











Water Security & Climate Adaptation in Rural Areas

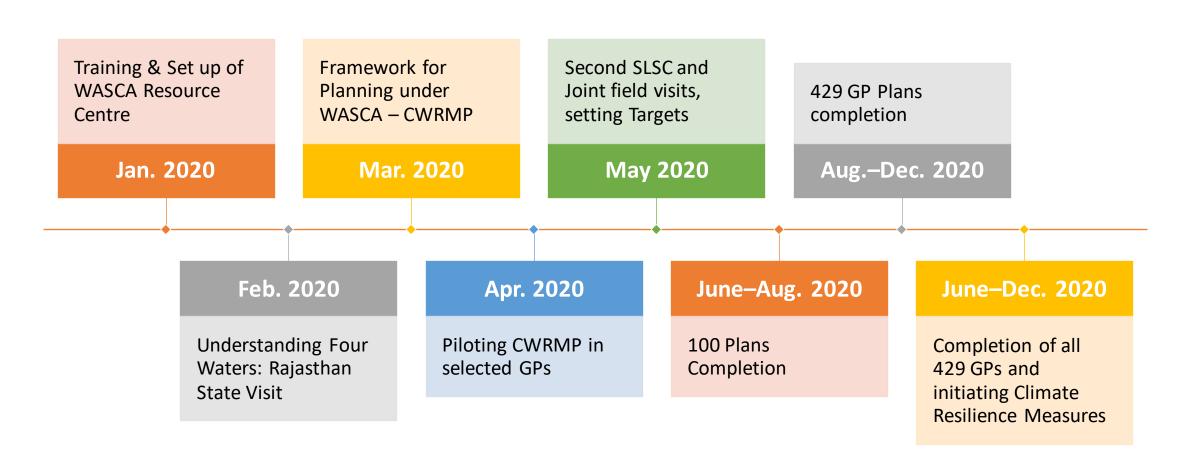
4th District Level Steering Committee Meeting 8 Feb 2021 **District Rural Development Agency** Ramanathapuram



Presentation Steps

- 1) WASCA Implementation & CWRM Planning Time Line
- 2) Composite Water Resources Management Plan (CWRMP) Progress, Findings
- 3) Key Water Actions under MGNREGS
- 4) Web Portal on WASCA –TN
- 5) Estimated impact of WASCA CWRMP
- 6) Climate Resilience Measures
- 7) WASCA Ramanathapuram: Convergence Line Department
- 8) WASCA- Ramanathapram: Convergence: Private Sector
- 9) Points for Discussion with the proposal for year 2021-2022

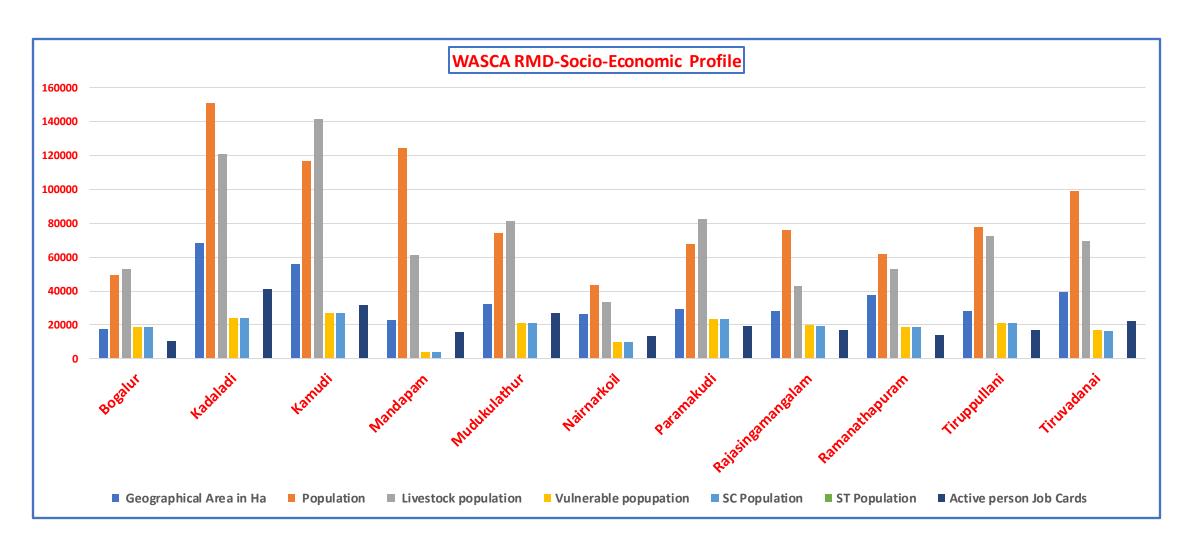
1.1 WASCA Implementation & CWRM Planning Time Line



1.2 WASCA-RMD: CWRMP – Socio-Economic

Name of Block	Geographical Area in Ha	Population		Area under Agriculture	Vulnerable population	SC Population	Population	Active person Job Cards
Bogalur	17,691	49,694	53,228	7258	18,817	18,816	1	10,478
Kadaladi	68,506	1,51,063	1,20,750	32401	24,014	24,002	12	41,026
Kamudi	55,962	1,16,622	1,41,899	25999	27,020	27,020	-	31,708
Mandapam	23,137	1,24,751	61,074	9624	4,285	4,255	30	15,893
Mudukulathur	32,246	74,194	81,330	19486	21,291	21,286	5	27,271
Nairnarkoil	26,341	43,616	33,282	11785	10,100	10,098	2	13,484
Paramakudi	29,175	68,021	82,740	9260	23,808	23,736	72	19,681
Rajasingamangalam	28,035	75,986	43,050	10004	19,726	19,676	50	16,914
Ramanathapuram	37,636	61,757	53,189	20633	18,846	18,680	166	13,823
Tiruppullani	28,429	78,036	72,834	12670	21,030	21,029	1	17,029
Tiruvadanai	39,737	99,006	69,780	21944	16,892	16,730	162	22,317
Total	3,86,896	9,42,746	8,13,156	1,81,065	2,05,829	2,05,328	501	2,29,624

