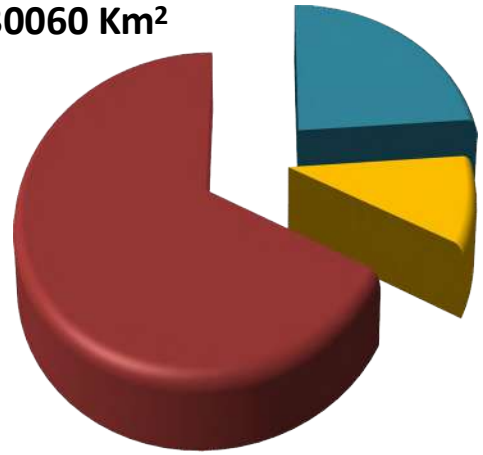
GREEN TAMIL NADU MISSION

GREEN TAMIL NADU MISSION

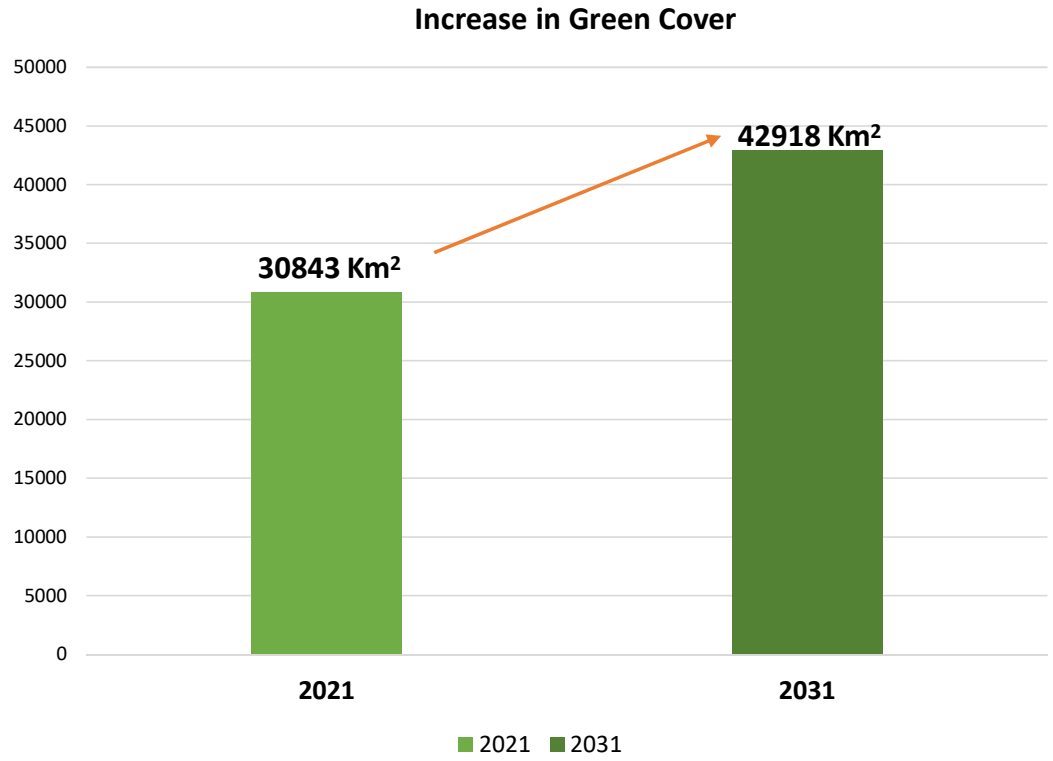
Forest and Tree Cover

Total Geographic area of the State
130060 Km²



23.71%
30843 Km²
Current Forest & Tree Cover

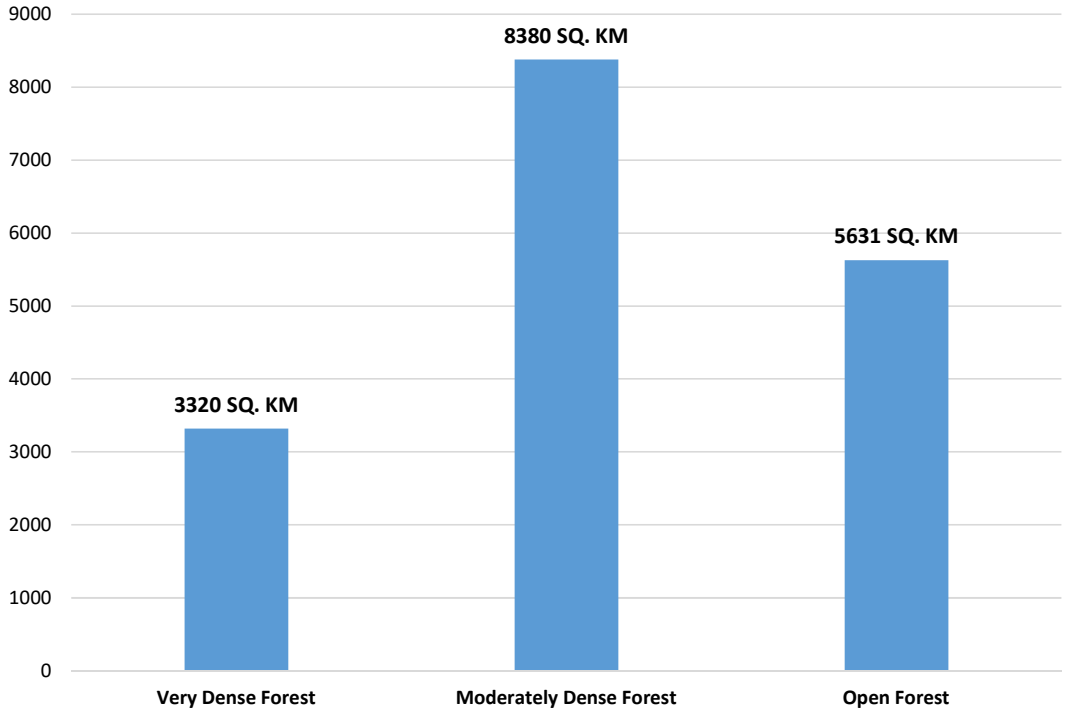
9.21%
12076 Km²
Proposed increase



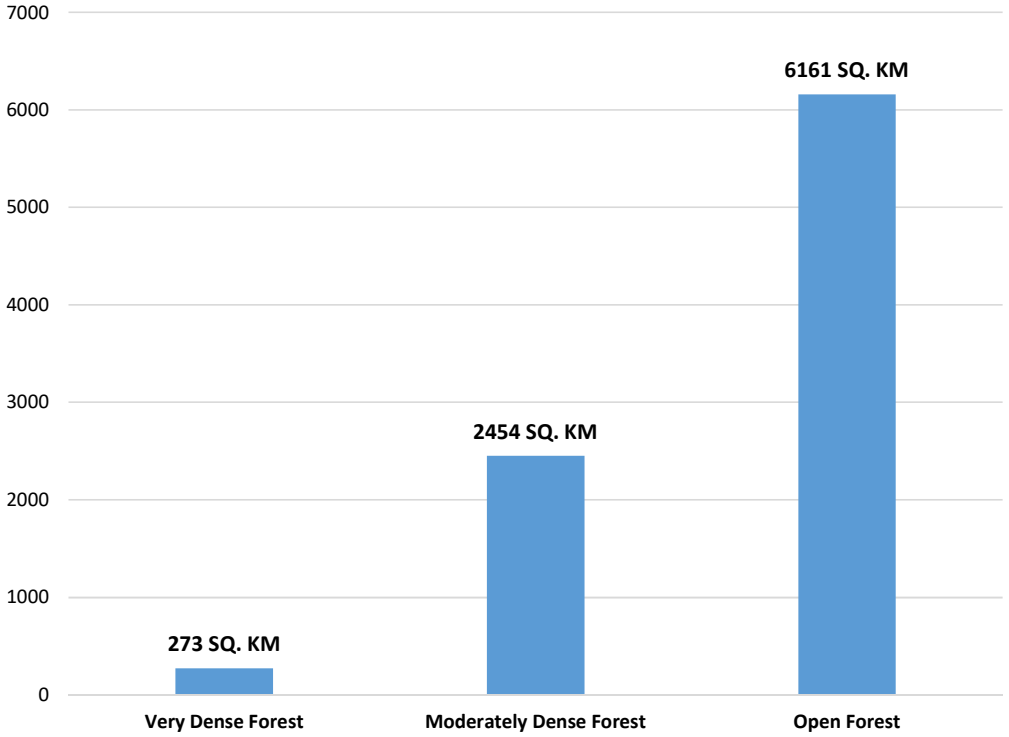
GREEN TAMIL NADU MISSION

India State of Forest Report 2021

RECORDED FOREST AREA

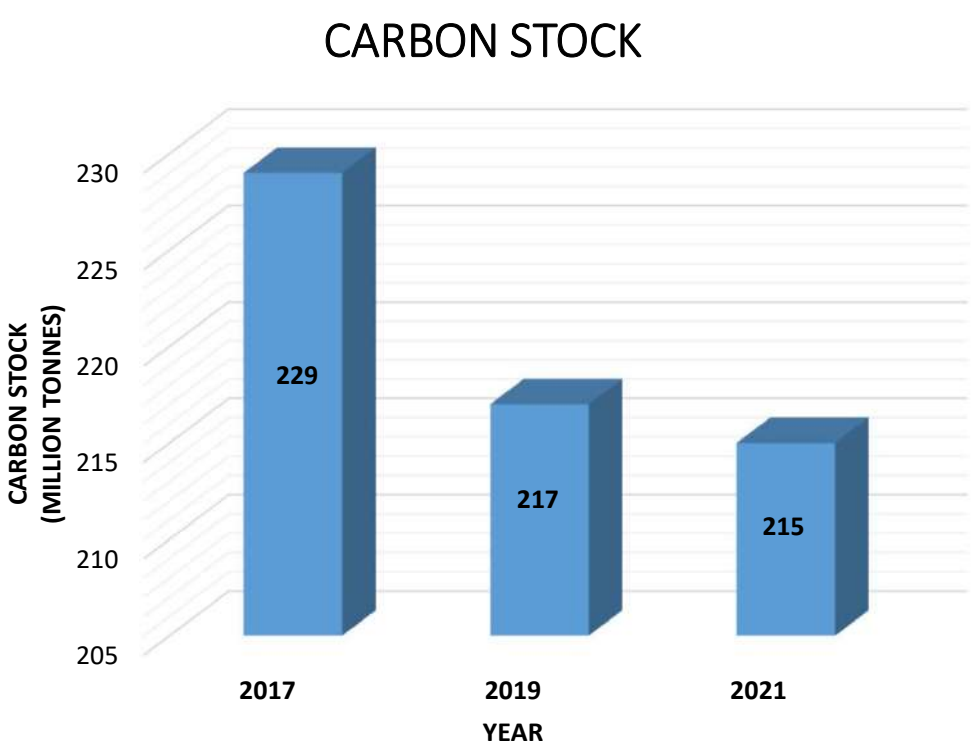


FOREST COVER OUTSIDE RFA



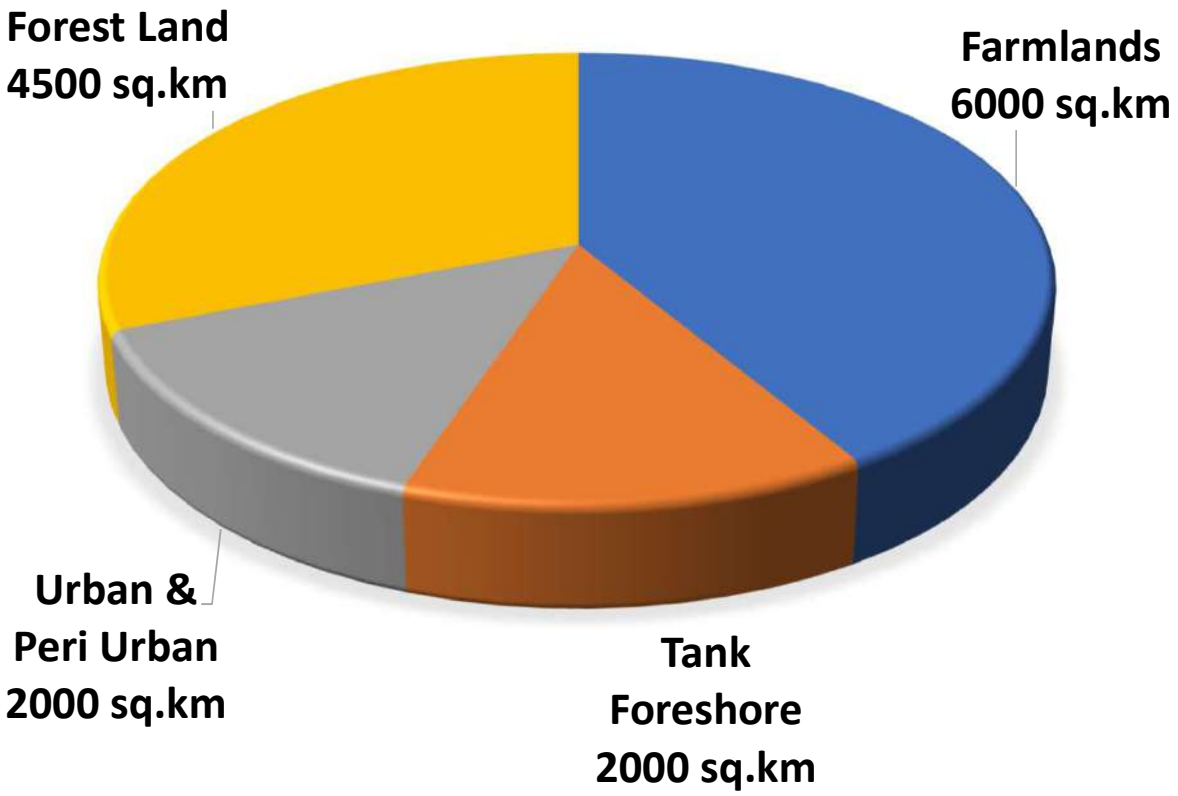
GREEN TAMIL NADU MISSION

Carbon stock
(as per India State of Forest Report 2021)



GREEN TAMIL NADU MISSION

Proposed Action Plan 2021-31



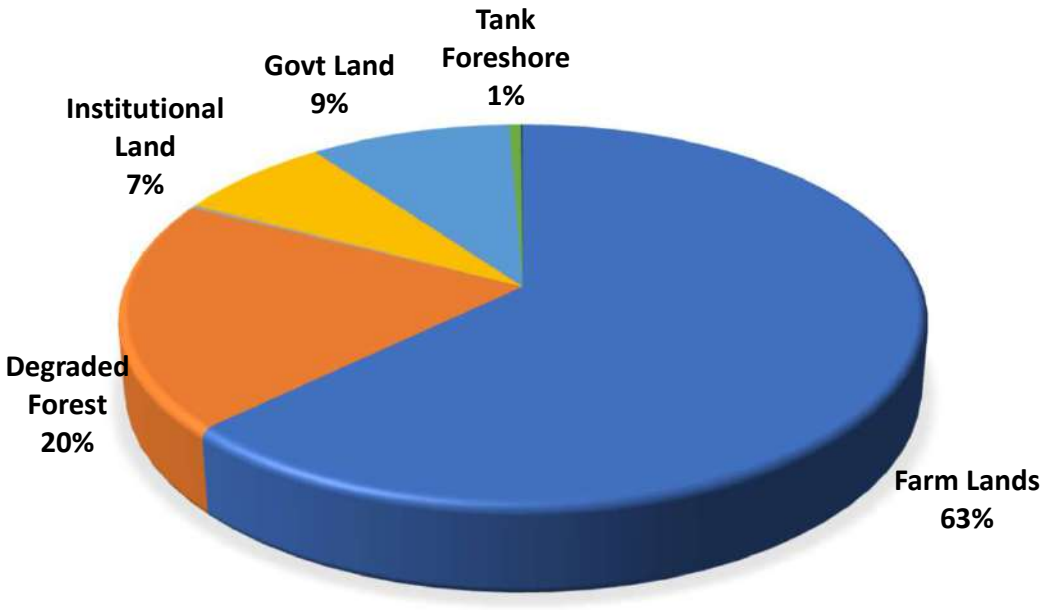
Forest & Tree Cover increase is projected as:

- Forest Cover (3.46%)
- Trees on Farmlands (4.6%)
- Urban & Peri Urban (1.54%)
- Tank Foreshore & other lands (1.54%)

