draft plans and scope for convergence, visited the field and collated the available schemes for further planning and action. In Tiruvannamalai, block level meetings and field visits are conducted |
| 7 | Ramanathapuram district to focus on series of water storage structures as per contour, watershed and construct new water storage structures at saturation mode | CWRMP focus on construction of farm ponds esp. with the available schemes under AED |
| 8 | District Collector to facilitate convergence meetings | 24th Aug at Ramanathapuram and 28th Aug in Tiruvannamalai - DLSC Meetings were conducted |
| 9 | Plantations to be given high priority. All water conservation and soil conservation work invariably to have vegetative measures and plantations with livelihood and employment generation. | Mini forest, Mangroves, Silviculture, Greening of hillocks, River-bank plantations, Dry land Horticulture and other forms of Agro-forestry models etc are identified |
| 10 | Identification of private sector partnership with CII. | CII National level Meeting was held through virtual mode at 3 Sep 2020. CII identified state wise CSR and thematic areas. 26 Private Partners involved. |

4.3 Actions Taken on 2nd SLSC Meeting: 3

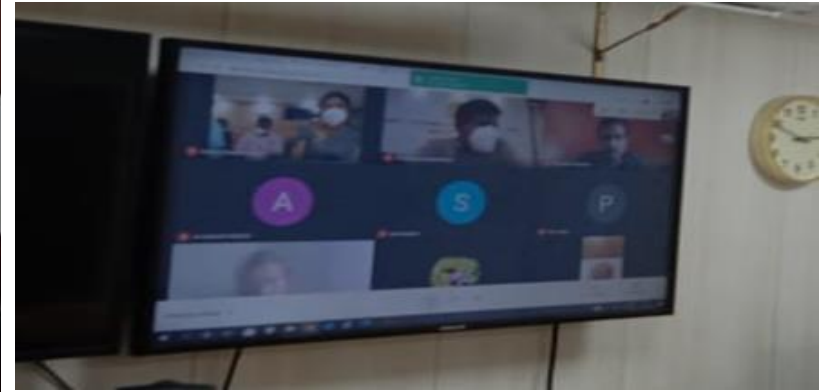
(* Actions during review ,meetings with ACS and DRD, State Nodal Officers)

| S No | Recommendation of 2 nd SLSC | Action Taken |
|------|---|--|
| 11 | Monthly reviews of progress of WASCA to be conducted and reports to be submitted by 24th of every month to this office. | Monthly reports generated and shared with State and District Officers |
| 12 | Monthly State Level Review with GIZ and Chairperson shall be taken up on 25th of every month. | 9 th July 2020 State Level review meeting was conducted 23 rd July NSC meeting was conducted. |
| *13 | Coastal watershed formation of Committee and Nodal Officer at Ramanathapuram | Committee Constituted |
| *14 | Three Pilot Works to be started on Coastal Watershed | One Pilot Area, Works identified using GIS |
| *15 | Participation in NSC | Targets revised as per submission by GIZ in the NSC |



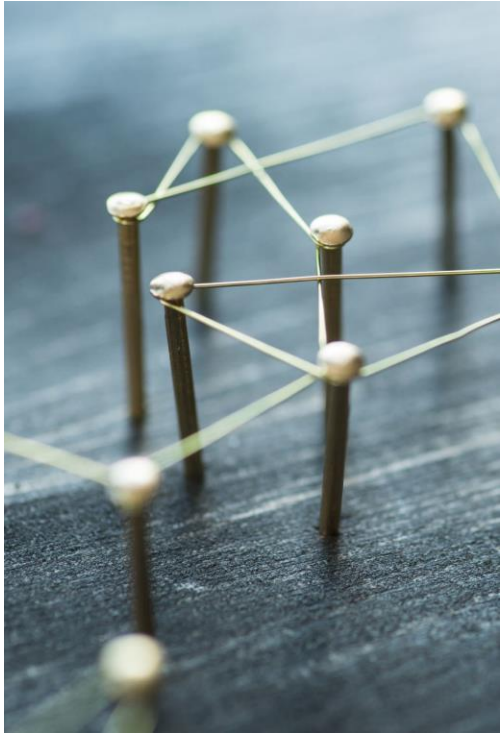
First National Steering Committee Meeting: 23 July 2020

State Review Meeting by DRD: 9th July 2020





National Consultation meeting on Private Partners- 3rd September, 2020



5) Discussion Points

3rd SLSC

5.1.1 Revised Action Plan for 2020-21 as per NSC Meeting

| S NO | Activity | Target | Time Line |
|------|--|---|---------------------|
| 1 | Four GPs per block, CWRM planning works to be taken up during the season | 44 GPs in Ramanathapuram; 72 GPs in Tiruvannamalai | Sep – Oct 2020 |
| 2 | GP Level CWRM Planning | 1289 GPs in two districts | 15 November 2020 |
| 3 | CWRM Plans also to include all Non-NRM works | All GPs | 15 November 2020 |
| 4 | Integrating GP plans to Block, Watershed & Rive Sub-basin level | Both the District | 15 December 2020 |
| 5 | All CWRM GPs uploading to MoRD GIS plan portal (after due verification & approval by GP) | 1289 GPs | 30 November 2020 |
| 6 | Base Line for WASCA (One GP per Block) | One GP per block | 30 Oct 2020 |
| 7 | District WASCA plans | Both Districts | 15 December 2020 |
| 8 | Coastal Micro Watershed development | Three Pilots in RMD | Oct2020 – Feb 2021 |
| 9 | Silvi-pasture development | 2 Ha per GP | Oct 2020 – Feb 2020 |