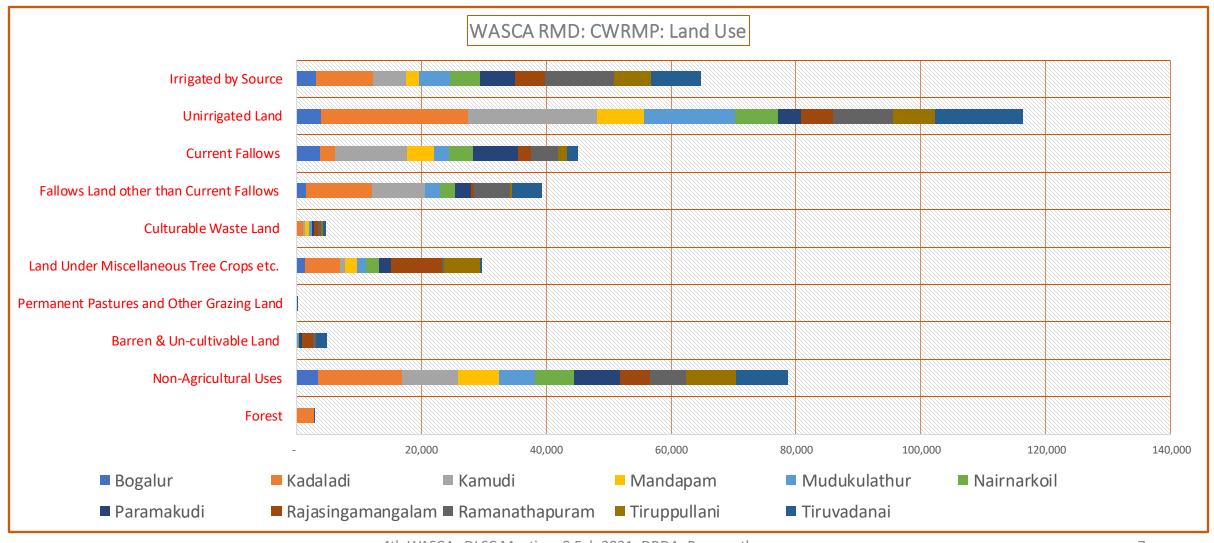
1.2 CWRM Planning: Key Water Issues- Findings



1.3 WASCA-RMD: CWRMP: Land Use

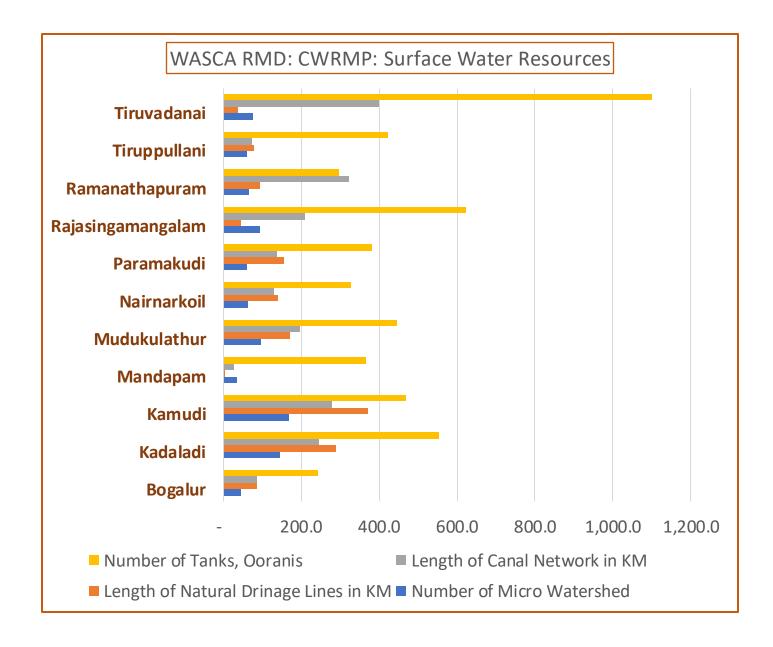
NAME OF THE BLOCK		NON-AGRICULTURAL	BARREN & UN-	PERMANENT PASTURES AND OTHER GRAZING LAND	LAND UNDER MISCELLANEOUS TREE CROPS ETC.	CULTURABLE WASTE LAND	FALLOWS LAND OTHER THAN CURRENT FALLOWS	CURRENT FALLOWS	UNIRRIGATED LAND	IRRIGATED BY SOURCE
Bogalur	-	3,461.37	94.50	21.00	1,369.65	34.84	1,613.28	3,837.90	4,025.99	3,232.37
Kadaladi	2,874.40	13,533.62	-	8.00	5,706.13	1,039.27	10,586.57	2,356.84	23,396.71	9,004.35
Kamudi	-	8,951.23	31.00	4.00	720.28	277.11	8,422.75	11,556.97	20,706.72	5,292.28
Mandapam	-	6,548.14	6.30	-	2,011.48	646.74	56.37	4,244.22	7,500.94	2,123.00
Mudukulathur	-	5,795.32	230.70	16.00	1,297.41	481.13	2,420.39	2,518.53	14,580.26	4,906.14
Nairnarkoil	-	6,182.47	27.00	3.00	2,150.81	72.53	2,386.64	3,733.91	6,976.82	4,808.13
Paramakudi	-	7,323.14	535.30	-	1,999.43	235.35	2,543.94	7,277.72	3,666.54	5,593.85
Rajasingamangalam	-	4,842.41	1,779.80	-	8,131.59	707.62	436.59	2,133.33	5,068.83	4,935.24
Ramanathapuram	19.10	5,836.30	418.20	3.80	288.26	400.82	5,761.62	4,275.00	9,632.62	11,000.09
Tiruppullani	-	7,897.01	-	-	5,697.27	400.72	308.25	1,455.90	6,749.24	5,920.74
Tiruvadanai	19.04	8,290.03	1,771.10	168.33	391.98	542.32	4,821.51	1,788.44	14,027.99	7,916.46
Total	2,912.54	78,661.04	4,893.90	224.13	29,764.29	4,838.45	39,357.91	45,178.76	1,16,332.66	64,732.65
Percentage to total	1%	20%	1%	0%	8%	1%	10%	12%	30%	17%

1.3 WASCA RMD: CWRMP: Land Use (census 2011)



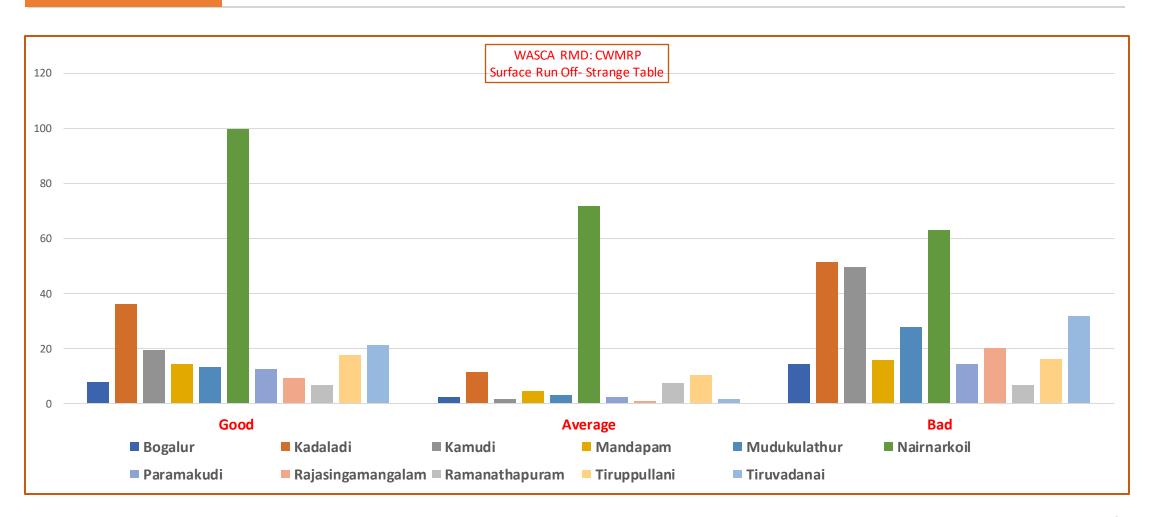
1.4 WASCA-RMD: CWMRP: Surface Water Resources