GREEN TAMIL NADU MISSION

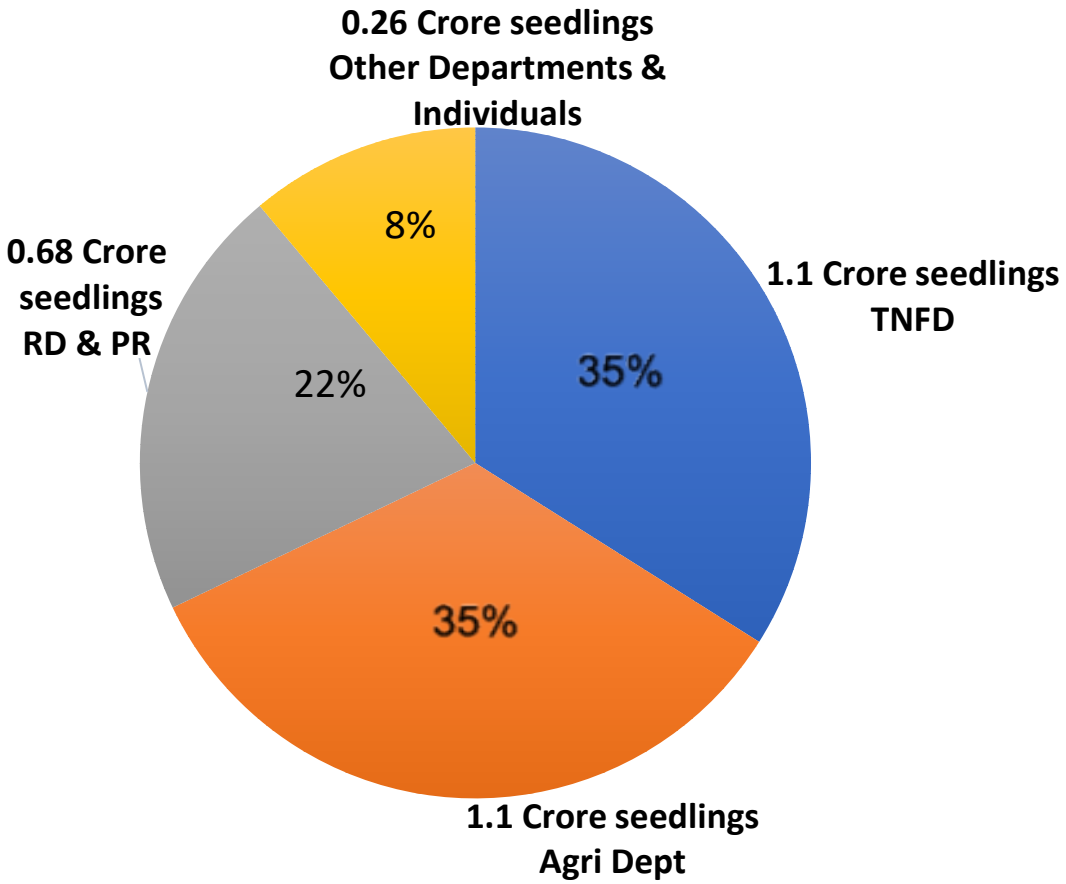
Various landscapes covered (2021-23)

S.No.	Land Categories	Area (in ha)
1	Coastal Forest	48
2	Fallow Land	161
3	Tank Foreshore	326
4	Institutional Land	4492
5	Govt Land	5767
6	Degraded Forest	12062
7	Farm Lands	38695
	Total	**61551**

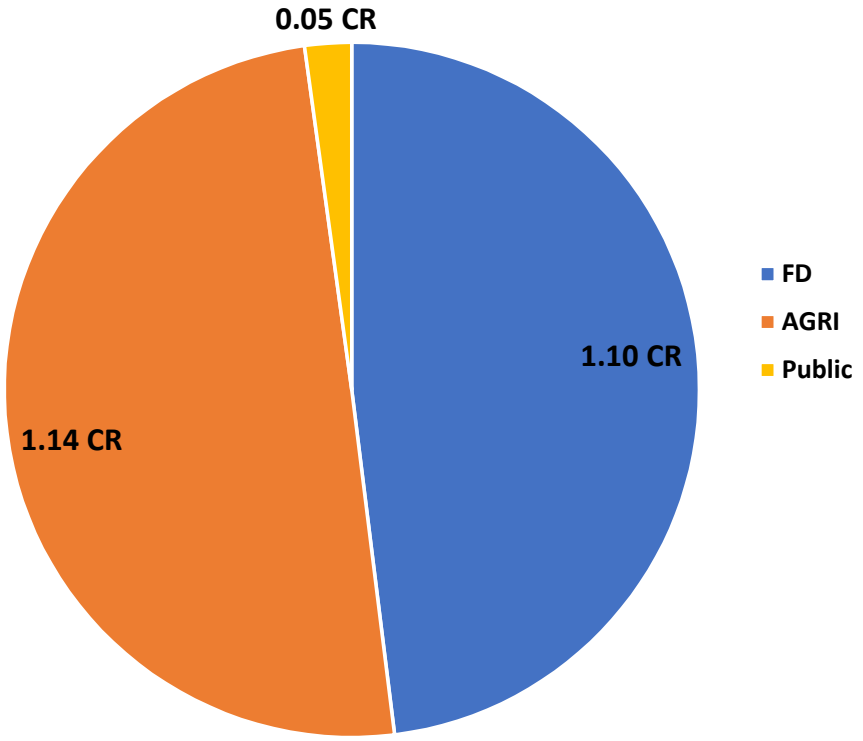


GREEN TAMIL NADU MISSION
2021-23

DETAILS OF PLANTING



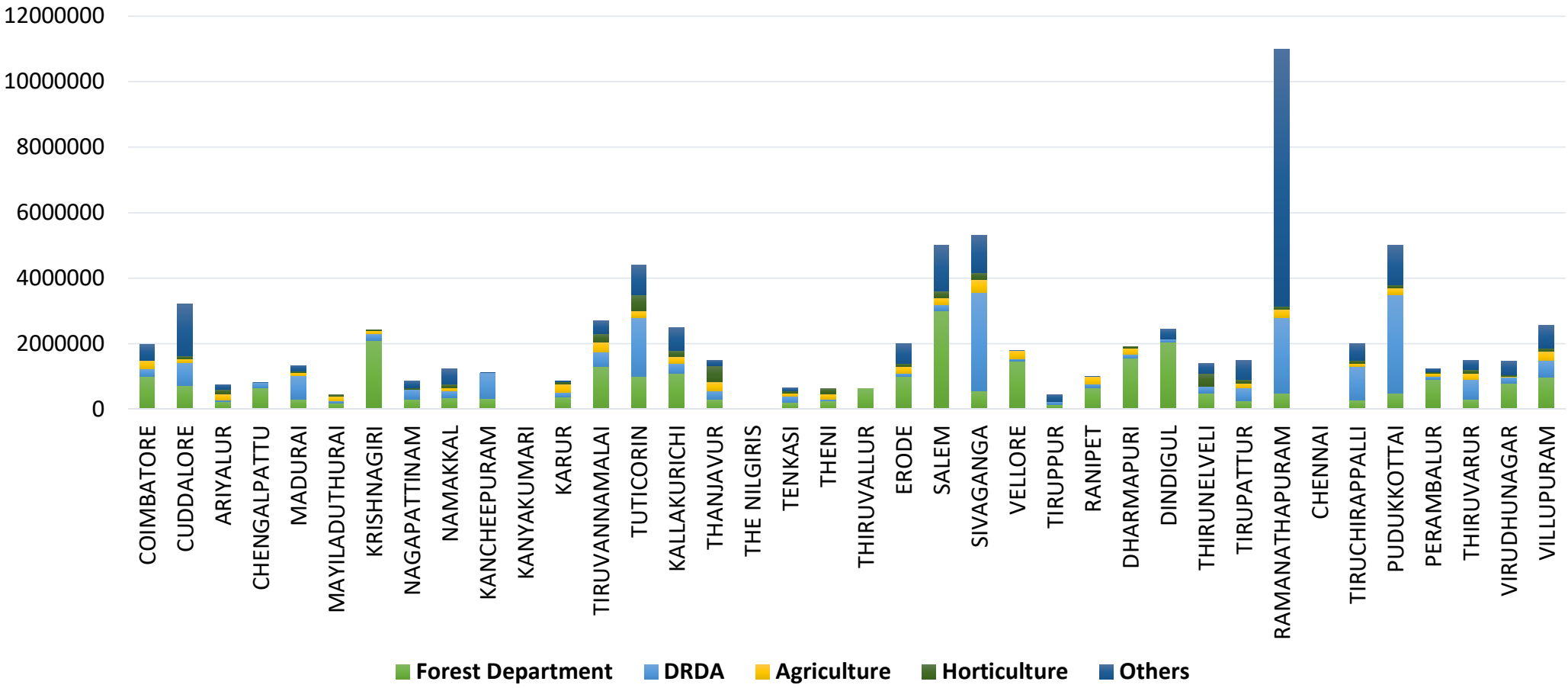
STATUS OF GEOTAGGING



***RD & PR yet to upload geotagged planting data for 68 lakhs**

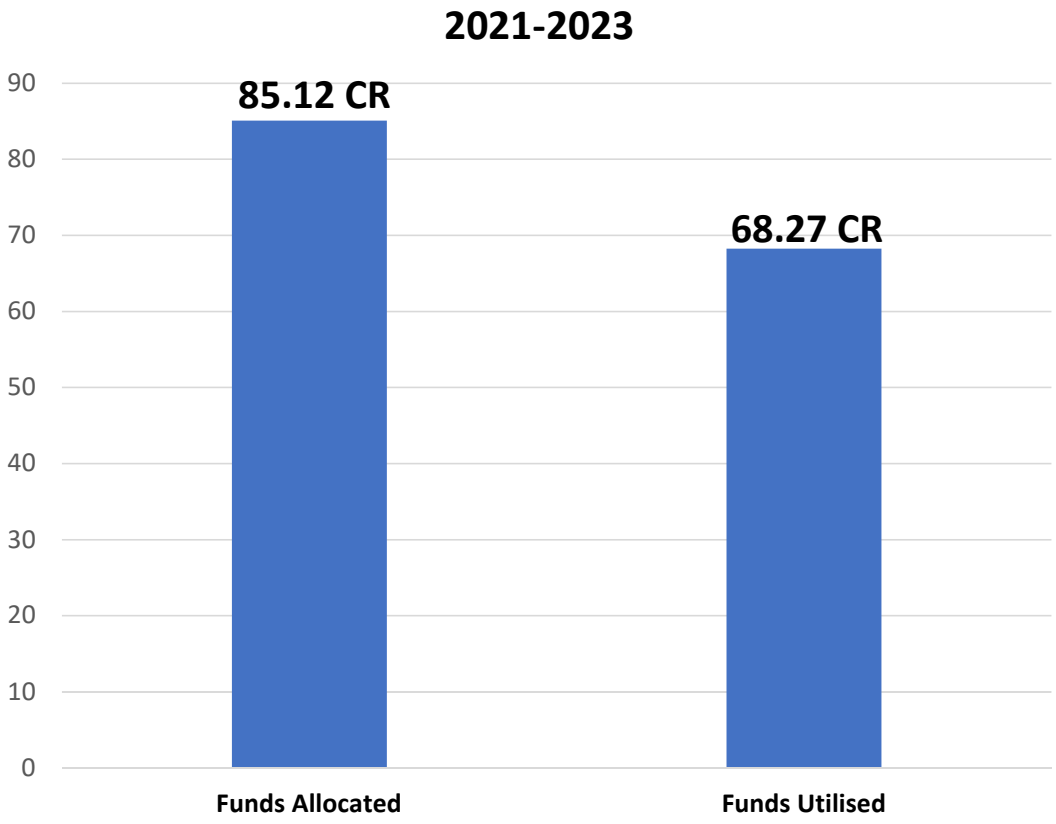
GREEN TAMIL NADU MISSION

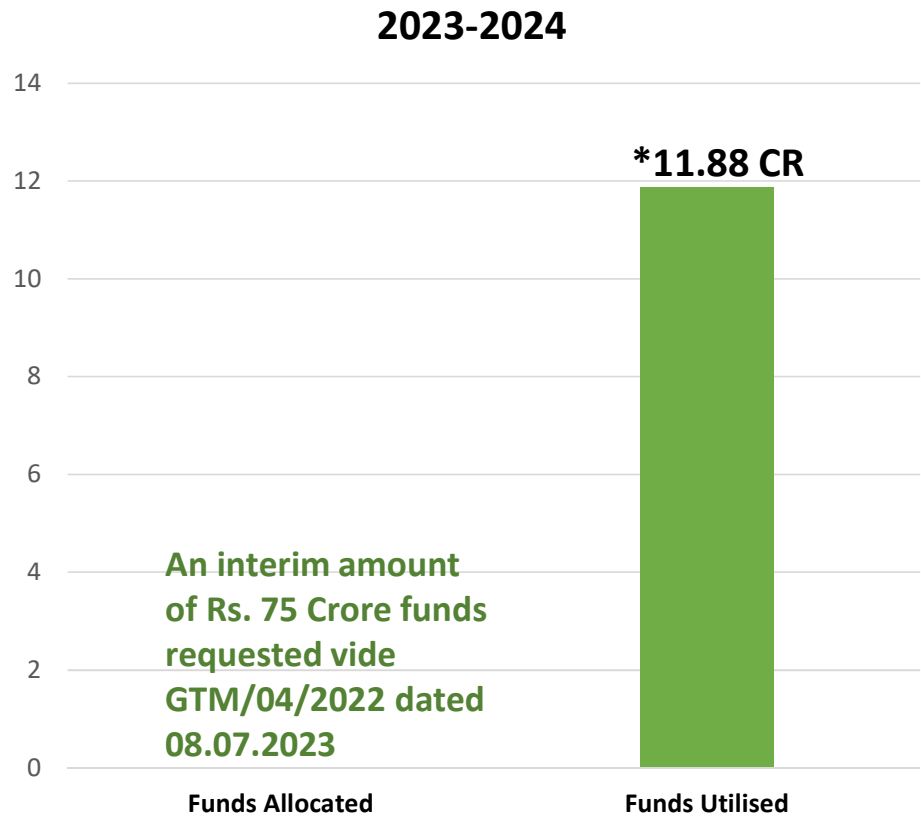
Approved District Annual Action Plan 2023-24 (7.5 Crore seedlings)