5.1.2 Revised Action Plan for 2020-21 as per NSC Meeting

| S NO | Activity | Target | Time Line |
|------|--|---|---------------------|
| 10 | Green Fodder & Livestock Shelters | As per CWRM GP Plan | Oct 2020- Feb 2021 |
| 11 | Block Nursery for supporting all plantations | One Nursery per block (one lakh number) | Oct 2020- June 2021 |
| 12 | Horticulture Development Dry lands | Policy Framework | 10 Nov 2020 |
| 13 | Agro-Forestry (Community & Individual) | Policy Framework | 10 Nov 2020 |
| 14 | Cascading Tanks | Policy Framework | 10 Nov 2020 |
| 15 | Two River Sub basin Rejuvenation model plans | Framework | 30 Oct 2020 |
| 16 | Identification of Hillocks for afforestation | Framework plan | Feb 2021 |
| 17 | Sea Water Intrusion Reduction (including drinking water challenges/ solutions) | Framework plan | 30 Nov 2020 |
| 18 | Artificial Recharge – GW Recharge | Framework plan | 30 Nov 2020 |
| 19 | District and State Convergence and Financing Meetings | Online Web Meeting | 15 Dec 2020 |

5.2 Areas of Convergence, co-financing & Policy Development

| S NO | Area of Convergence | Name of the Department |
|------|--|---|
| 1 | Coastal Watershed: (Mangroves, Wetlands, Creeks, Coast Line, Rural Beaches, Seagrass / weed cultivation, Fisheries) | NABARD, PSU- CSR; PWD (Coastal); Forest; Agriculture, Horticulture; A&H, Fisheries; Watershed dept, DRDA-SHGs, TNAU |
| 2 | Agro- Forestry (Individual& Community): Key for Fallow lands, Dry Lands, Hilly Areas, Coastal Small Marginal Farmers, degraded public lands | NABARD, Horticulture, Agriculture, A&H, Forest department, TNAU, DRDA |
| 3 | Nursery raising: Multipurpose: Block Level Mega Nursery (all plantations) | Dept of Forest, Horticulture, DRDA |
| 4 | Horticulture: Farm Pond Farmers (dryland) and Borewell farmers | Dept of Horticulture, Jain Irrigation (Private Partnership and CSR) (to be expored) |
| 6 | Silvi-pasture and pastureland development | Dept of Animal Husbandry |
| 7 | Involvement of SHGs in maintenance, management of community block plantations | Dept of Rural Development, NABARD |
| 8 | Restoration of Cascade tanks and Drinking Water | PWD Water Resources Organization, FPO/Water users associations, DRDA, TWAD Board, Watershed |
| 9 | River Rejuvenation & Ground Water Recharge | WRO, NWM-TN, and Dept of Agriculture Engineering, DRDA |

5.3 Private Sector Partnership

- 1) Formation of a sub- group headed by DRD, RDPR for encouraging private sector projects in collaboration with CII & GIZ
- 2) Engaging actively TVS CSR in Tiruvannamalai district
- 3) Engaging PSU – CSR to WASCA
- 4) Using CWRM completed GPs as start point for discussion for partnership
- 5) Organising Webinars and Meeting during Oct-Dec with district collectors and line departments

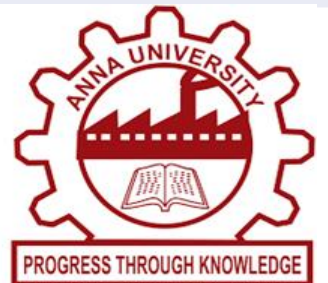


5.4 Monitoring Mechanisms

| S No | Monitoring Mechanism | Level | Whom to Review | Periodicity |
|------|---|-------------|---|-------------|
| 1 | State Level Steering Committee | State | Districts | Bi-Monthly |
| 2 | State Level Review DRD | State | PD, EEs | Monthly |
| 3 | District Steering Committee | District | AEE, AE, GIZ Partners | Bi-Monthly |
| 4 | Convergence Meeting Block Level Line departments | Block Level | Concerned Block level officers, BDO and AE | Monthly |
| 5 | Private Sector Partnership | State Level | CII and Private Partners | Bi-Monthly |

Technical Partners of WASCA

| S.No | Institution Name and Responsibilities | Contact Person |
|------|--|--|
| 1 | Centre for Climate Change and Disaster Management, Anna University -Climate Study – Scoping | Dr. K. Palanivelu Director, CCC&DM, Anna University |
| 2 | MS Swaminathan Research Foundation (MSSRF) – Lead Technical Partner. Taramani- Lead Technical Agency | Dr R.Rengalakshmi, Director, JRD Tata Eco Technology Centre, MSSRF, Chennai. |
| 3 | Suganthi Devadason Marine Research Institute (SDMRI), Thoothukudi – Seawater intrusion study | Dr. Edward Patterson Director, SDMRI, Thoothukudi |
| 4 | Prime Meridian – Ground Water Assessment and Study | G. Kumaran, Director |
| 5 | Advisors and Experts | Tank Management – Dr. K. Palanisami, Former Dean TNAU & IWMI Soil Conservation- Dr. S. Manivannaan, Principal Scientist, ICAR Institute Forestry- Mr. B. LakshmiKantam, IFS Rtd. Dy Conservator of Forest, GoAP Coastal Ecosystem - Dr R Ramasubramanian, MSSRF Sand dune Engineering Dr. R. R. Krishnamurthy, Professor, Univ of Madras |
| 6 | Subgroup working on Agroforestry, silvi-pasture, and fallow lands | Dr A Balasubramanian Prof & Head, Department of Silviculture, Forest College and Research Institute, TNAU, CBE |



Thank You