Name of the Block	Micro Watershed	Surface Run off: Strange Table in MCM			Natural Drainage lines	Canal Network	Tanks, Ooranis	Drinking Water Sources
	Number	Good	Average	Bad	in KM	in KM	Numbers	Numbers
Bogalur	45	7.89	2.43	14.44	87.76	86.22	243	1713
Kadaladi	146	36.4	11.51	51.51	288.95	246.35	553	18610
Kamudi	168	19.48	1.72	49.83	370.26	279.64	470	4488
Mandapam	34	14.54	4.53	15.82	4.8	27.75	366	9282
Mudukulathur	96	13.37	3.06	27.75	170.08	196.9	445	2722
Nairnarkoil	64	99.94	71.83	63.16	139.42	129.03	328	1011
Paramakudi	62	12.78	2.44	14.51	156.99	138.46	381	3913
Rajasingamangalam	94	9.5	0.91	20.16	45.46	209.61	623	1602
Ramanathapuram	65	6.91	7.61	6.86	94.24	323.26	296	3952
Tiruppullani	60	17.52	10.39	16.4	80.08	74.5	423	7852
Tiruvadanai	76	21.39	1.67	31.74	37.97	400.04	1099	6385
Total	910	259.72	118.1	312.18	1476.01	2111.76	5227	61530 8



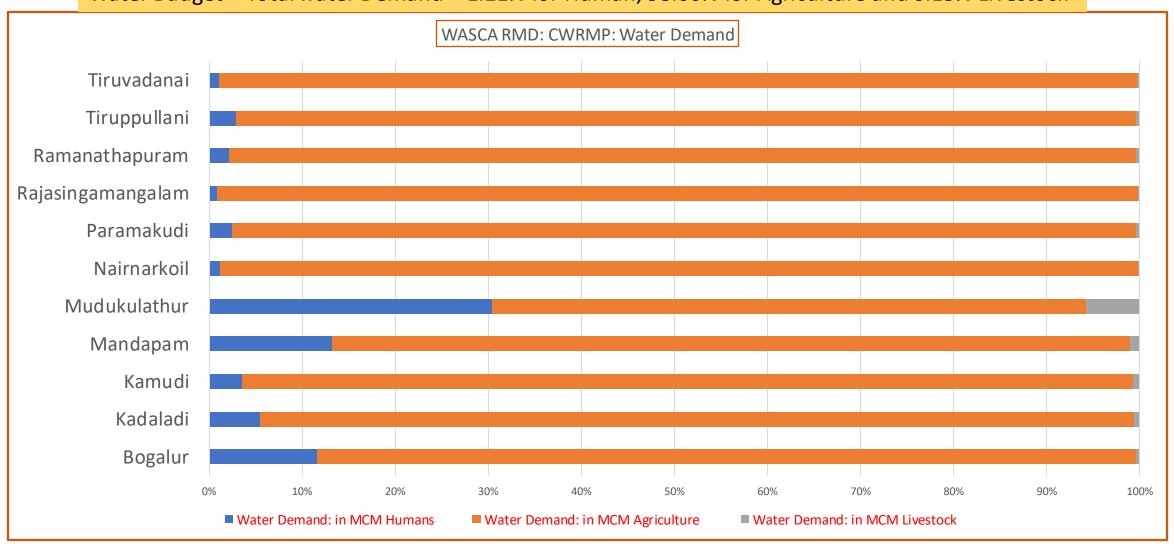
1.4.1
WASCA-RMD:
CWRMP- Water
Resources

1.4.2 WASCA-RMD: CWRMP: Run-off



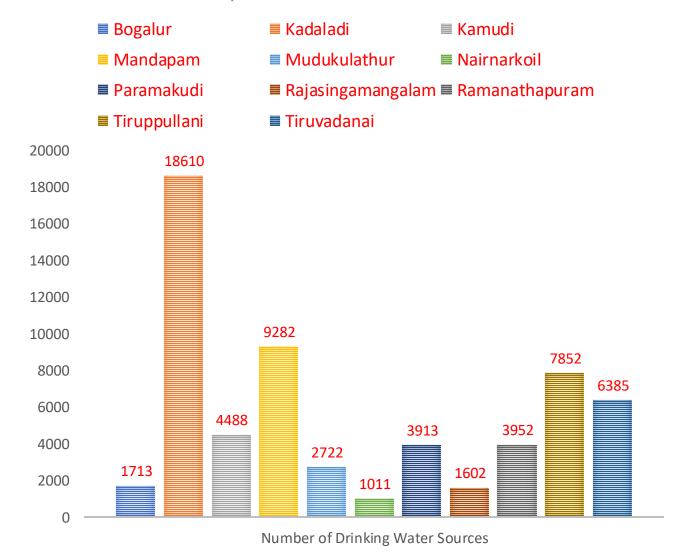
1.6 WASCA RMD: CWRMP: Water Demand

Water Budget – Total water Demand – 1.21% for Human, 98.66% for Agriculture and 0.13% Livestock