GREEN TAMIL NADU MISSION

FUND UTILISATION

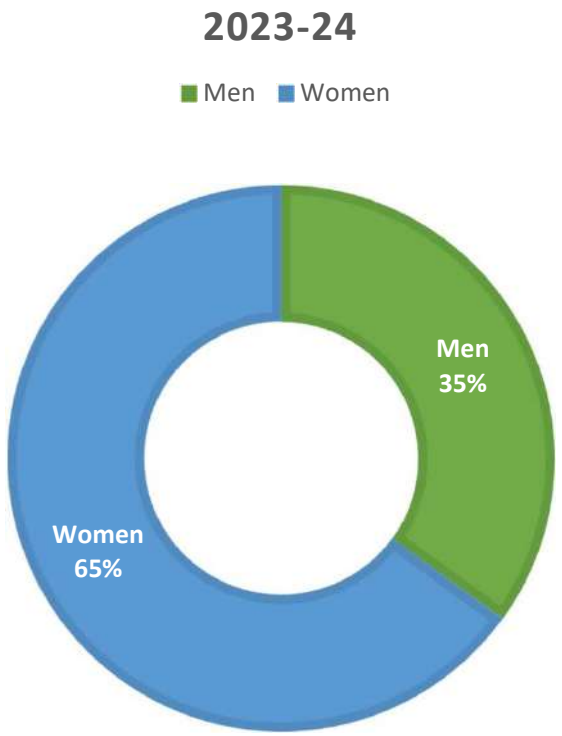




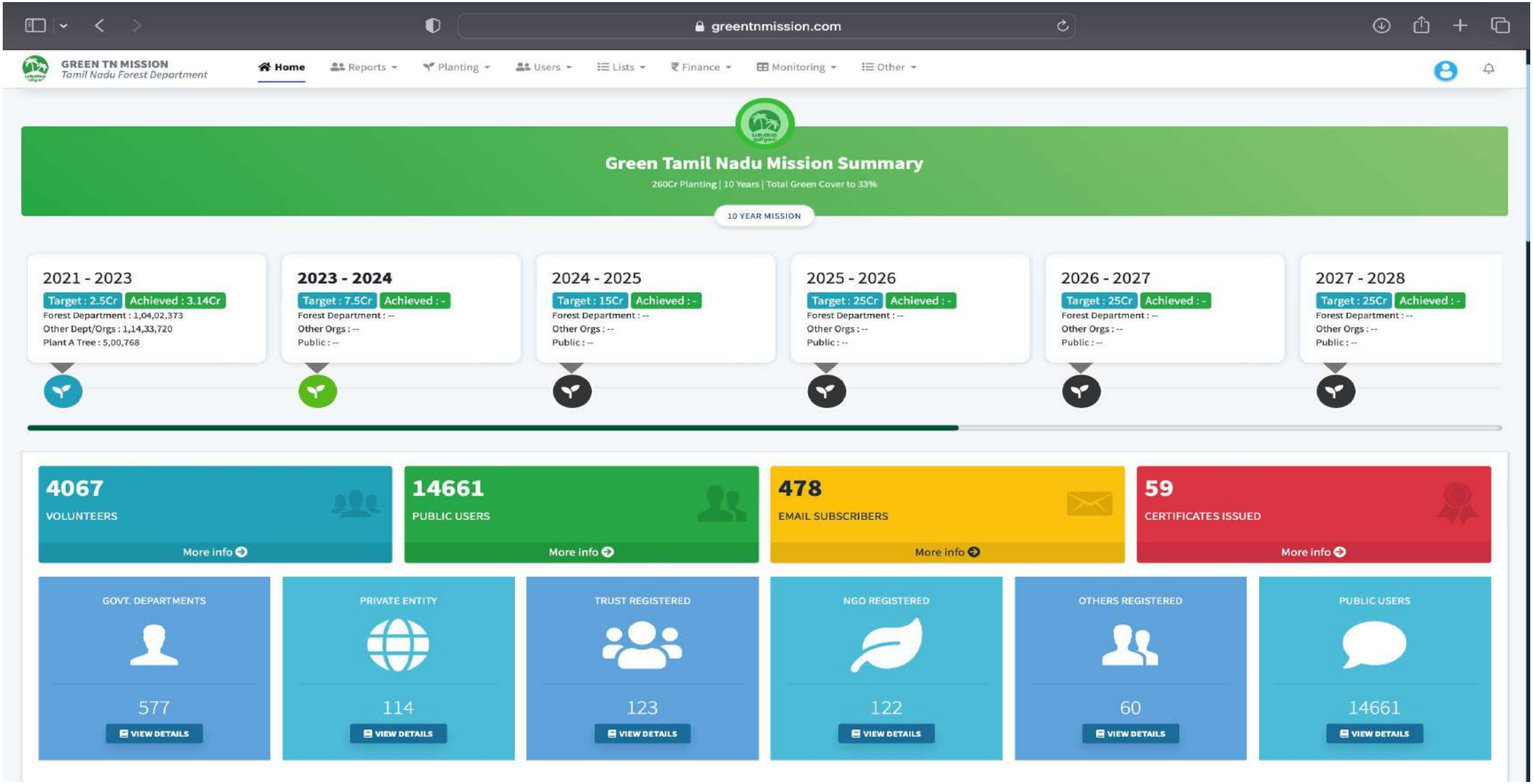
*Savings from the previous year

GREEN TAMIL NADU MISSION

Green Employment



DASHBOARD


greentnmission.com
GREEN TN MISSION
Tamil Nadu Forest Department
Home
Reports
Planting
Users
Lists
Finance
Monitoring
Other
Green Tamil Nadu Mission Summary
260Cr Planting | 10 Years | Total Green Cover to 33%
10 YEAR MISSION
2021 - 2023
Target : 2.5Cr
Achieved : 3.14Cr
Forest Department : 1,04,02,373
Other Dept/Orgs : 1,14,33,720
Plant A Tree : 5,00,768
2023 - 2024
Target : 7.5Cr
Achieved : -
Forest Department : --
Other Orgs : --
Public : --
2024 - 2025
Target : 15Cr
Achieved : -
Forest Department : --
Other Orgs : --
Public : --
2025 - 2026
Target : 25Cr
Achieved : -
Forest Department : --
Other Orgs : --
Public : --
2026 - 2027
Target : 25Cr
Achieved : -
Forest Department : --
Other Orgs : --
Public : --
2027 - 2028
Target : 25Cr
Achieved : -
Forest Department : --
Other Orgs : --
Public : --
4067
VOLUNTEERS
More info
14661
PUBLIC USERS
More info
478
EMAIL SUBSCRIBERS
More info
59
CERTIFICATES ISSUED
More info
GOVT. DEPARTMENTS
577
VIEW DETAILS
PRIVATE ENTITY
114
VIEW DETAILS
TRUST REGISTERED
123
VIEW DETAILS
NGO REGISTERED
122
VIEW DETAILS
OTHERS REGISTERED
60
VIEW DETAILS
PUBLIC USERS
14661
VIEW DETAILS


GREEN TAMIL NADU MISSION
2021-23
Kadavur, KArur


KARUR


TIRUPPUR


ATTUR


THANJAVUR


Krishnagiri District

Mangrove planting - Cuddalore

Other Departments


Education dept, madurai

RD & PR , Cuddalore

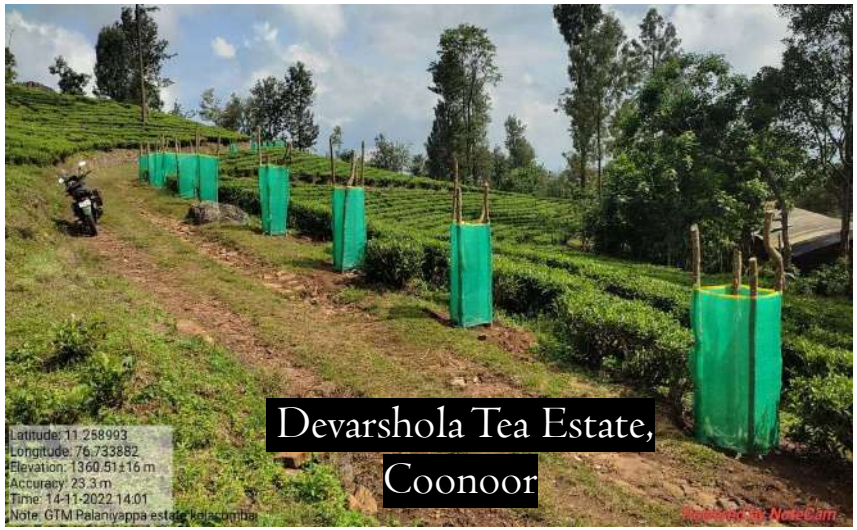

PWD, Thiruvallur

Panchayat Union, Tirunelvelli

Horticulture Dept, trichy


Highways Dept, udhagaimandalam

Public Participation



Devarshola Tea Estate, Coonoor


Balachander, Tirupur


Coimbatore


kkr spinning mills, Namakkal


Lady Willingdon Institute of Advanced Study, Mylapore

Dindugul

GREEN TAMIL NADU MISSION

NURSERIES IN POSITION (DEPARTMENT WISE)
2023-24

DRDA -722

Private - 329

Agriculture -

Revenue - 24

FD - 674

Horticulture - 58

NGO - 24

Others - 79

Total number of Nurseries in 38 districts - 1931

Donor Nursery – Nanmangalam, Chennai
funded by Hyundai/CPCL/ Kothari Petrochemicals/NATCO Pharma & others

FOREST DEPT NURSERIES

DHARMAPURI


CHENNAI


SIVAGANGAI


CUDDALORE

SALEM

OTHER NURSERIES

RURAL DEPT -TIRUVANNAMALAI

PANCHAYAT - TIRUNELVELI

PRIVATE - CUDDALORE

EVENTS


PUDUKOTTAI

NAGAPATTINAM

TIRUNELVELI


TRICHY

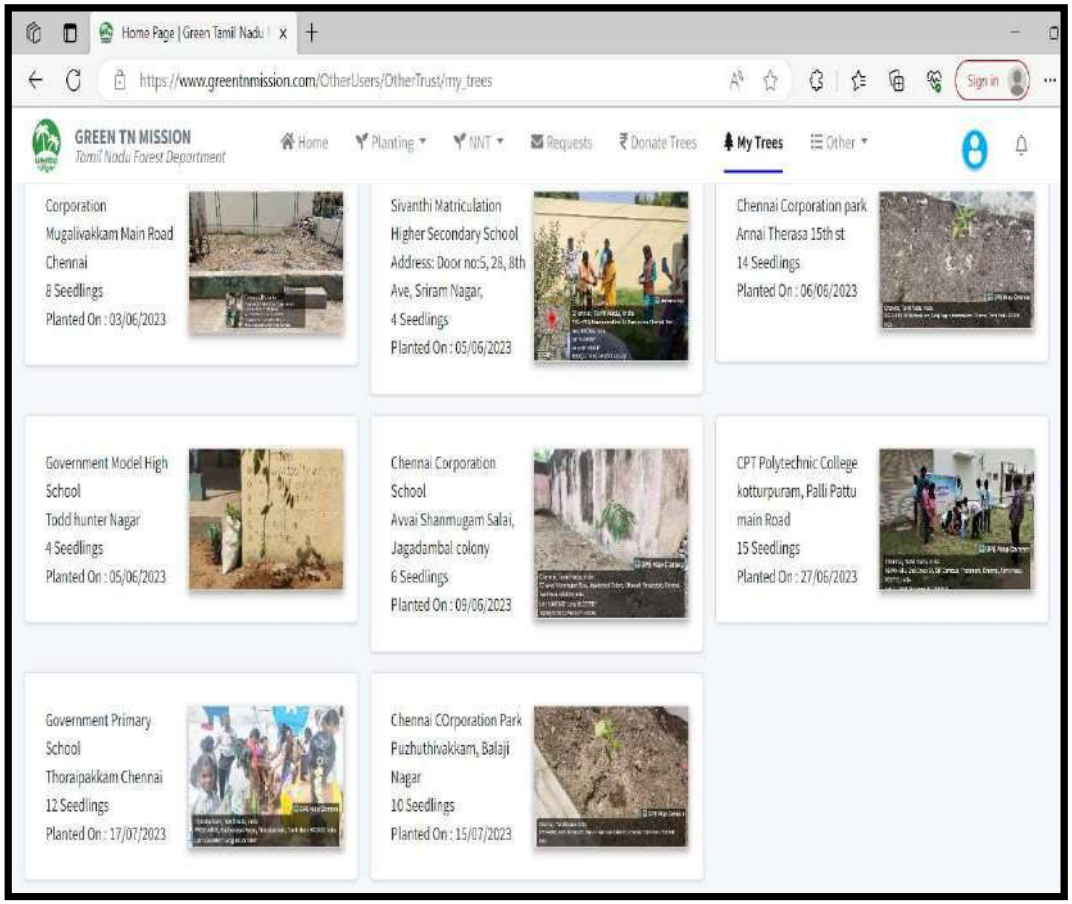
PUBLIC AWARENESS

GREEN TAMIL NADU MISSION

Afforestation of Dump Yards in Chennai

- MoU signed with Urbaser Sumeet (empanelled with Greater Chennai Corporation) on 7th July 2023

- Green Tamil Nadu Mission to provide seedlings free of cost for planting on reclaimed dumpyards for mitigating heat island effect and pollution



GREEN TAMIL NADU MISSION

Maragadha Pooncholai

Phase I: 45 no of villages

(G.O.(MS) NO:146 E&F,CC dated 24.08.2022)

Phase II: 38 no of villages
(G.O.(MS) NO:30 E&F,CC dated 09.02.2023)

Phase III: 6 no of villages - proposal submitted to Govt for approval

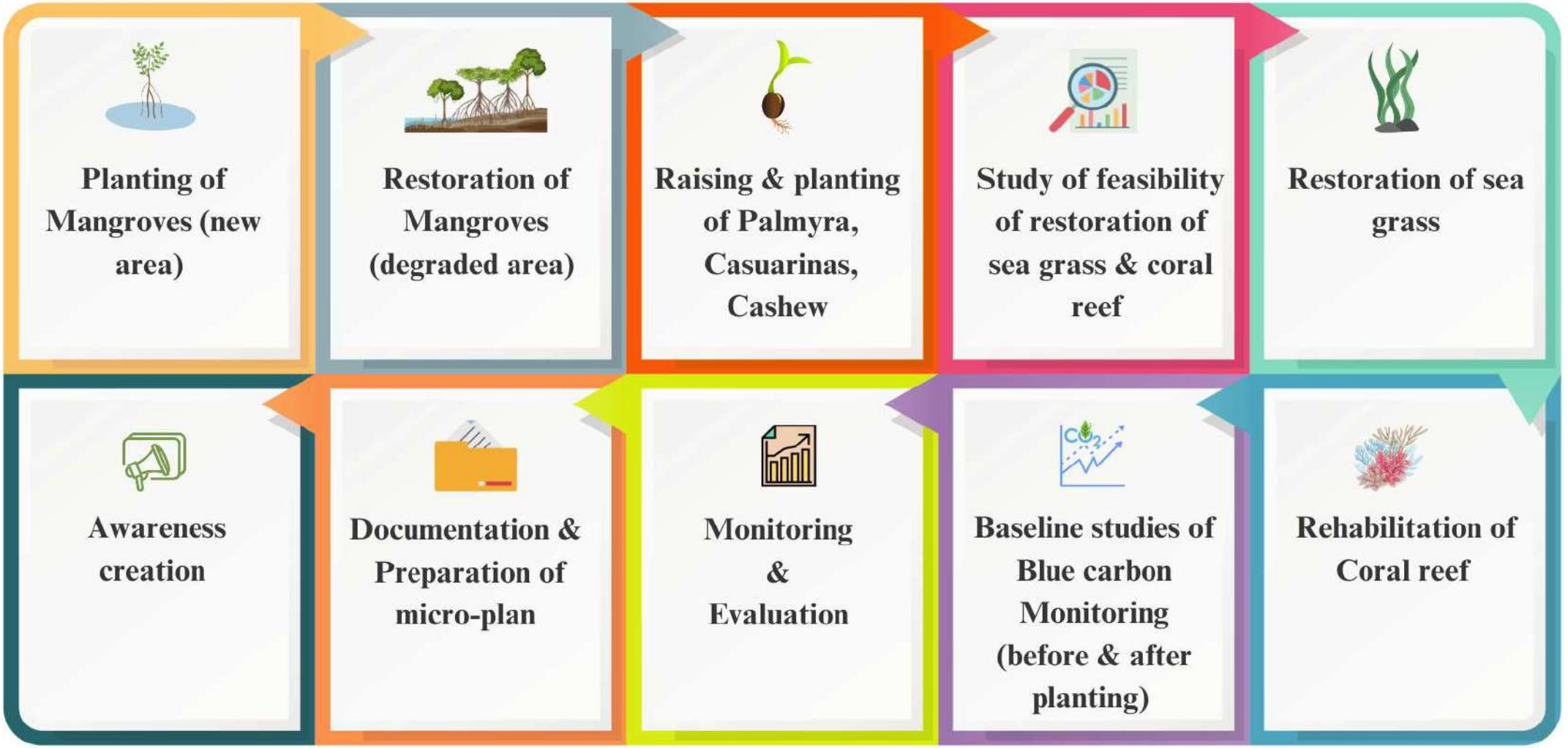
Sl No	Year	Sanctioned amount (Rs in Cr)	Amount Utilised (Rs in Cr)
1	2022-23	10.72	2.37
2	2023-24	9.05	-

*11 sites to be identified

*works being streamlined

GREEN TAMIL NADU MISSION

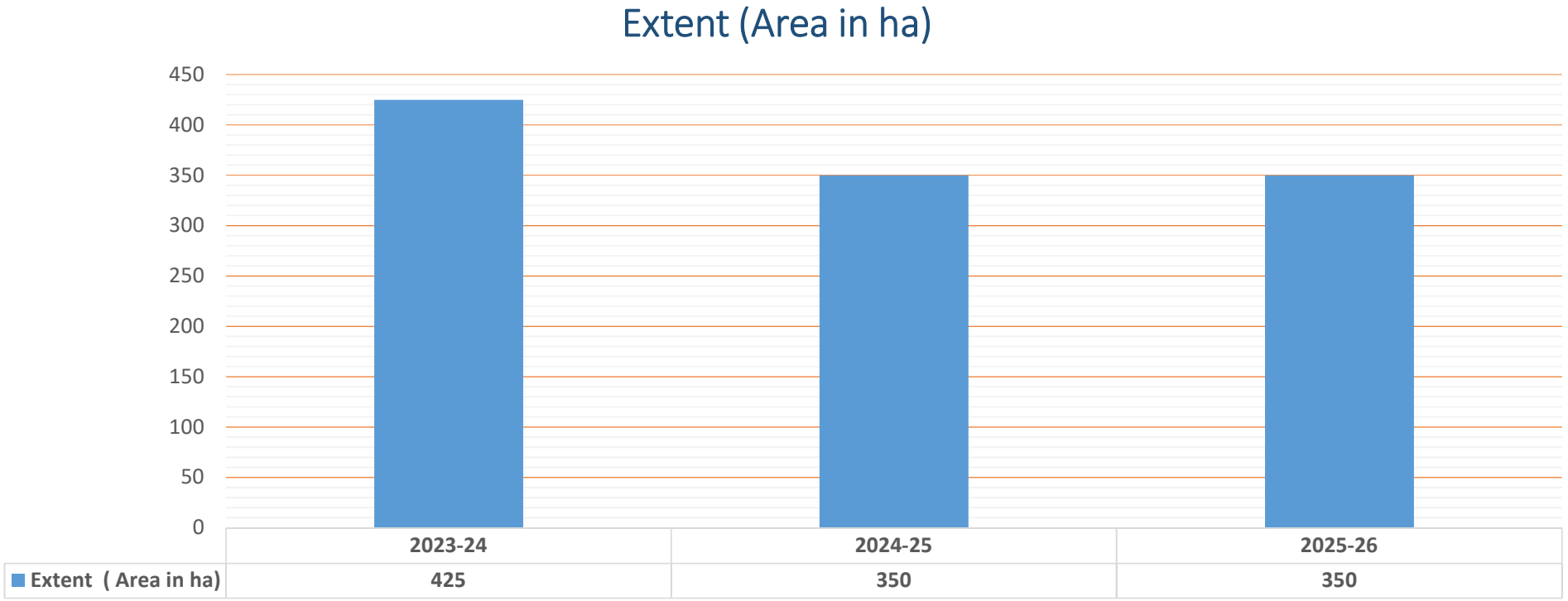
Rehabilitation of Coastal habitats (BLUE CARBON initiative) - Components