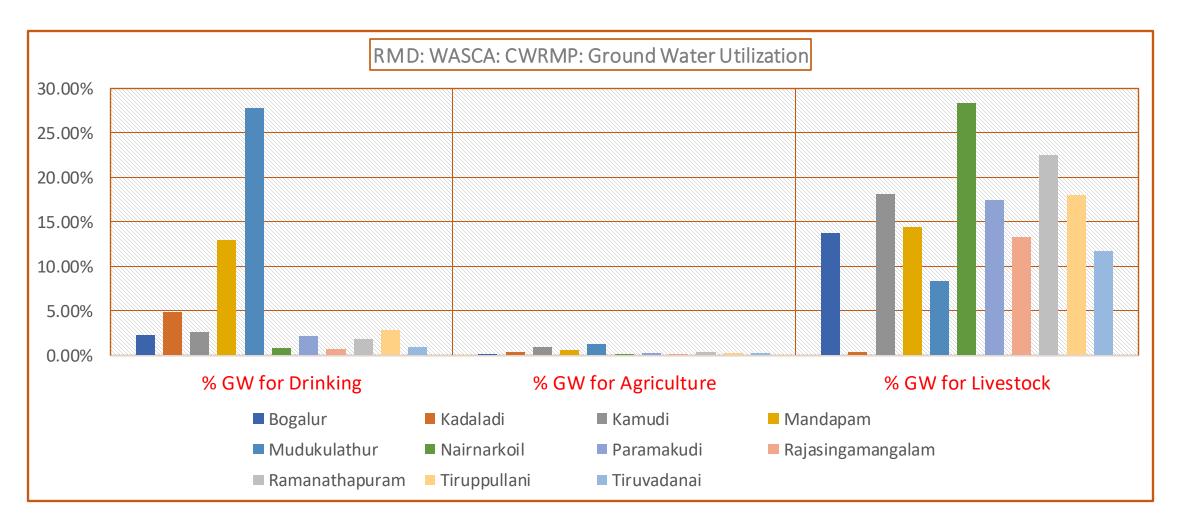


1.4.3 WASCA RMD: CWMRP: Drinking Water Sources

WASCA RMD; CWRMP DRINKING WATER SOURCES

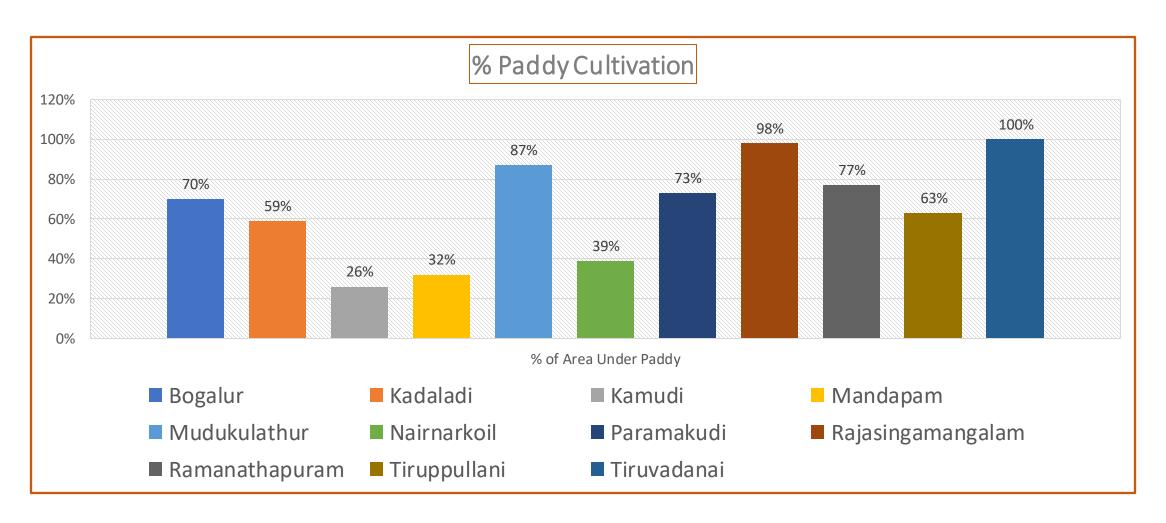


1.4.4 WASCA RMD: CWRMP: Ground Water Utilization

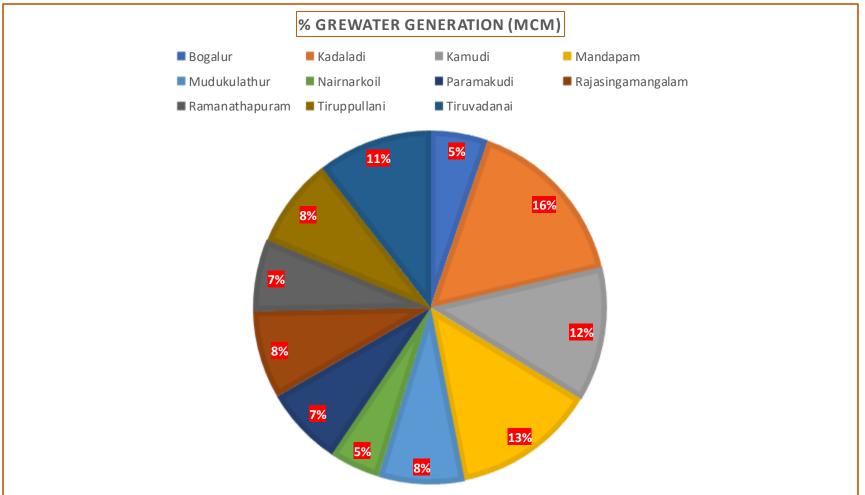


1.7 Area under Paddy Cultivation

Of the Total water requirement for Agriculture – Paddy consumes 82.12% of water within Agriculture sectors



1.5 WASCA RMD: CWRMP: Grey Water Generation

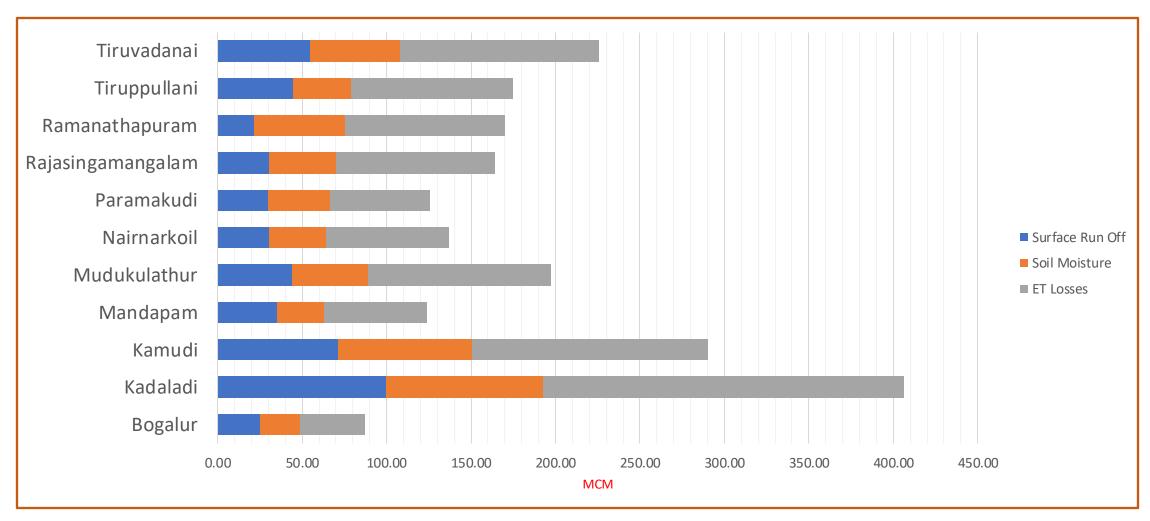


Block	Greywater Generation (MCM)
Bogalur	0.91
Kadaladi	2.76
Kamudi	2.13
Mandapam	2.28
Mudukulathur	1.35
Nairnarkoil	0.8
Paramakudi	1.24
Rajasingamangalam	1.39
Ramanathapuram	1.13
Tiruppullani	1.42
Tiruvadanai	1.81