GREEN TAMIL NADU MISSION

Rehabilitation of Coastal habitats – BLUE CARBON initiative

The restoration of degraded mangrove eco system



GREEN TAMIL NADU MISSION

Namakku Naamae Thittam

- Guidelines for implementation, Operational framework and Model Estimate uploaded on the web portal.
- Provision for voluntary participation created on the web portal
- State Coordinator / Zonal Coordinator selected for facilitating NNT

GREEN TAMIL NADU MISSION

Assisted Natural Regeneration and Artificial regeneration inside/outside RFA

- Instruction issued vide GTM/783/2023 dated 19.06.2023 for annual restoration plan for five years by December 2023 (Commencement of work from July 2024), use of wide range of climate resilient species, use of treated water and solid waste
- Rapid Assessment and Regeneration Survey
- ANR/AR with the help of Private institutions and local communities
- 4500 sq km of degraded forest patches identified
- The ANR/AR is expected to increase the forest cover by about 3-4%

GREEN TAMIL NADU MISSION

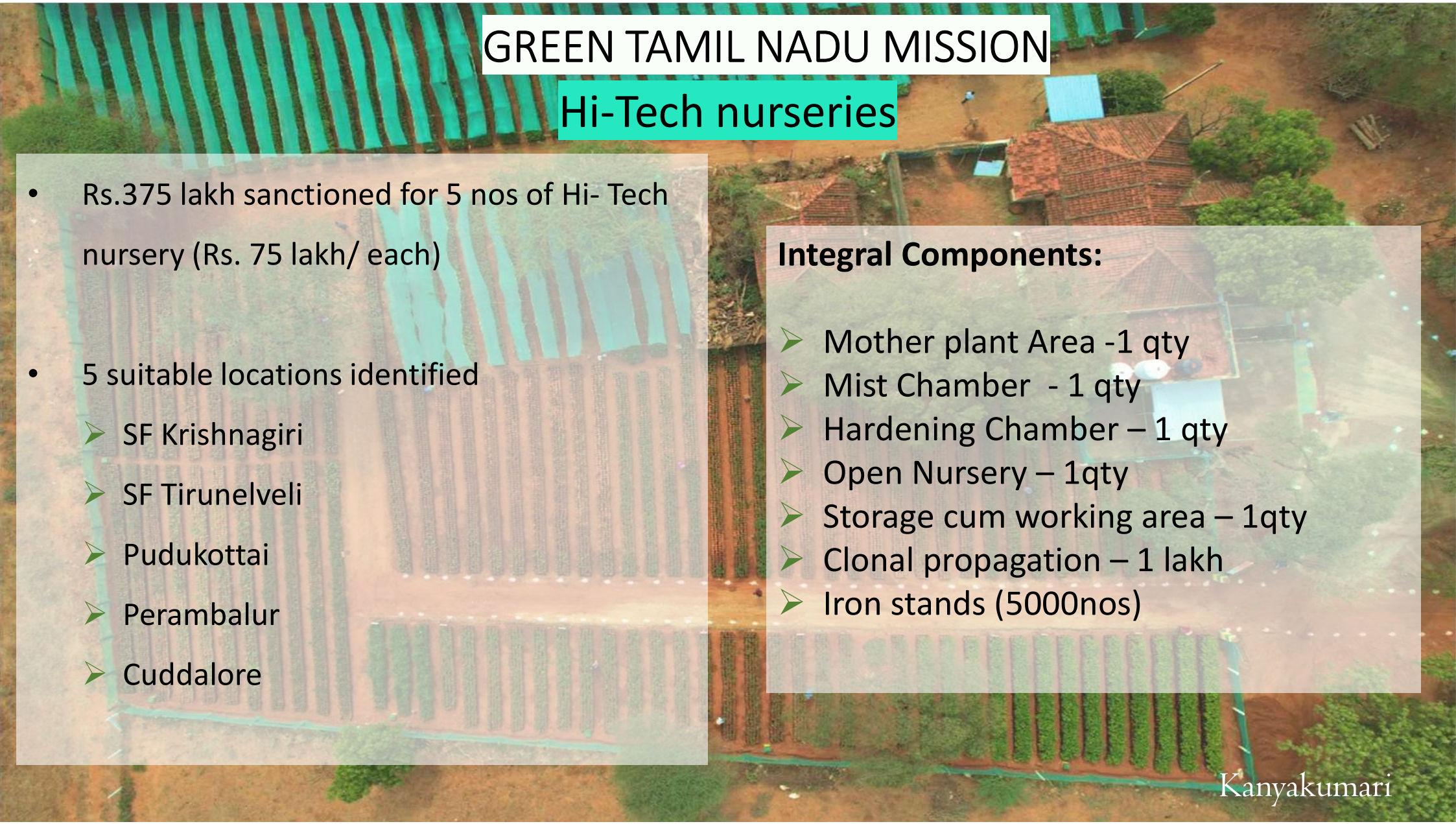
Hi-Tech nurseries

- Rs.375 lakh sanctioned for 5 nos of Hi- Tech nursery (Rs. 75 lakh/ each)

- 5 suitable locations identified
  - SF Krishnagiri
  - SF Tirunelveli
  - Pudukottai
  - Perambalur
  - Cuddalore

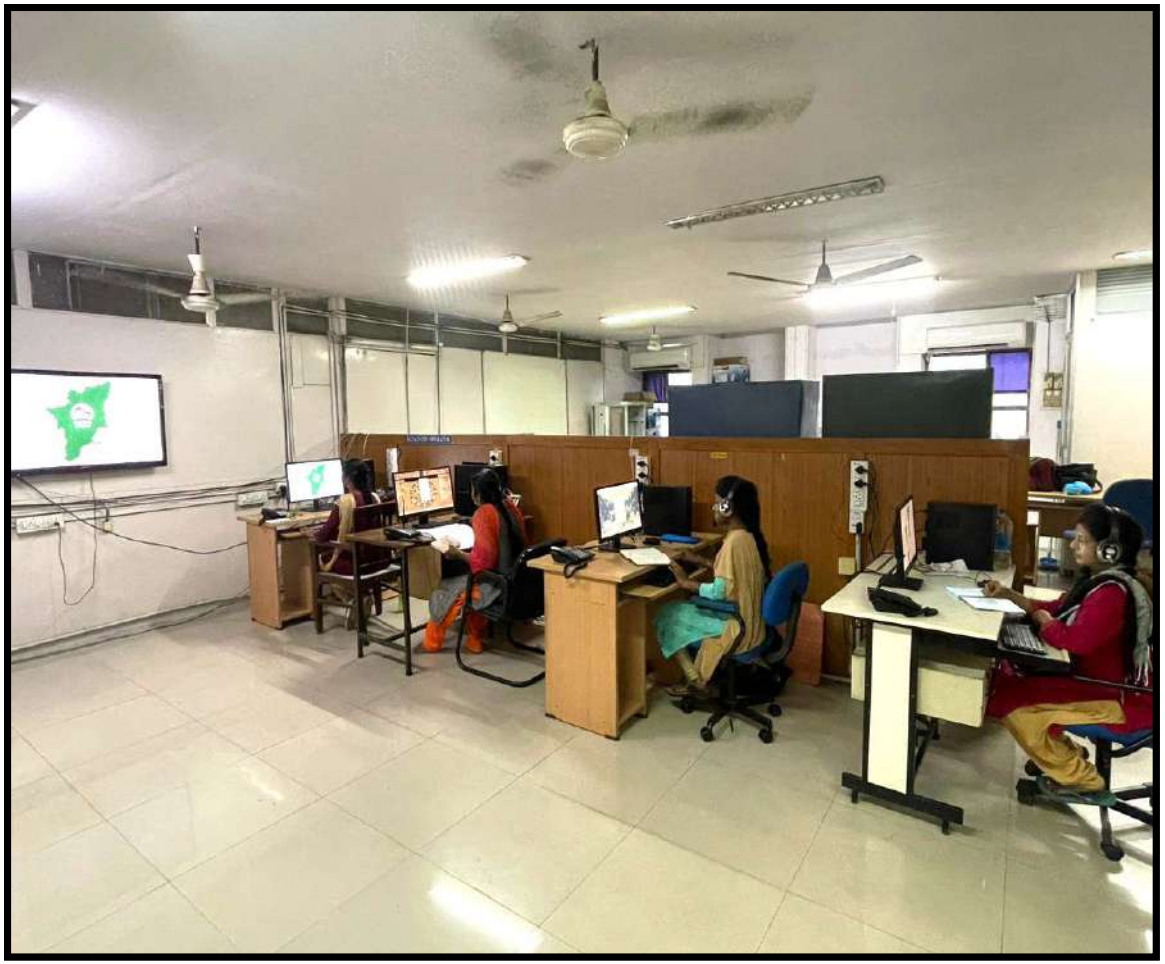
Integral Components:

- Mother plant Area -1 qty
- Mist Chamber - 1 qty
- Hardening Chamber – 1 qty
- Open Nursery – 1qty
- Storage cum working area – 1qty
- Clonal propagation – 1 lakh
- Iron stands (5000nos)



GREEN TAMIL NADU MISSION

Dial a Tree (proposed)



Convergence under GTM

Mangrove plantations – MS Swaminathan Foundation, Forest Department, Revenue Department, NGOs, Tribal youths

Maragadha Pooncholai – Rotary Action Club for implementing green infrastructure component

Rehabilitation of dumpyards – Urbaser Sumeet

GTM - WAY FORWARD (for making it as people's movement)

1) DIAL A TREE – Free delivery of seedlings to willing households.

2) Carbon Development Project with the assistance of TNAU, Coimbatore.

3) Enhancement of livelihood opportunities of raising of seedlings through VFC's, SHGs etc with a buy back guarantee.

4) Interdepartmental convergence and NGOs coordination

GTM - WAY FORWARD

Use of treated Municipal water and solid waste for GTM planting

10000 seedling in each of the 6000 panchayats to be raised, planted and geotagged as a livelihood improvement measure.

Concurrent Monitoring & Evaluation

(TNAU, Coimbatore -Proposal submitted to the Government)

Third Party evaluation

(NABCONS, New Delhi – Proposal submitted to the Government)


THANK YOU

Tamil Nadu Climate Change Mission

DISTRICT LEVEL WORKSHOP ON CLIMATE CHANGE

Department of Environment and Climate Change
Government of Tamil Nadu

TAMIL NADU CLIMATE CHANGE MISSION

Hon'ble Chief Minister launched Tamil Nadu Climate Change Mission at a total outlay of Rs.500 Crores on 09.12.2022

Tamil Nadu Climate Change Mission

The Mission will work towards

- ✓ Reducing Greenhouse gas emissions
- ✓ Emission reduction by use of efficient public transport
- ✓ Promote Use of clean and green energy
- ✓ Eco-alternative solutions to single use plastic
- ✓ Sustainable practices for disposal of solid waste
- ✓ Creating awareness on Climate change

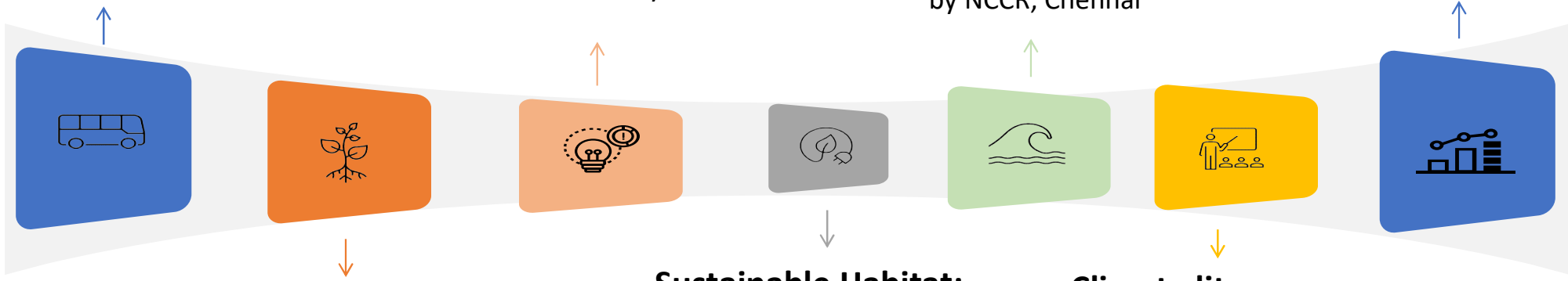
Baseline Studies FY 2021-2022

Reducing Emissions from Mass Transport
by IIT Madras

Waste to Energy
by CCCDM, Anna University

Rehabilitation of coastal habitats
by NCCR, Chennai

Climate Smart Villages
by WRI, Bangalore



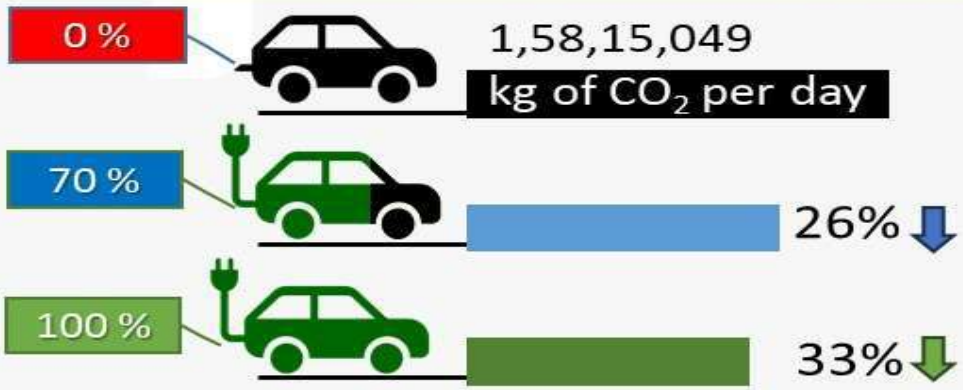
Carbon Enrichment
By CCCDM, Anna University

Sustainable Habitat: Energy saving measures.
by Ela Green, Chennai

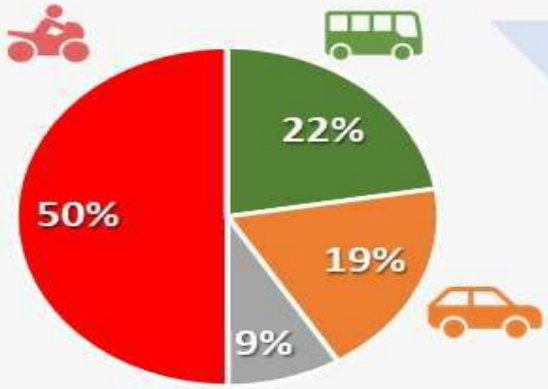
Climate literacy
by citizen consumer and civic action group

Baseline study on Reducing Emissions from Mass Transport

Projections on Tail pipe emissions for 2030



Percentage of Emission



Metro have the least impact even when operated at 50% occupancy

Please Prefer Public Transport

CARBON ENRICHMENT

BIOMINING SITE DETAILS

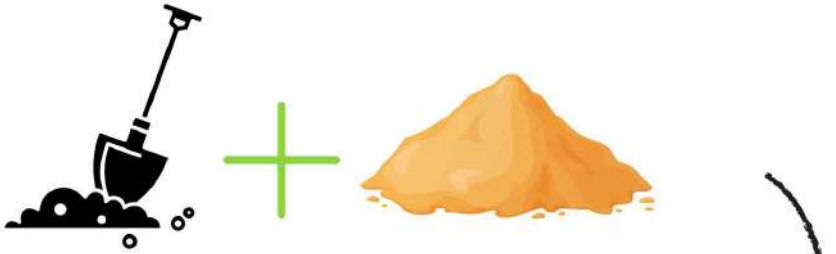
Perungudi

225 acres

Bio Earth
(30-35% of legacy waste)

35 years

Soil Organic Carbon = 4.9%



0.5 kg Bio Earth
from Biomining site

1 kg soil from
Madurapakkam RF*

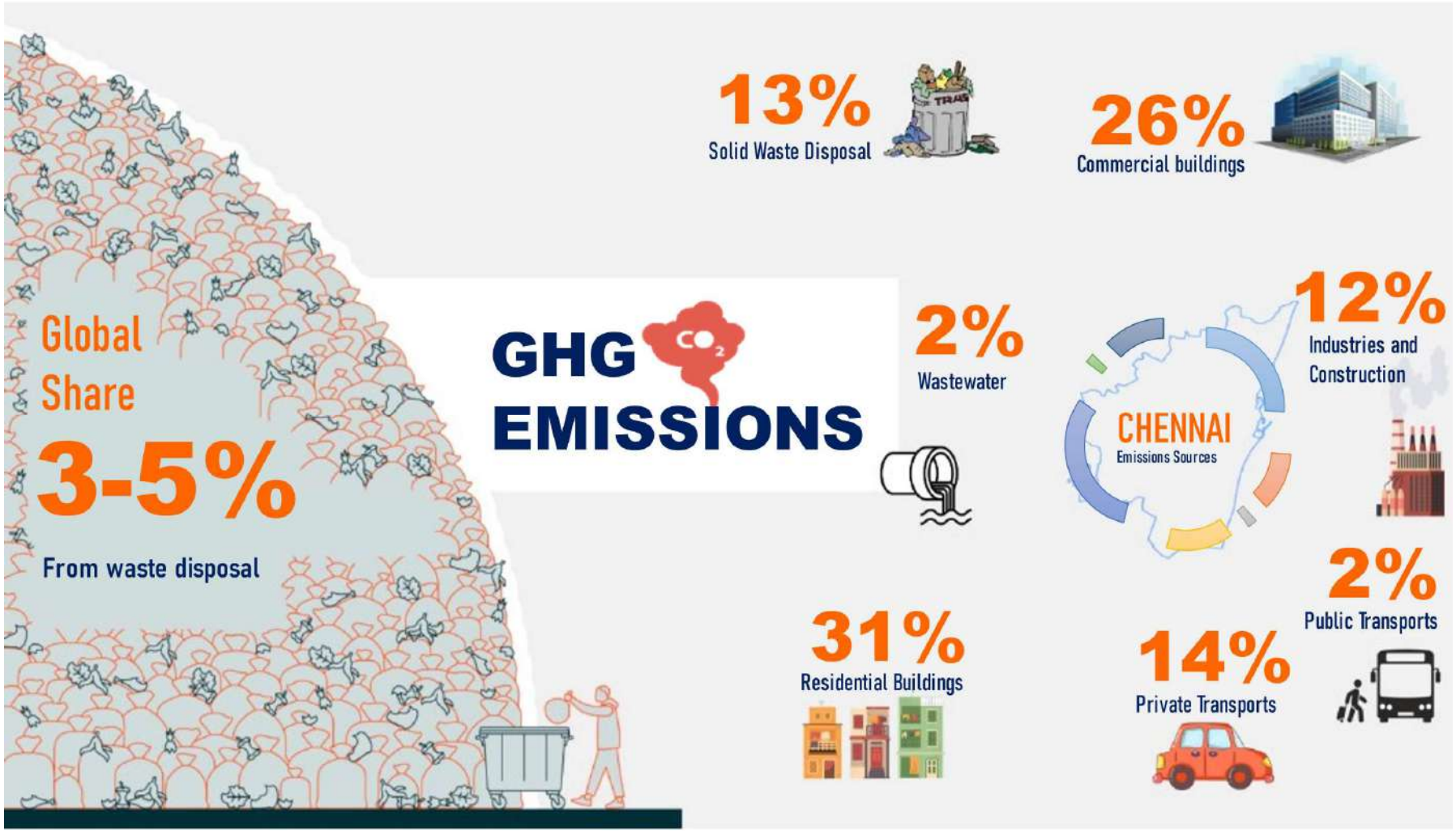
Soil Organic Carbon

Soil Fertility

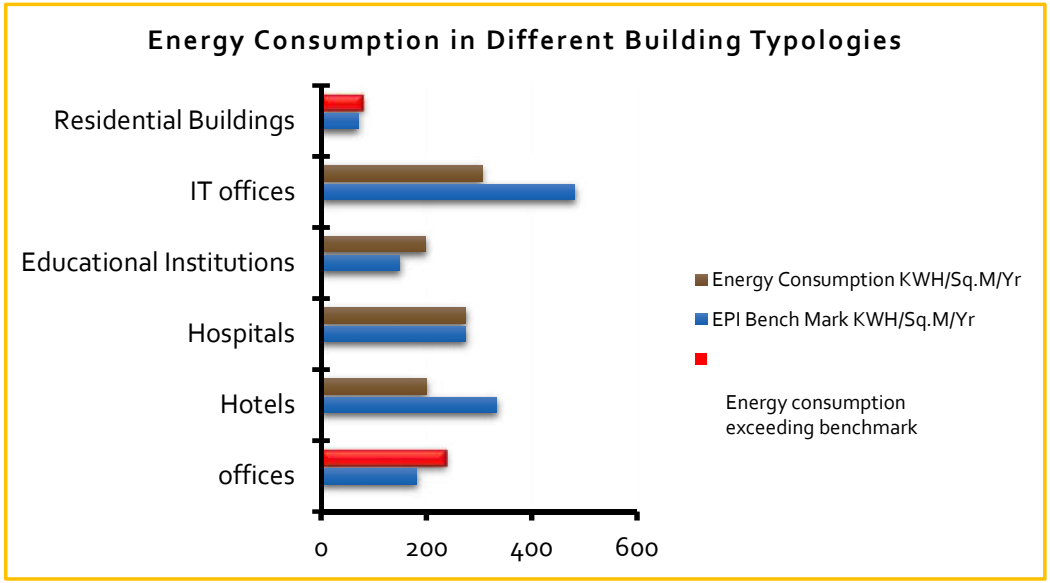
Water Retention

Nutrient Availability

*RF- Reserve Forest


Global Share
3-5%
From waste disposal
GHG EMISSIONS
13%
Solid Waste Disposal
26%
Commercial buildings
2%
Wastewater
12%
Industries and Construction
CHENNAI
Emissions Sources
31%
Residential Buildings
14%
Private Transports
2%
Public Transports

Measures to be taken for Energy Efficiency in buildings



WAY FORWARD

New buildings

- Integrated design approach (Workshop & Awareness)
- Adoption of ECBC
- Awareness on green ratings & design tools

Existing buildings

- Retrofits

Awareness & Capacity building

- Encourage research and innovation
- Awareness campaigns and training programs
- Foster partnership to enhance capacity building efforts
- Recognizing buildings for their energy efficient practices

Monitoring & Reporting

- Establish online dashboards
- Regularly collect and analyse energy consumption data
- Publish periodic reports highlighting the progress
- Periodically review and update the action plan

CLIMATE LITERACY

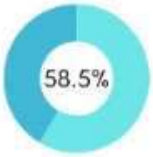
AWARENESS LEVELS

The term "Climate Change"

Awareness through school text books

GHG and human activities

Difference between weather & climate



Government Initiatives

Knowledge on Climate Change aids in mitigation

RECOMMENDATIONS

Students

Curriculum with climate aspects and practical components.

Teachers

Training of Trainer and nomination as Climate Change Champion.

Youth

Inclusion of climate change in training and provision of online courses.

Government Officials

Orientation on climate change and involvement of youth from Community Climate Change Clubs.

TAMIL NADU CLIMATE CHANGE MISSION 2022- 2023

1. Stakeholders workshops on integrating capacity building workshop for local communities, government line departments
2. Rehabilitation of Coastal Habitats for Climate Change Adaptation through eco Friendly Solutions
3. Carbon Enrichment Programme
4. Sustainable Habitat Energy Saving Measures in Government and Private Buildings
5. Climate Literacy and International Climate Summit
6. Climate Smart Villages
7. Climate Resilient Green Temples

Climate Clubs

- The government of Tamil Nadu has created **11,469** eco clubs in various schools of Tamil Nadu
- To educate young minds about the climate change, its impacts, and to move forward towards adaptation and mitigation measures.
- The government intends to rejuvenate and remodel the existing eco-clubs as Climate Clubs.
- These Clubs shall be engaged in regular Club activities, interactive sessions, experimental learning, conducting quiz competitions etc.

CHIEF MINISTER' S GREEN FELLOWSHIP PROGRAMME

- Research best practices adopted by other districts, states and countries on Environment and Climate Change
- Assisting in designing innovative new policy solutions and citizen engagement strategies
- Establish institutional feedback mechanisms for comprehensive policy improvement.
- Use of technological tools for reporting and delivering of Environmental services

PASUMAI PALLIKOODAM THITTAM (GREEN SCHOOLS PROGRAMME)

- For the first phase 25 schools are selected – (20 Lakhs per school)
- Torchbearers for other schools to follow the footprint
- Renewable Energy source – Solar
- Garden – Native trees and Herbs
- Waste management & Plastic free zone

1. **Government Higher Secondary School, Valliyoor, Tirunelveli**
2. **Government Higher Secondary School, Vanniconendal, Tirunelveli**

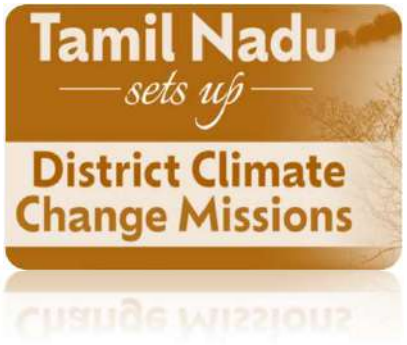
Carbon Neutral Hubs

- Four locations, **Coimbatore, Nilgiris, Rajapalayam** and **Rameshwaram** were selected for transforming into Carbon Neutral Hubs.
- Various Stake holders were active participants of the workshop to bring in numerous ideas for the action plan to achieve Carbon neutrality in their respective districts

Carbon Neutral Workshop, Coimbatore

Carbon Neutral Workshop, Ooty

DISTRICT CLIMATE CHANGE MISSION



- The District Collectors – Chairperson of the District Climate Change Mission
- The District Forest Officers - District Climate Officers
- The District Climate Change Mission shall work with all line Departments

Role of District Administration

- Identification and prioritization of sectors in districts vulnerable to climate change.
- Formulation of specific climate change mitigation and adaptation strategies.
- Preparation of District Climate Change Mission Documents.

Tamil Nadu – Governing Council

The Government has issued orders for setting up Tamil Nadu Governing Council on Climate Change with Eminent Scientist, Experts from International Organizations, Chief Secretary and Secretaries to Government, Hon'ble Ministers and Stake Holders from various sectors to

i. Provide a policy directive to the Tamil Nadu Climate Change Mission

ii. Advise on Climate Adaptation and Mitigation Activities

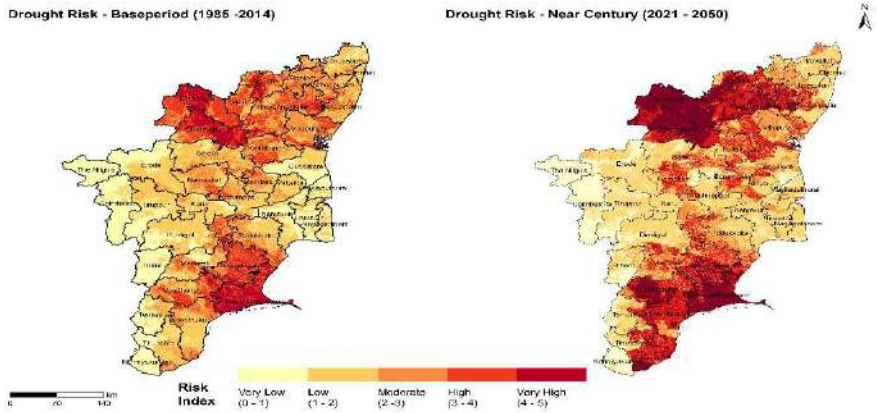
iii. Approve Tamil Nadu State Action Plan on Climate Change

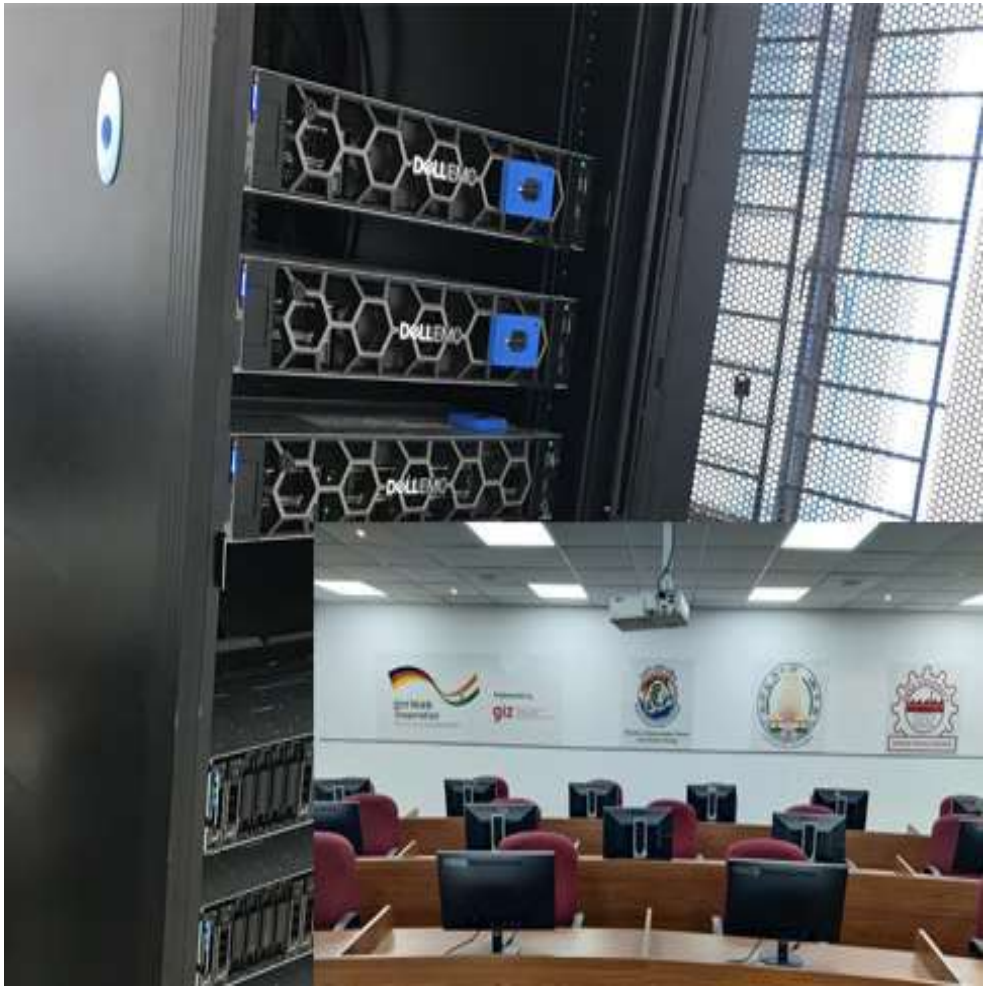
iv. Provide guidance to the State Climate Change Missions and District Climate Change Missions on implementation of various Climate initiatives.

Climate Studio

- An exclusive Climate Change Research Center set up at Centre for Climate Change and Disaster Management (CCCDM) at Anna University

- It develops regional climate scenarios using Regional climate models, sectoral impacts and vulnerability assessments based on continuous assessment reports of IPCC.





TNGCC - Tamil Nadu Green Climate Company

Steering Tamil Nadu to a Climate Smart State

Green Tamil Nadu Mission	Tamil Nadu Climate Change Mission	Tamil Nadu Wetland Mission

TNGCC Mandate

Identify sectoral priorities like Transport

Identify sectoral priorities like Sustainable waste management

Identify sectoral priorities like Energy Transition

Work closely with communities on climate literacy & Grassroots Climate Actions

Access Tamil Nadu Climate risks & Vulnerability

Forge Local, National and Global partnership for Climate Action

Conceptualize and setup financing models for climate project

Preparing a comprehensive pathway to a Resilient & Climate Smart Tamil Nadu

Tamil Nadu's Climate Actions has been

decentralised to District levels and further down to villages

so as to buildup a people's movement to combat climate crisis.