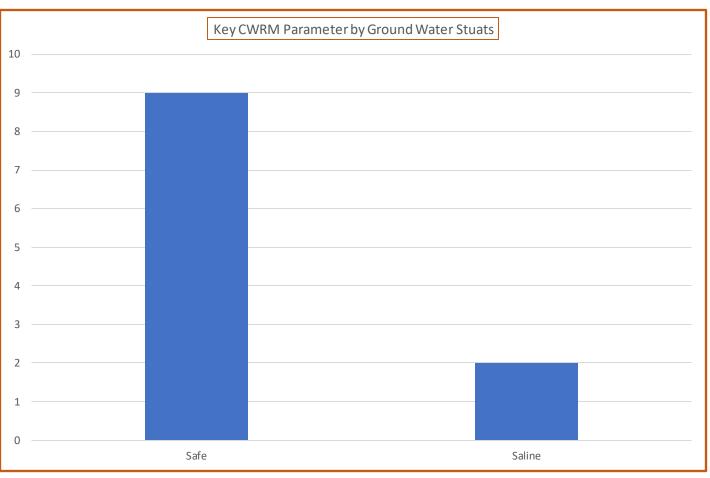
1.8 WASCA RMD: CWRMP: Water Availability Estimation

WASCA RMD: CWRMP: Water Availability: Estimation (in MCM)							
Name of the Block	Surface Run Off	Soil Moisture	ET Losses	Ground Water Availability	Ground Water Recharge		
Bogalur	24.76	24.08	38.49	2184.03	2426.7		
Kadaladi	99.42	93.01	213.97	3302.1	3669		
Kamudi	71.03	79.54	139.5	7444.67	8271.86		
Mandapam	34.89	28.07	60.74	3161.21	3512.46		
Mudukulathur	44.17	44.75	108.58	4608.13	5120.14		
Nairnarkoil	30.22	34.11	72.76	4366.58	4851.76		
Paramakudi	29.73	36.97	58.78	8048.34	8942.61		
Rajasingamangalam	30.57	39.24	94.67	7052.04	7835.6		
Ramanathapuram	21.38	53.8	94.67	4017.31	4463.68		
Tiruppullani	44.31	34.74	95.88	3193.18	3547.97		
Tiruvadanai	54.80	53.21	117.57	4584.92	5094.35		
	485.28	521.52	1095.61	51962.51	57736.13		

1.9 WASCA RMD-CWMRP: Surface Water, Soil Moisture, E.T Losses



1.11 WASCA RMD: CWRMP: Ground Water Status



	Ground Water
Block	Status
Bogalur	Safe
Kadaladi	Saline
Kamudi	Safe
Mandapam	Safe
Mudukulathur	Safe
Nairnarkoil	Safe
Paramakudi	Safe
R. S. Mangalam	Safe
Ramanathapuram	Safe
Tiruppullani	Saline
Tiruvadanai	Safe

நிலையான நீர்வளம்

நீர்ப்பயன்பாட்டு மேலாண்மை மற்றும் கிராமப்புற வளர்ச்சி

Water #For SDGs #ForNature



நீர் செயல்திட்டம் 1 பாதிக்கப்பட்ட மற்றும் பொது நிலங்களைப்

பண்படுத்துதல்



செயல்திட்டம் 3 கிராமப்புற சமுதாயம் மந்நும் குடும்பங்களின் பங்கேர்பு



செயல்கிட்டம் 2 வேளாண்மை மற்றும்

வேளாண்சார் நிலங்களை விரிவுபடுத்துதல்



செயல்கிட்டம் 4 ஊரக தொழில்களின்



நாலநிலை 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









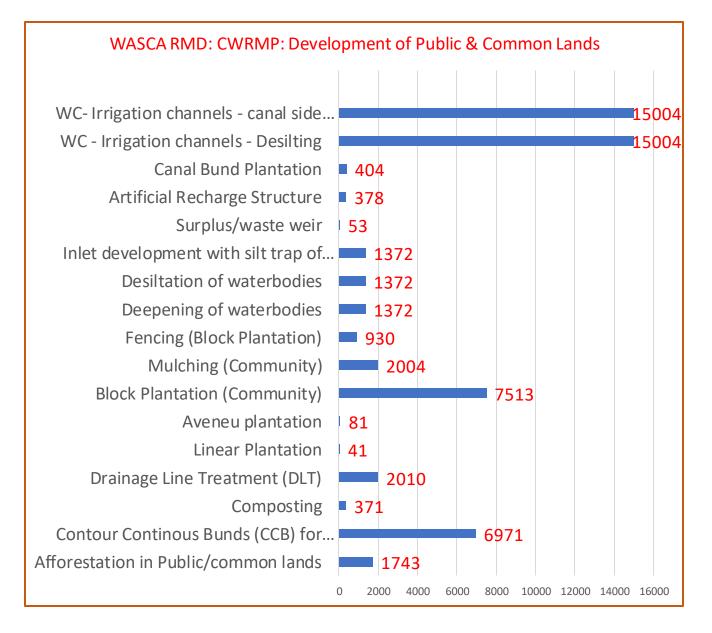




2.0 WASCA RMD: CWRMP: Key Water Works & Intervention Areas

- **A. Development of Public Land development**: Afforestation, block plantation, Waste land development, Silvi-pasture, River Rejuvenation (one in each district). drainage line treatment, cascade tanks restoration
- B. Development of Agriculture Land: Fallow land development: Ground water recharge structures, farm ponds, farm bund cum trench, bund plantation, dry land horticulture
- **C. Development of Rural Water Management:** Roof rainwater structures, Rajasthan model Tanka pilots, soak pits, avenue plantations
- **D. Development of Climate Resilience Measures :** About 10 model works with climate resilience are at different levels of implementation in the district (Agro-forestry, coastal watersheds, Tankas for drinking water etc)

2.1 **CWRM Water** Action 1: Development of Public lands and Common lands: Estimates for Three Years (2021-22 to 2023-24)



2.1.1 CWRM Water Action 1:

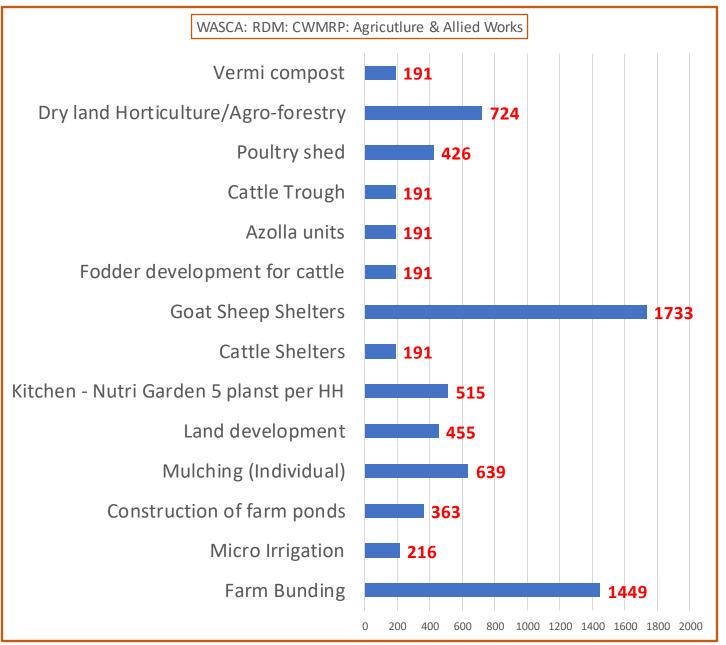
Development of Public lands and Common lands:

Estimates for Three Years (2021-22 to 2023-24)

				Estimated cost	
S.NO	Name of the work	Extent	No of Works	in lakhs of Rupees	Estimated Person Days
			WOIRS	(INR)	Days
1	2	4	5	6	7
1	Afforestation in Public/common lands in Ha	1743	1743	13070.93	5106375
2	Contour Continous Bunds (CCB) for Afforestaion area in Mts	1743	6971	174.28	69713
3	Composting in Nos	1449	371	63.07	5565
4	Drainage Line Treatment (DLT) in Mts	80409	2010	60.31	10052
6	Linear Plantation in Km	41275	41	74.3	29016
7	Aveneu plantation in KM	81261	81	146.27	57126
8	Block Plantation (Community) in Ha	7513	7513	75133.3	29347067
9	Mulching (Community) in Ha	2004	2004	2004.47	783747
10	Fencing (Block Plantation) in Ha	8655	930	93.03	21397
12	Deepening of waterbodies Ha	1372	1372	13723.56	53608342
13	Desiltation of waterbodies Ha	1372	1372	13723.56	26803485
14	Waterbody Bund strengthening KM	686	1	2.06	670
15	Inlet development with silt trap of Waterbodies in Ha	1372	1372	6861.78	2680211
16	Surplus/waste weir in No	317	53	265	41393
18	Artificial Recharge Structure in NO	909	378	945	147798
19	Canal Bund Plantation in Ha	404.08	404	3030.6	1183954
20	WC - Irrigation channels - Desilting in Mts	150041	15004	112.53	45012
21	WC-Irrigation channels - canal side plantation in Mts	150041	15004	225.06	90025
		5,32,566.08	56,624	1,29,709.11	12,00,30,948

2.2
CWRM Water
Action 2:
Development of lands for
Agriculture and allied sector

Estimates for Three Years (2021-22 to 2023-24)



2.2.1CWRM Water Action2:

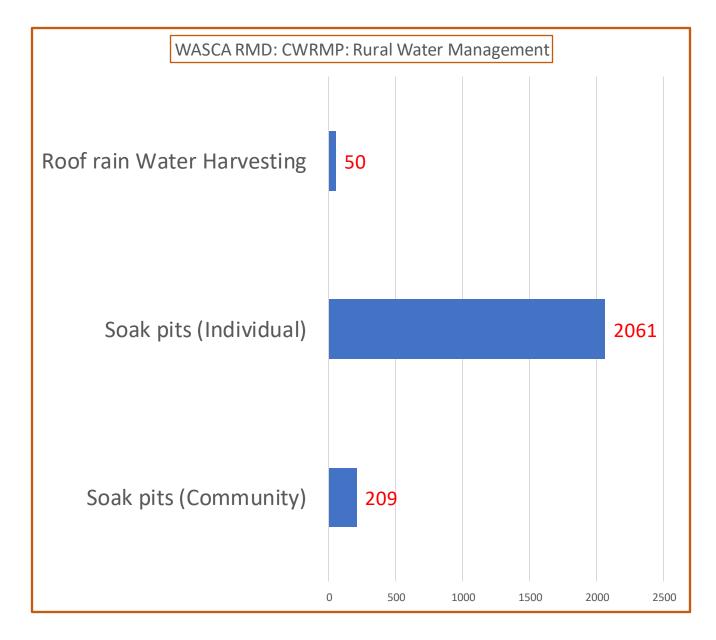
Development of lands for Agriculture and allied sector

Estimates for Three Years (2021-22 to 2023-24)

S.NO	Name of the work	Extent	No of Works	Estimated cost in lakhs	Person days
1	2	3	4	5	6
1	Farm Bunding in Ha	1449	1449	1811.34	849155
2	Micro Irrigation in No	538	216	216	0
3	Construction of farm ponds in No	1449	363	726	283503
4	Mulching (Individual) in Ha	639	639	638.61	249697
5	Land development	455	455	2959.65	1778519
6	Kitchen - Nutri Garden in Ha	20604	515	7726.5	1207394
7	Cattle Shelters in No	1896	191	404.92	63221
8	Goat Sheep Shelters in No	17352	1733	3933.91	615215
9	Fodder development for cattle in No	1896	191	282.68	447704
10	Azolla units in No	1896	191	28.65	4393
11	Cattle Trough in No	1896	191	257.85	40301
12	Poultry shed in No	4258	426	170.4	11076
13	Dry land Horticulture/Agro- forestry in Ha	724	724	5432.03	2122111
14	Vermi compost in Ha	1896	191	34.38	5157
	Total	56,949.25	7,475	24,622.91	76,77,446

2.3
CWRM Water
Action 3:
Rural Water
Management

Estimates for Three Years (2021-22 to 2023-24)



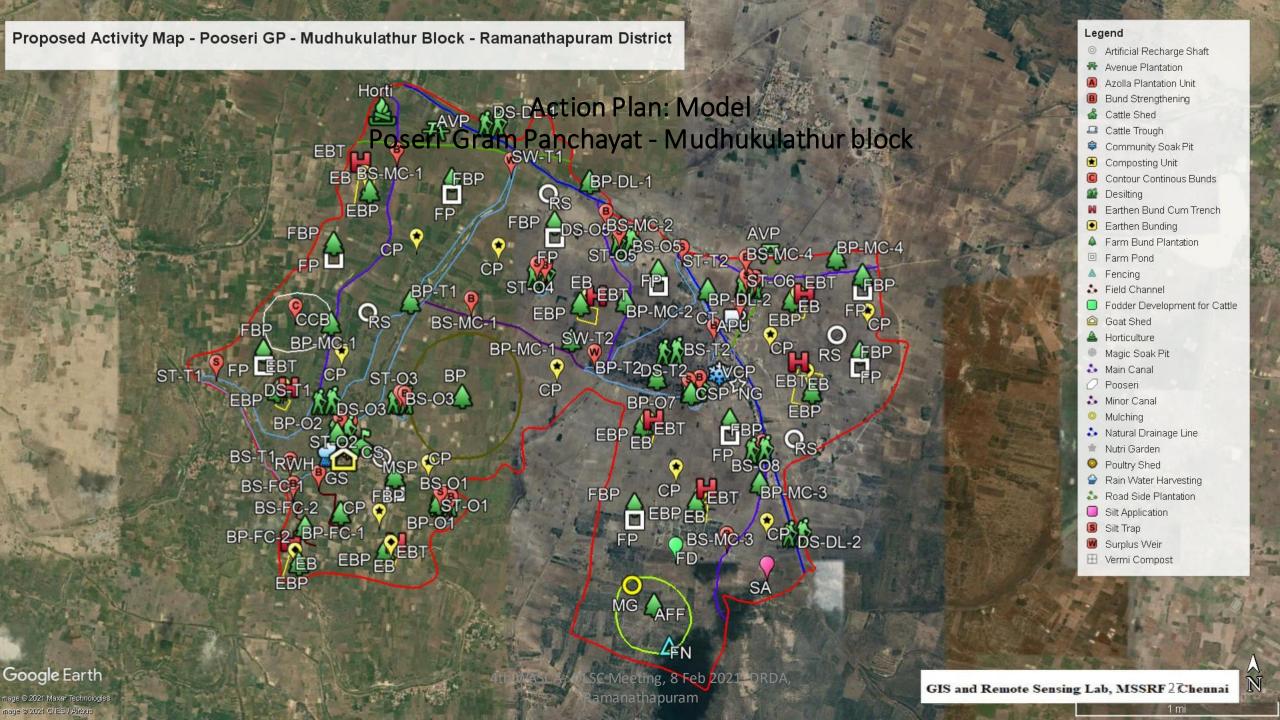
2.3.1 CWRM Water Action 3: Rural Water Management:

Estimates for Three Years (2021-22 to 2023-24)

S.NO	Name of the work	Unit of Measurement	No of Works	Estimated cost in lakhs	Person days
1	2	3	4	5	6
1	Soak pits (Community)	Number	209	27.17	4180
2	Soak pits (Individual)	Number	2061	206.1	32976
3	Roof rain Water Harvesting	Number	50	200	31250
	Total		2,320	433	68,406

2.4 WASCA-RMD: CWRMP: Estimates for three years

WASCA - Ramanathapuram	Estimated Persor	n Days	Estimate in Lakhs of Rupees		
CWMRP Water Actions	Number	Percentage	Cost	Percentage	
Development of Public & Common lands	12,00,30,948	93.94%	129709	83.81%	
Development of Agriculture & Allied acivities	76,77,446	6.01%	24622.91	15.91%	
Development of Rural Water Management	68,406	0.1%	433.27	0.3%	
Total	12,77,76,800	100.00%	1,54,765.29	100.00%	





3..0 Web Portal: Module

About WASCA - TN | CWRM (resilienceindia.org)

4. Impact of WASCA & CWRMP in the District



5. 0 WASCA RMD: CWRMP Water Action: 5.1. Development of Climate Resilience Measures

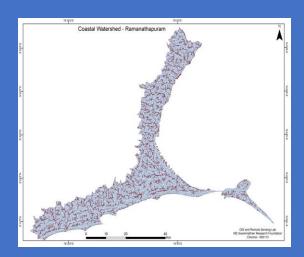
S NO	Name of the Block	Key Water Challenge	Proposed CRM	No of GPs
1	Bogalur	Vegetation cover – soil and water conservation	Mega forest, IFS in common land	3
2	Kadaladi	Salinity, Sand Dunes degradation, Vegetation cover – soil and water conservation	Coastal Watershed, Mega forest, IFS in common land	30
3	Kamudi	Harvesting and storage of surface runoff water	Agro-forestry models, Mega forest, IFS in common land	5
4	Mandapam	Coastal erosion, sand dune degradation	coastal watersheds	49
5	Mudukulathur	Harvesting and storage of surface runoff water	Agro-forestry models, IFS in common land	5
6	Nairnarkoil	Harvesting and storage of surface runoff water, Soil erosion	IFS in common land	5
7	Paramakudi	Harvesting and storage of surface runoff water, Soil erosion	IFS in common land, River bank stabilization,	5
8	R. S.Mangalam	Harvesting and storage of surface runoff water	Cascade of Tanks and River rejuvenation, mega forest	15
9	Ramanathapuram	Degraded public and common lands	Horticulture parks - IFS in common land	2
10	Tiruppullani	Drinking water, coastal erosion, sea water intrusion	IFS in common land, Community level Tanka, sea water intrusion structures	5
11	Tiruvadanai	water storage, coastal erosion, sea water intrusion	Coastal Watershed, IFS in common land	22

4th WASCA- DLSC Meeting, 8 Feb 2021, DRDA,

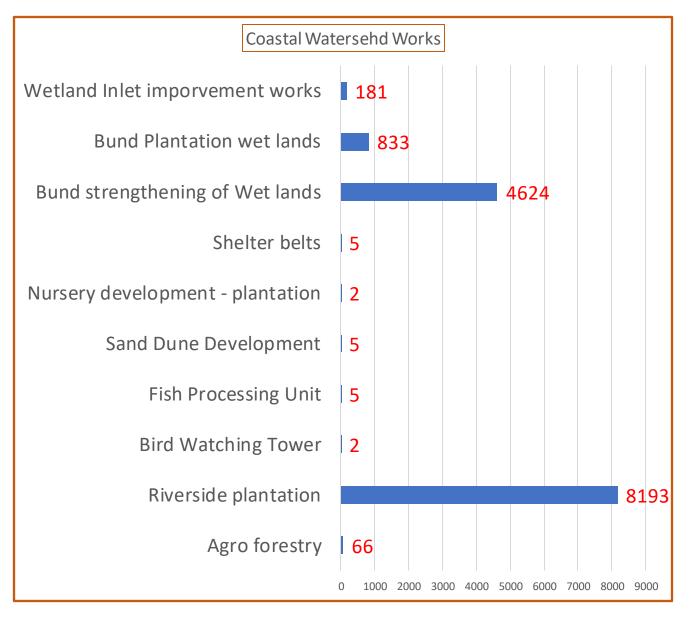
Coastal Watersheds of Ramanathapuram



	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						



4.2 CWRM Water Action: Climate Resilience Measure Coastal Watershed





Climate Resilient Models for sustainability

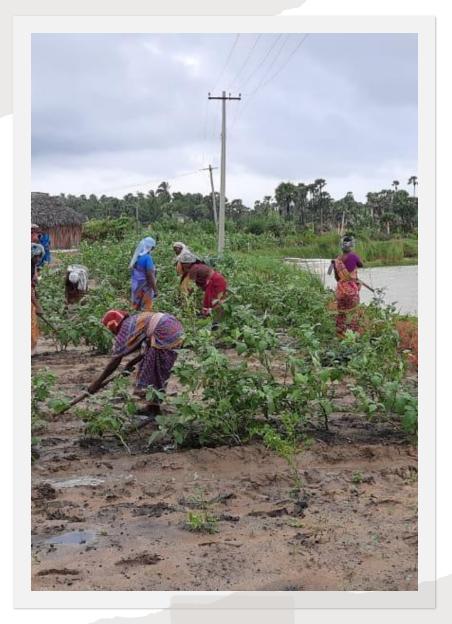
MINI FOREST



- 1000 Mini forest-1st Phase
- 11 Mega forest- 2nd Phase
- 20 traditional varieties of trees
- 500 trees in Mini forest
- 5,000 trees in Mega-forest
- Nearly 500 acres of land converted into mini forest
- Recognized by Elite world Records, Asian book of records, Tamilan records
- Replication by Other districts