Thank You

Schweizerische Eidgenossenschaft
Confédération suisse
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CapaCITIES
LOW CARBON • CLIMATE RESILIENT • CITY DEVELOPMENT

Tamil Nadu Climate Change Mission

Building Climate Resilience in Tirunelveli City

Climate Stakeholder Workshop, Tirunelveli
15th February 2023

south pole group

ICLEI Local Governments for Sustainability

econcept
Research / Consulting / Evaluation

ICLEI – Local Governments for Sustainability

A global network of more than 2500 local & regional governments committed to sustainable urban development

Project Phases

Phase 1 (2016-2019)

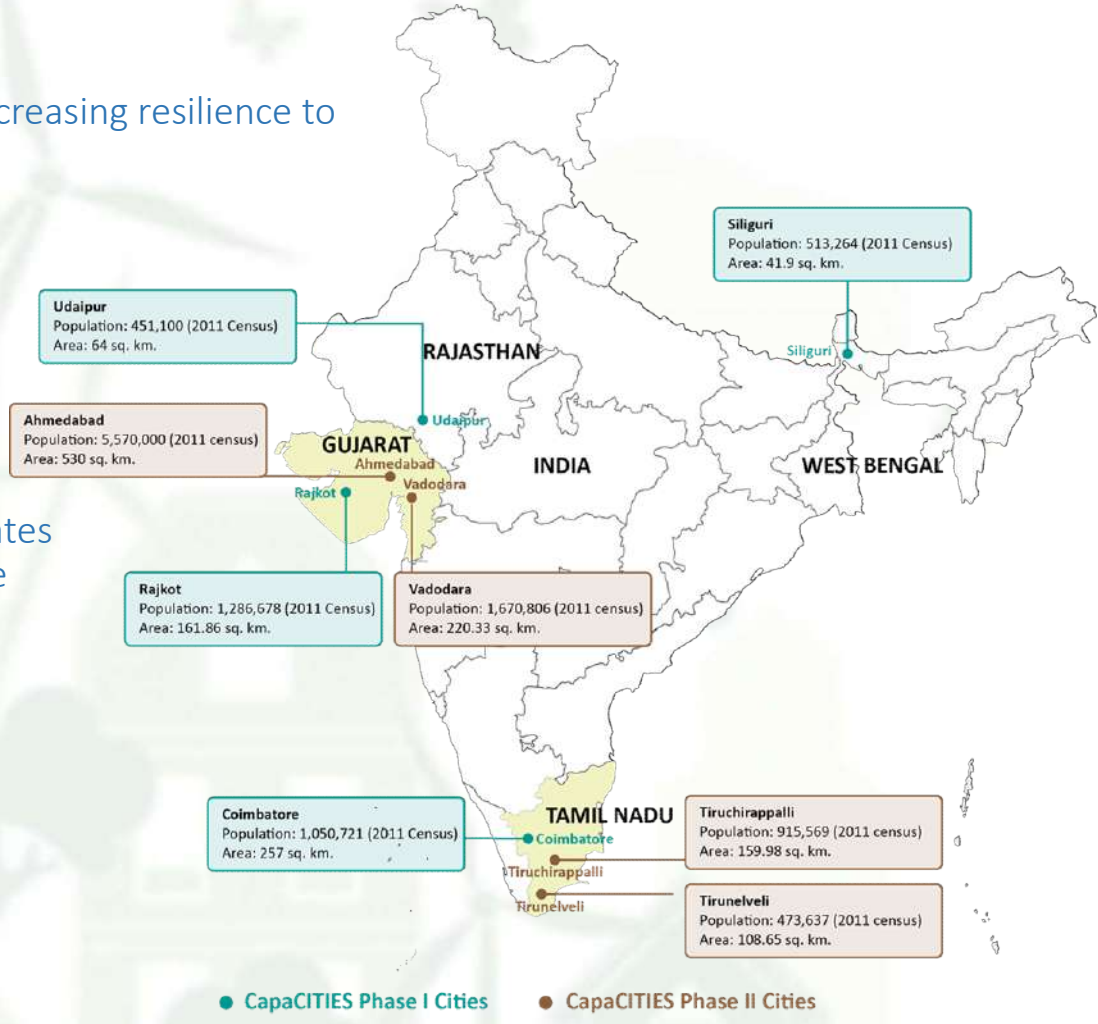
Objective: Lowering greenhouse gas emissions growth path and increasing resilience to climate change in 4 Indian cities through CRCAP

Public Sector Partners:
Municipal Corporations of Coimbatore, Rajkot, Siliguri and Udaipur

Phase 2 (2019-2023)

Objective: Mainstreaming climate action in 8 Indian cities and 2 states by enhancing capacities to develop climate resilience infrastructure

Public Sector Partners:
Municipal Corporations of **Coimbatore**, Rajkot, Siliguri, Udaipur, **Tirunelveli, Tiruchirappalli**, Vadodara, and Ahmedabad and State Government of Gujarat and **Tamil Nadu**



Climate Change and Cities

Climate Change is a global phenomenon and all countries, developed or otherwise need to take actions urgently to limit climate change to 1.5 ^{o}C

Need of the hour: Sustainable Urban Development considering Climate Change Mitigation and Adaptation aspects

Climate Resilience = Climate Change Mitigation + Adaptation

Preparation of Climate Resilient City Action Plan

Climate Resilient Cities Action Plan – Prepared using the ClimateResilientCities (CRC) Methodology updated to include Net-Zero Scenario Planning and Target Setting in line with the GoI's target of Carbon Neutrality by 2070

<u>Status of Climate Resilient Cities Action Plan for Tirunelveli City</u>:

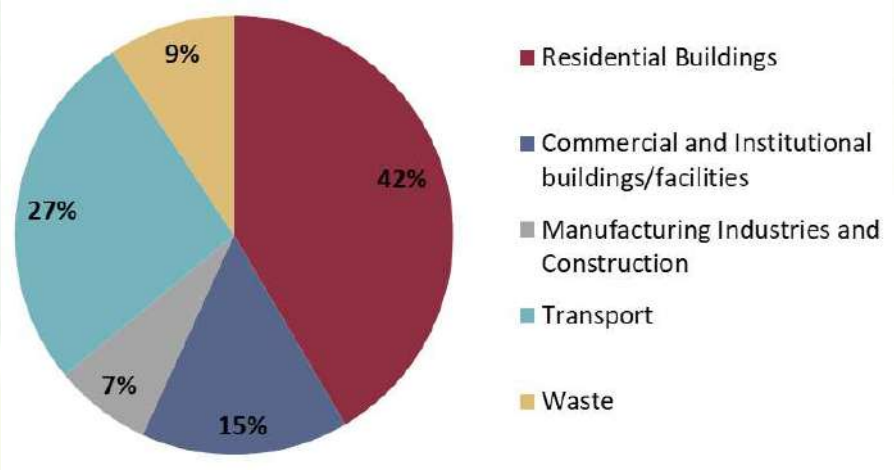
- ✓ **City Profile and Gap Analysis –** Completed
- ✓ **GHG Emission Inventory (2021-22) –** Completed
- ✓ **Climate Vulnerability and Risk Assessment –** Completed
- ✓ **CRCAP with Net-Zero Scenario Actions & Targets** – Draft Completed.

GHG Emission Inventory of Tirunelveli

Sector-wise GHG Emission in Tirunelveli Municipal Corporation, (2021-22)

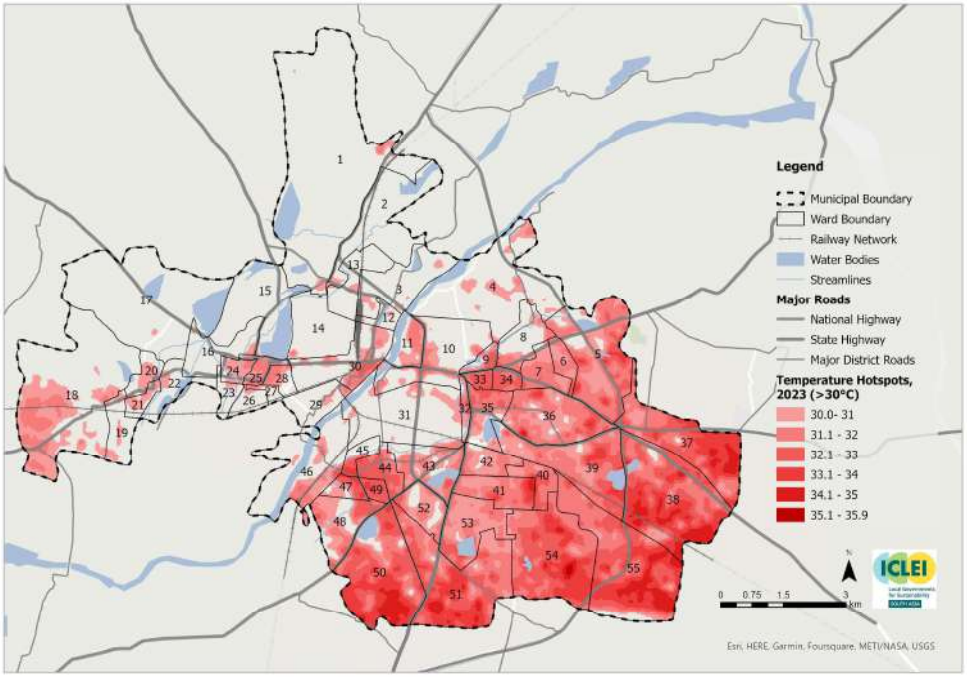
GHG Emissions Baseline (2021-22) = 0.73 Million tCO2e

Per Capita Emission: 1.32 tCO2e

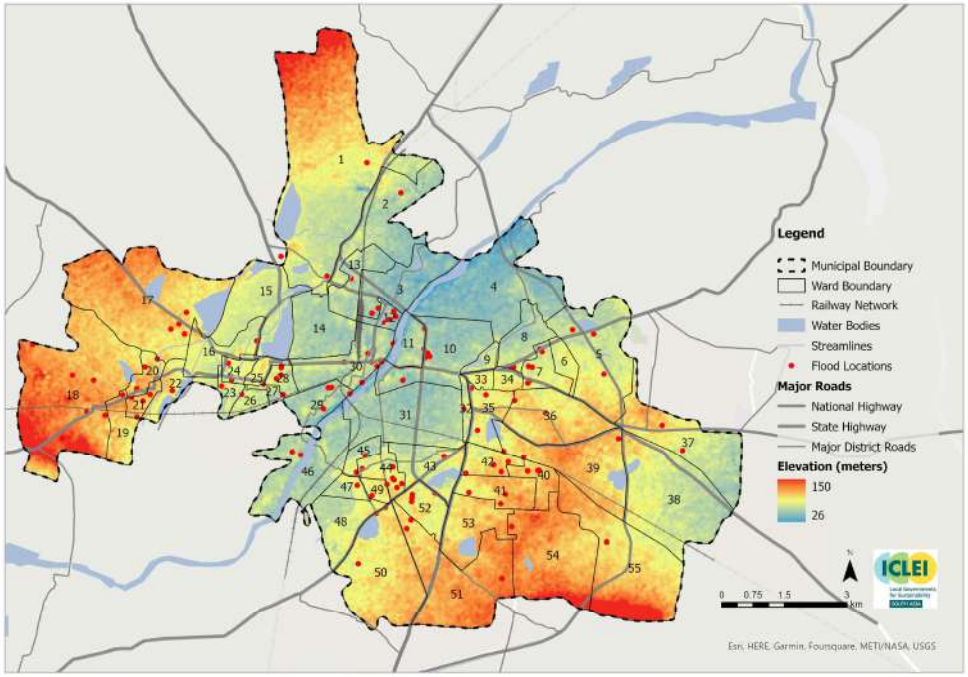


Tirunelveli M.Corp	2017-18	2018-19	2019-20	2020-21	2021-22
Energy Consumption (GJ)	55,33,939	56,18,026	57,87,734	49,79,827	60,04,395
GHG Emission (tCO2)	6,76,583	6,80,066	6,92,386	6,36,6278	**7,29,704**

Climate Risk and Vulnerability Assessment of Tirunelveli



Heat Hotspot areas



Flood Vulnerable Locations

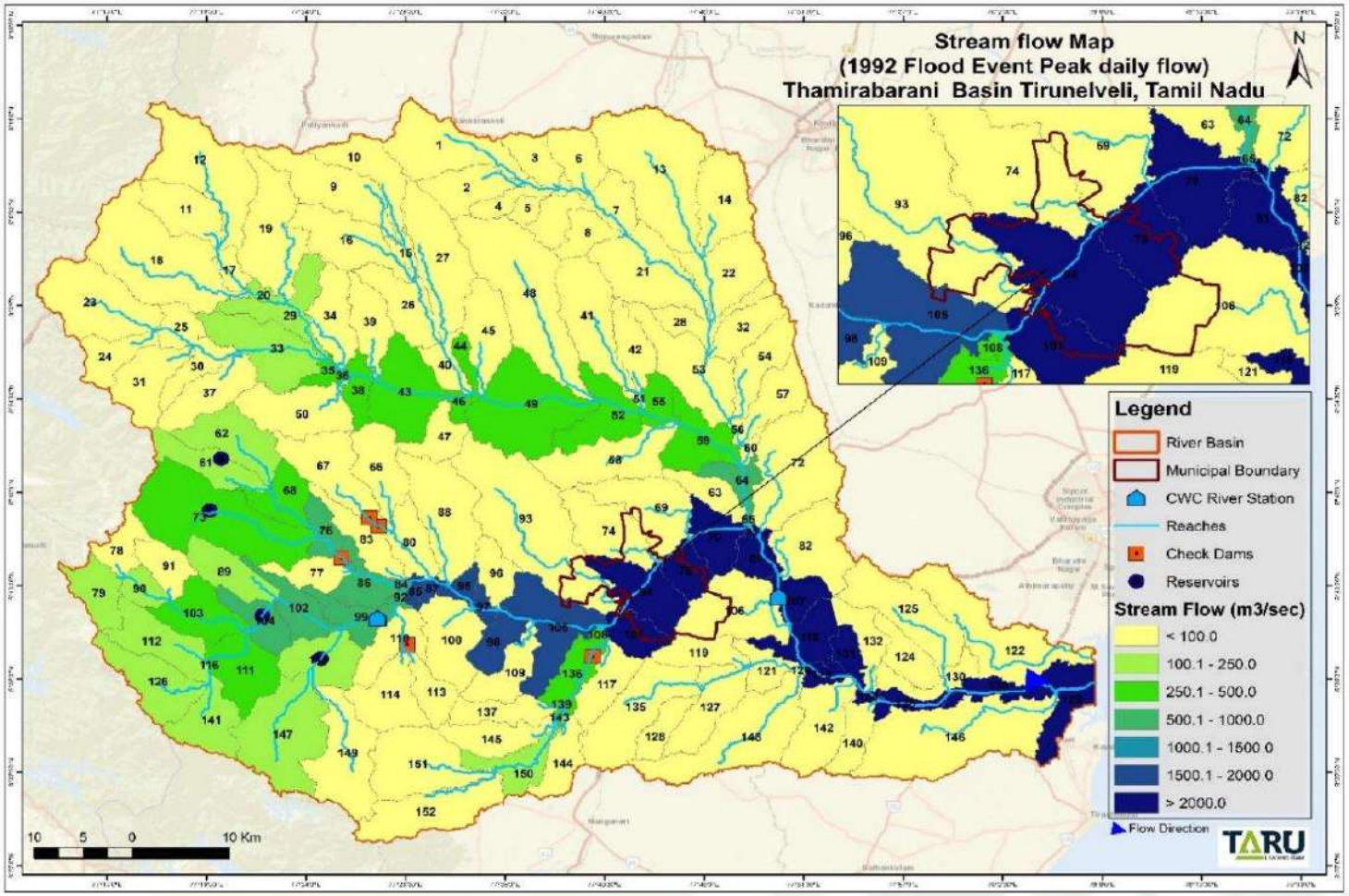
Technical Assistance to Tirunelveli on Flood Management