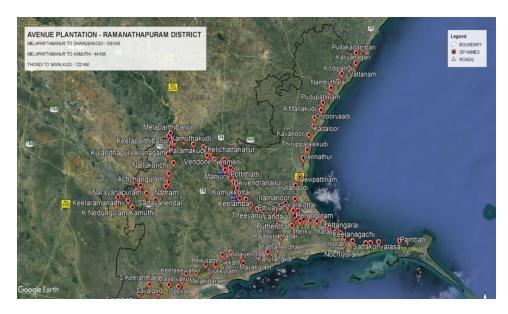
Horticulture Park

- 11 parks in 11 blocks
- Cattle, Country chick, Goat rearing Units, Azolla Production, Mushroom Production
- Vegetable, Fruits and Medicinal Plants are cultivated
- MGNREGS women getting more employment days and additional income
- Village Panchayat get additional revenue
- Barren land converted into Cultivable land
- Promoted Organic farming
- Planned 100 Horticulture parks in 11 Blocks



Road side or Avenue plantation

- 240 km was covered- Partibanur to Kamuthi, Partibanur to Paramakudi, Thondi to ramanathapuram, Sayalkudi to Ramanathapuram
- 12 types of Flowering trees are planted
- 24000 big trees, 48000- small trees are planted
- Reduce the air and noise pollution, Rejuvenate the Ecosystem and pleasant travelling in the road in Ramnad District
- MGNREGS labours and SHG women are involving in maintenance of plantations







Catch the Rain





- Size and storage capacity of a pond is 15m x 15m x 1m and 225cum (2,25,000 litres) respectively.
- 17,14,50,000 litres (171.45 Million litres) of rain water can be stores through 762 ponds at various places throughout the district.
- This will serve the needs of animals, birds, human beings etc.
- It will also act as a ground water recharge structure
- Planned to create 10 thousand ponds across the district

TANKA- drinking water security

- 2 community tanka were established in R.S. Mangalam and Thiruppulani Block
- 30 thousand liters capacity
- The tanka was filled with Rain water
- Based on the people utilization, plan to build more individual and community tankas in this district







- Established 1001 nutrition Garden in schools
- Growing Nutritional vegetables like Bhendi, Tomato, Curry leaves, Moringa and Leafy vegetables
- MGNREGS women maintain the garden and supply the vegetables to noon meal in the schools
- It leads to reduce the Maternal Mortality Ratio (MMR) at Ramnad District (113 women death in one lakh)

Village level Nursery



- Establish village level Nursery in 429 Panchayats
- 850 women was trained regarding the nursery management
- MGNREGS women maintain 1000 tree saplings (Minimum) in a Nursery
- Growing Fruits and Flowering tree saplings
- Fruits saplings are Guava, Custard apple, Black Jamun, Madras thorn (Kodikkapuli), Amla, Pappaya and Moringa which are rich in vitamins and minerals

Ramanathapuram

Oxygen Park

- Only 1% of Forest is available in Ramanathapuram
- So the Oxygen level is very low in this district
- To increase the Oxygen, planned to cultivate the Bamboo trees
- Tissue culture Bamboo namely Bheema will grow in 10 acres of land at Thiruppulani, Paramakudi and Tiruvadanai Block
- In Third year of plantation, Village panchayat will be get revenue from bamboo stems



Activity centers

40 Livelihood Activities are identified

Discussed with pay Agri for contract farming and Management Madurai for marketing linkage of products

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Barren land to cultivable land

- 250 acres of barren land will convert into cashew nut farm
- 100 acres of barren land will convert Chilli park
- 100 acres of land will convert Tomato park
- Prosopis juliflora will eradicate
- Panchayat get additional revenue
- MGNREGS women get additional income and employment





6.0 WASCA – Ramanathapuram: Convergence – Line Department

S No	Name of the Department	Areas of Convergence
1	Department of PWD - WRO	Traditional water harvesting structures restoration, Canal network improvements
2	Department of Agriculture	Fallow land – individual development, IFS and Water management – Micro irrigation
3	Department of Agriculture Eng	Farm ponds and Micro watersheds
4	Department of Horticulture	Dry land horticulture – fallow land dvt, crop diversification with reduced WR
5	Department of Forest	Shelter belt and mangrove plantations
6	Department of Animal Husbandry	Silvi pasture development in common lands, livelihood activity centres – technical support for fodder development in individual lands
7	Department of Fisheries	Alternate livelihoods
8	NABARD	Coastal watersheds

7.0 Partnership Areas with Private Sector

S NO	Technology and Knowledge Management	Water Management	Climate Resilience for Future Livelihoods
1	Management Skills	Improvement of Cascade Tanks Systems	Coastal Watershed
2	Business model development	Restoration and River Rejuvenation	Water- Energy nexus and development
3	Mapping of Areas for A.I and IT application & implementation	Ground Water development and artificial recharge	Livelihoods linked with land Development:
4	Community Participation in Technology development	Water Use Efficiency and cropping pattern change	Promotion of integrated farming, agro- forestry, Dryland horticulture – high value low water requiring crops
5	Traditional knowledge mapping in technology development	Soil improvement and composting	Afforestation
6	Strengthening WASCA District Resource Centre (GIS Centre)	Roof rain water harvesting, storage and use	Adoption of Villages
7	Institutional structures for the management of traditional water bodies – social and Financial capital building	Improving the water conveyance efficiency by improving the canal network systems	Skill development

8.0 Points for discussion and approval

- 1. Estimates and Person Days (Three Years) and specific to 2021-22 FY
- 2. Convergence Plan with line departments
- 3. Potential participation of private sector
- Converting 429 GPs into NREGA Soft As per MORD guidelines - Timelines, Roles & Responsibilities
- 5. CRM pilot approval Themes and selection of GPs, Roles and responsibilities
- Partnership with NABARD for Coastal Watershed pilot implementation
- 7. Any other point for discussion by members

WASCA TN: Works Table (Perspective plan - Long Term) & (FY 2021-22) Estimation Ramanathapuram

		Perspective Plan	FY 2021-22	
Sl.No.	Development of WASCA CWRM Focus	No of Works	No of Works	Person Days
1	Public & Common Lands	56,664	8,500	18,004,642
2	Agriculure allied activities	7,475	2,990	3,070,978
3	Rural Water Management	2,320	2,320	68,406
4	Coastal Watershed	13,897	5,559	5,447,935
5	Total	80,356	19,368	26,591,962

Thank you