Watershed Assessment and Flood Early Warning and Management System

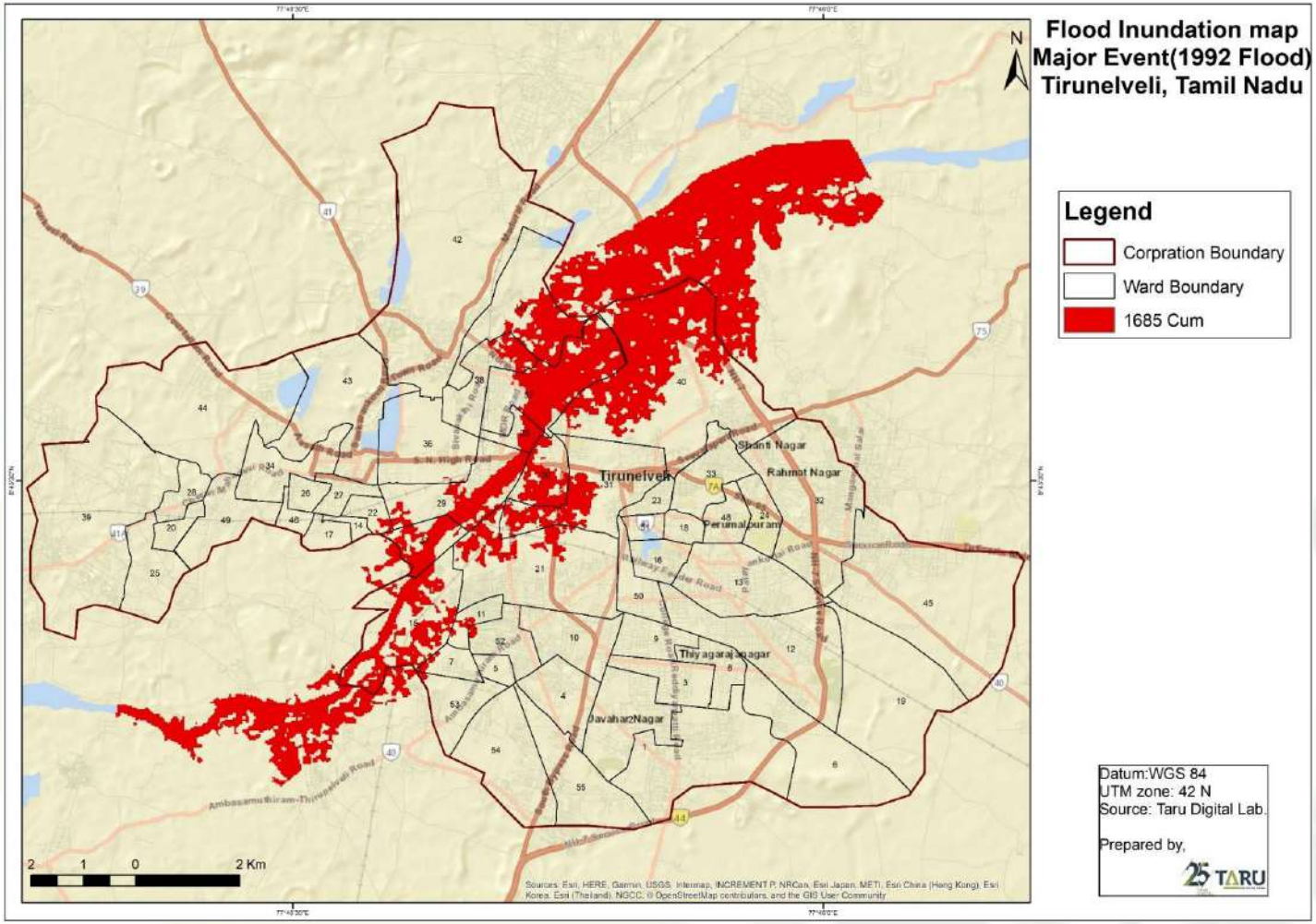
- Watershed Assessment of Flood Vulnerable Locations in Tirunelveli to identify structural and nature-based solutions
- Preparation of a city-wide watershed management plan
- **Feasibility study to deploy Flood Early Warning and Management System in Tirunelveli for Thamirabarani river**

Feasibility study for deploying Flood Early Waring System for Thamirabarani river

Streamflow Estimation at Ungauged Basins



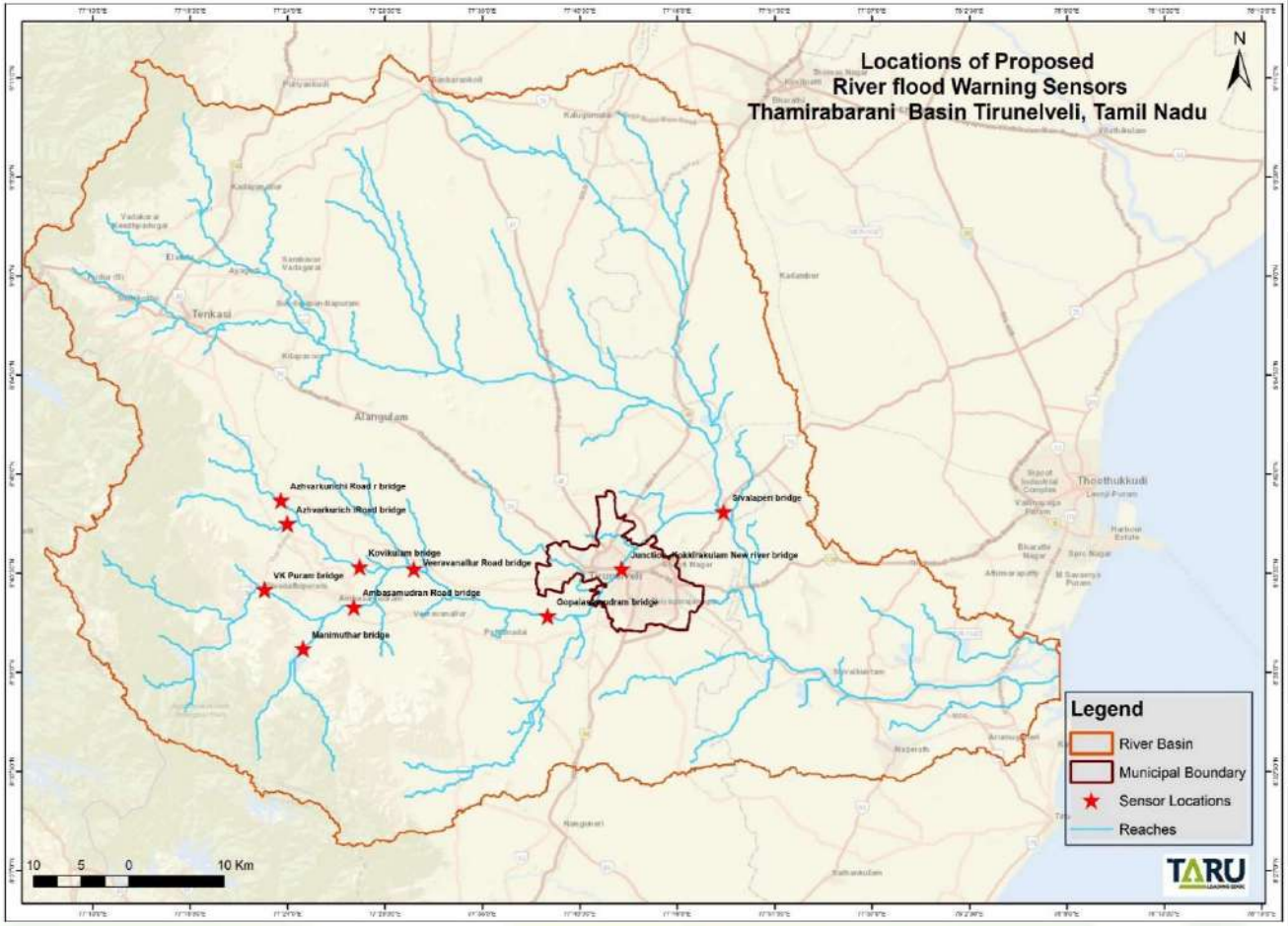
Flood Inundation Map for 1992 flood



Warnings for different water levels upstream

Discharge (Cumecs)	Water Depth at Mukkudal (m)	Water depth from WGS84 datum (m)	Warnings to the Tirunelveli city	Wards will get affected at City	Thresholds set for the Mukkudal AWLR (m)
50	0.38	67.38	**Safe**	-	**<68.13**
80	0.60	67.60			
100	0.75	67.75			
150	1.13	68.13			
170	1.28	68.28	**Warning**	3 & 4	**68.13-68.88**
200	1.51	68.51			
214	1.62	68.62			
250	1.89	68.89			
500	3.77	70.77	**Danger (2017, 2021 flood)**	2, 3, 4, 11, 12, 29 & 46	**68.88-74.54**
750	5.66	72.66			
1000	7.55	74.55			
1250	9.43	76.43	**HFL (1992 Floods)**	2, 3, 4, 10, 11, 12, 13, 28, 29, 30, 31, 44, 45, 46 & 47	**>74.54**
1500	11.32	78.32			
1649	12.45	79.45			

Feasible Locations for fixing Realtime Flood Warning Sensors



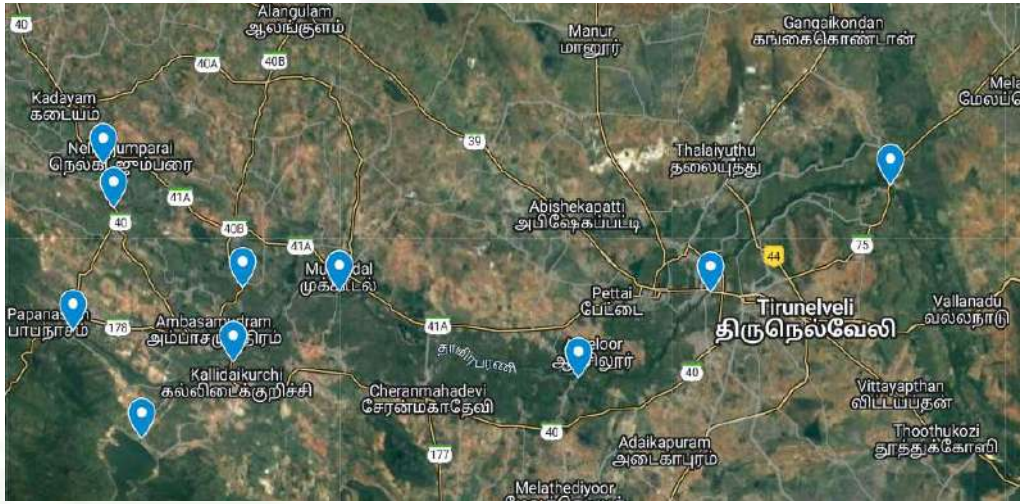
S.No.	Location	Description
1	VK Puram bridge near Madura Coats	All Papanasam outlet streams confluence before the bridge
2	Manimuthar bridge near the dam outlet	The first crossing after Manimuthar Dam
3	Pananjadi - Ambasamudram Road Kovikulam bridge	The crossing after Gadana and Ramanathi confluence
4	Kallidaikurichi- Ambasamudran Road bridge	The crossing after the confluence of streams from Papanasam and Manimuthar
5	Mukkudal-Veeravanallur Road bridge	Crossing after confluence of Gadana and Thamirabharani
6	Azhvarkurichi to Ambasamudram Road bridge	Upstream of Gadana river
7	Pottalpudur-Azhvarkurichi Road river crossing bridge	Upstream of Ramanathi
8	Gopalasamudram bridge	Downstream of Pazhavur and Suthamalli check dam
9	Junction–Kokkirakulam New river bridge	Inside city
10	Sivalaperi bridge	Downstream of city

FEWMS Implementation in Tirunelveli

Flood Early Warning and Management system Components:

- Automatic Water Level Recorders in 10 identified locations in Thamirabarani river basin
- 1 Automatic Weather Station (AWS) & 3 Automatic Rainfall Gauging Stations (ARGS) in 4 zones of city
- 50 Cameras in Flood Vulnerable Areas in the city
- System Integration and Software development for the Flood Early Warning and Management system, and integration with ICCC, Tirunelveli Smart City

10 identified AWLR sensor locations in Thamirabarani river basin (in consultation with Water Resources Department, TNPWD



Identified Automatic Weather Station (AWS) location at WTP of Ariyanayagipuram Headworks Project river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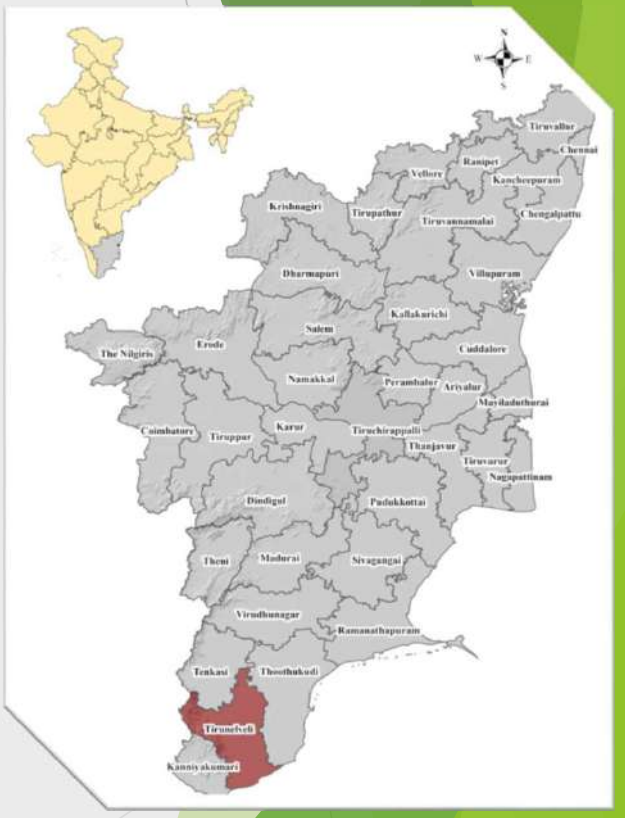
Thank You

Climate Change Vulnerability and Risk

Tirunelveli District



by

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Climate Studio

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Department Of Civil Engineering, Anna University, Chennai

Climate and Climate change

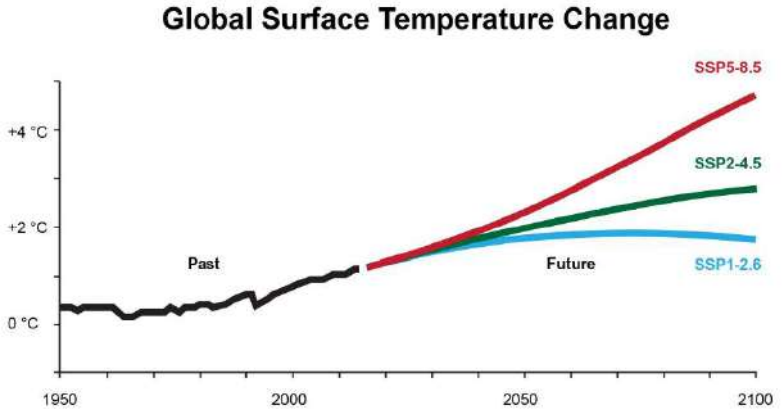
WHY IT SO IMPORTANT

Climate Change is REAL and witnessing the impact worldwide.

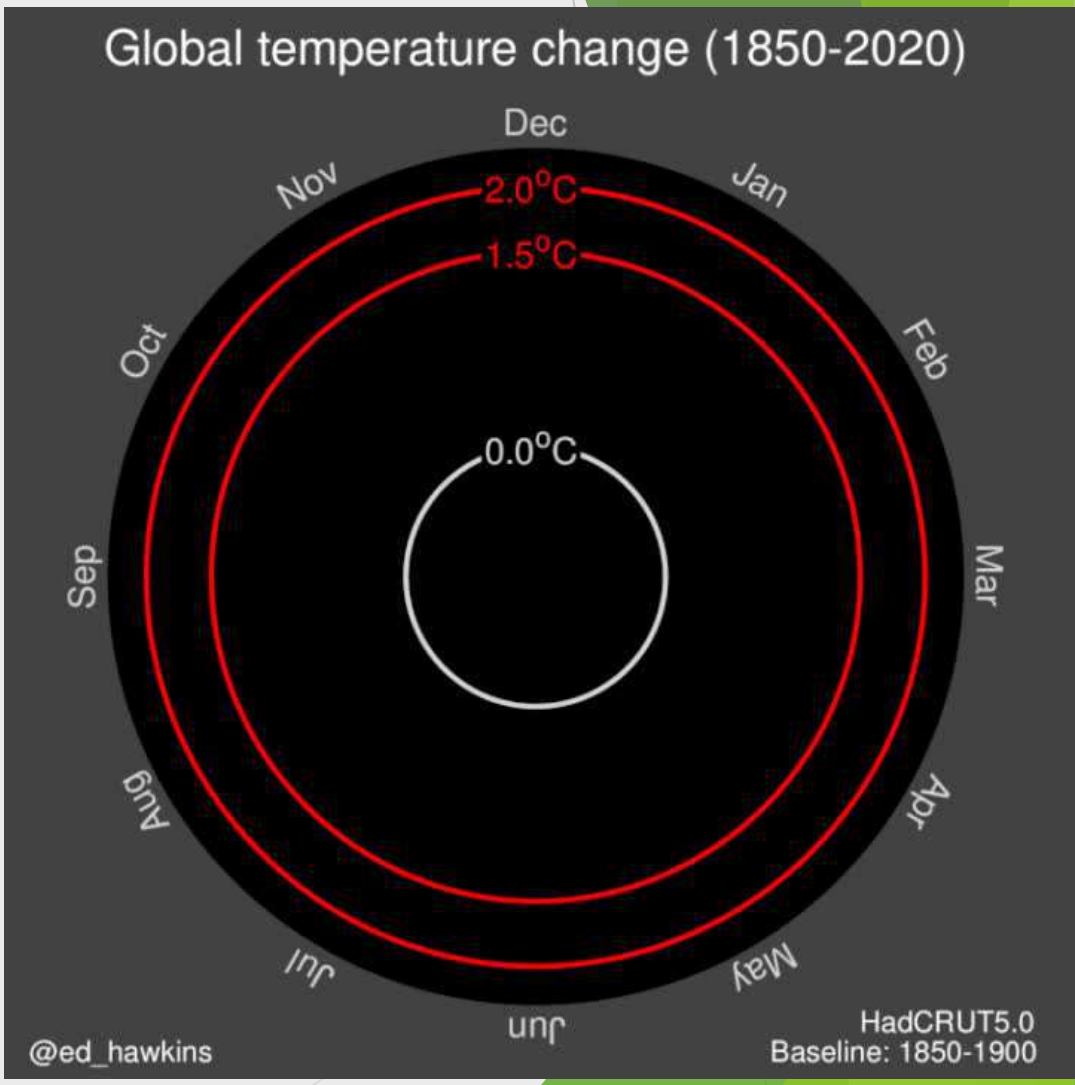
Climate Change – A Scientific Awareness

The Intergovernmental Panel on Climate Change (IPCC) has released five assessment reports since 1988:

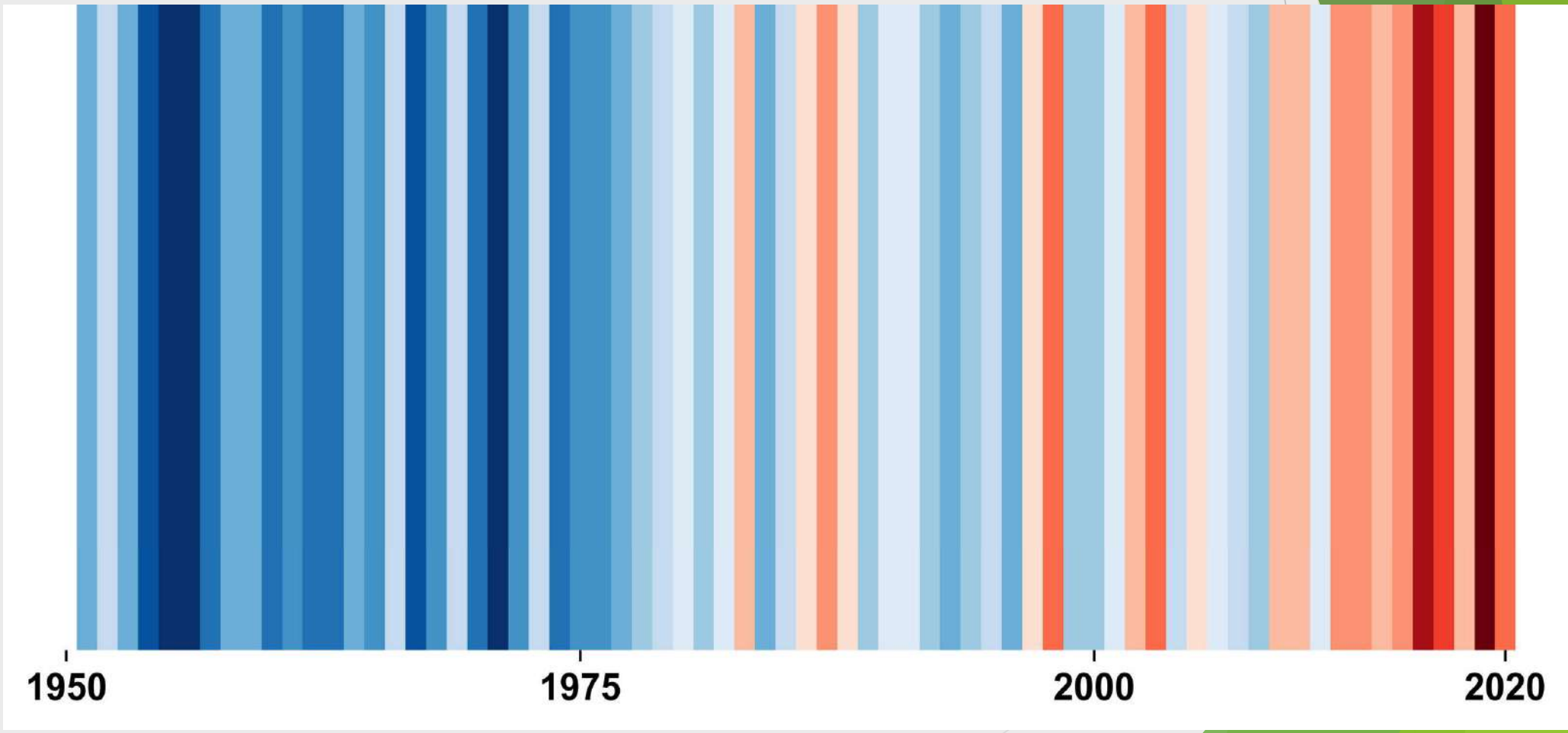
- First Assessment Report (FAR): 1990
- Second Assessment Report (SAR): 1995
- Third Assessment Report (TAR): 2001
- Fourth Assessment Report (AR4): 2007
- Fifth Assessment Report (AR5): 2014
- Sixth Assessment Report (AR6): 2021



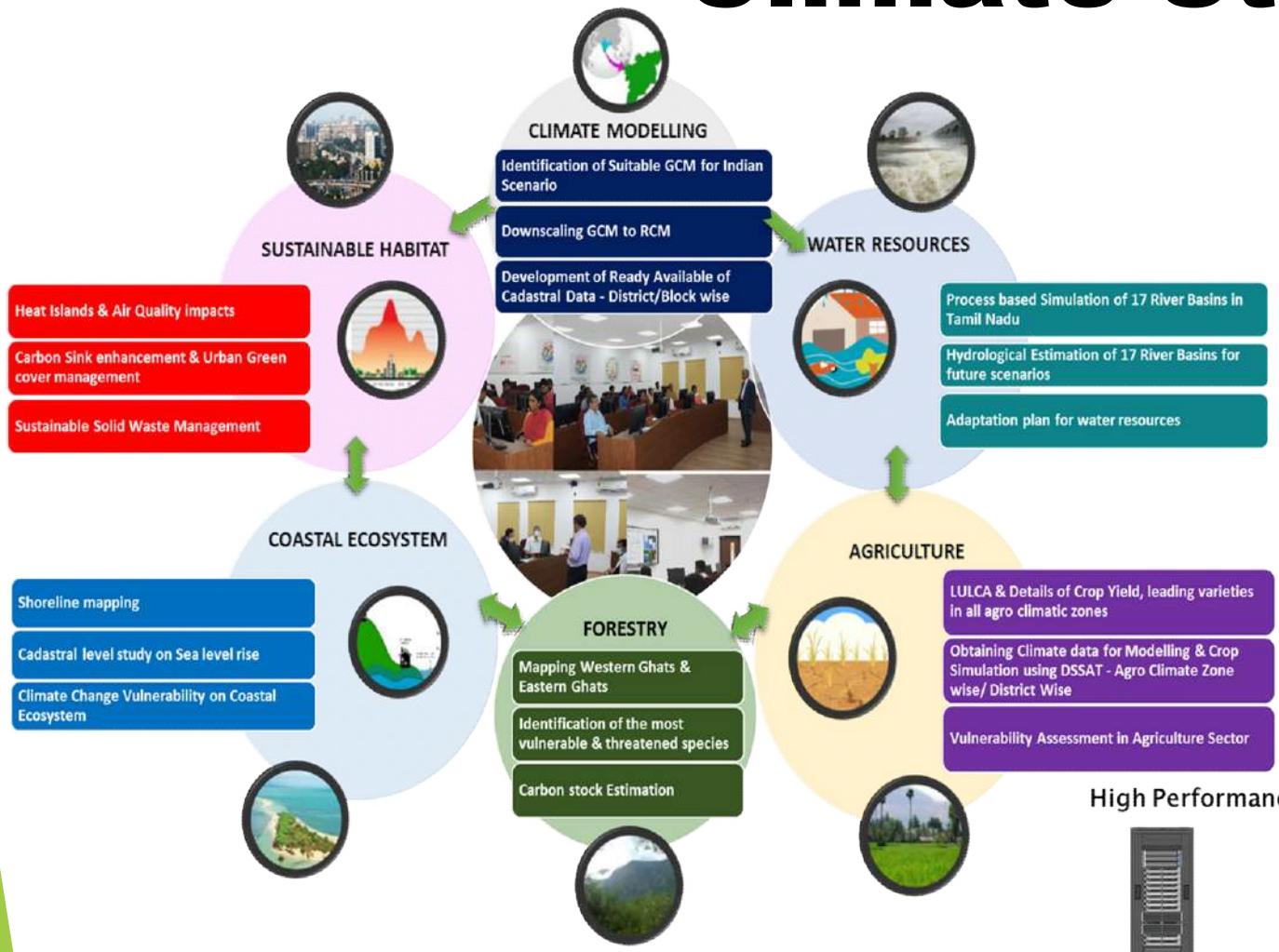
Climate and Climate change



Climate Stripes of Tamil Nadu



Climate Studio

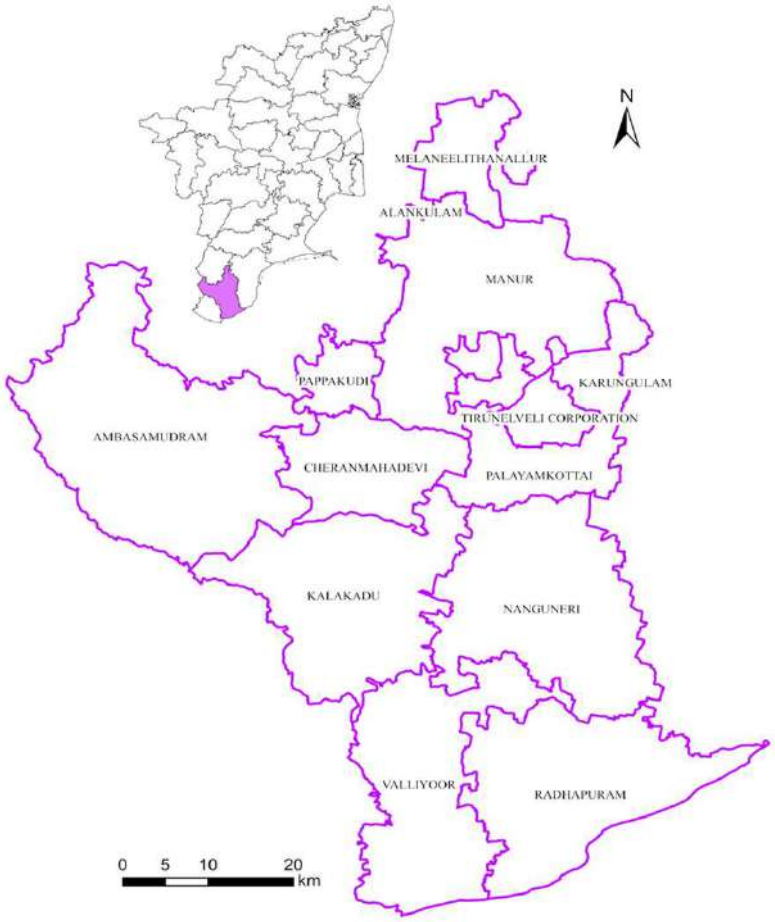


- PROJECTION OF REGIONAL CLIMATE SCENARIO
- SECTORAL VULNERABILITY ASSESSMENT
- CADASTRAL LEVEL RISK INFORMATION
- KNOWLEDGE DISSIMINATION
- CAPACITY BUILDING

High Performance Computing System

Supporting Climate Resilient Sustainable Development Planning

District Profile - Tirunelveli

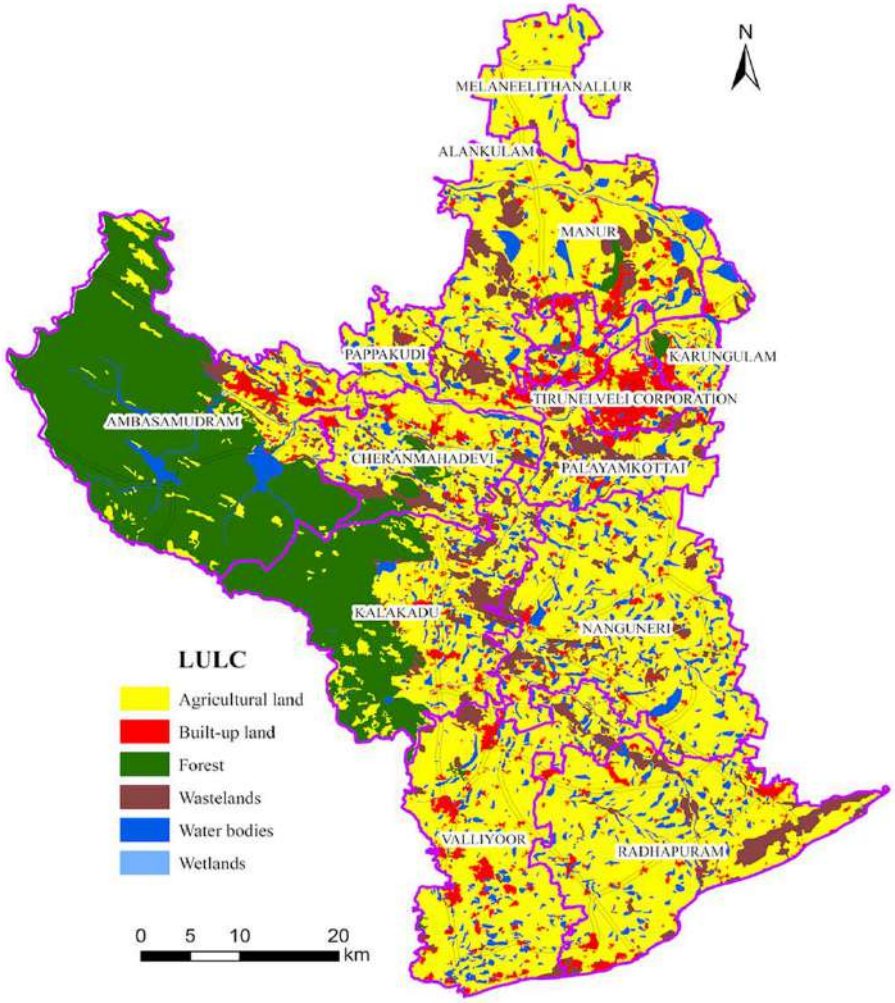


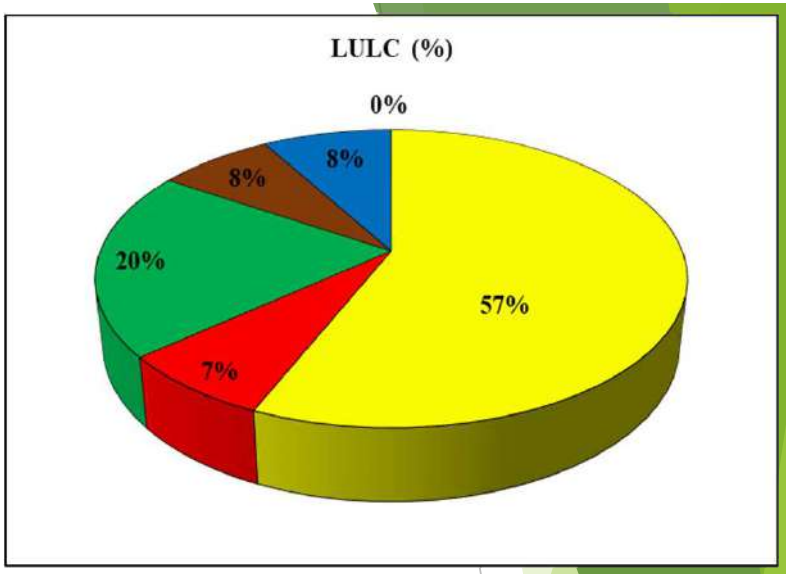
Area: 3876 sq.km **No. of Blocks: 9** **No. of Villages: 204** **Corporation: 1**

Municipalities: 3 **Panchayat Unions: 9** **Town Panchayats : 17**

DISTRICT PROFILE	
Demographic	***Census 2011***
Total Population	3077233
Density	455
Female	1556321
Male	1520912
Elderly	348316 (11.32%)
Literates	2273457(82.50%)
Urban Population	1520229 (49.40%)
Livelihood	***Census 2011***
Total Main Workers	1271407
Marginal workers	165047
Non workers	1640779
Eco-sensitive aspects	***TN wetland Mission***
Total wetland area	37709
Ramsar sites/Wetlands	Koothankulam Birds Sanctuary (Nanguneri)

Land use/Land cover (LULC)





- **Water Resources:**
  - Major River Basin: Nambiyar (37.46%) and Tamiraparani (62.42%)
  - Major river - Peyar, Ullar, Karaiyar, Servalar, Pampar, Manimuthar, Varahanatha, Ramanathi, Jambunatha, Gadana nathi, Kallar, Karunaiyar, Pachaiyar, Chittar, Gundar, Aintharuviar, Hanumanathi, Karuppanathi and Aluthakanniar
  - Water Systems: 8 dams and 875 tanks

  (*IWS & PWD, 2017*)
- **Agriculture:**
  - Net area sown - 67556 ha
  - Cropping intensity - 110.9%

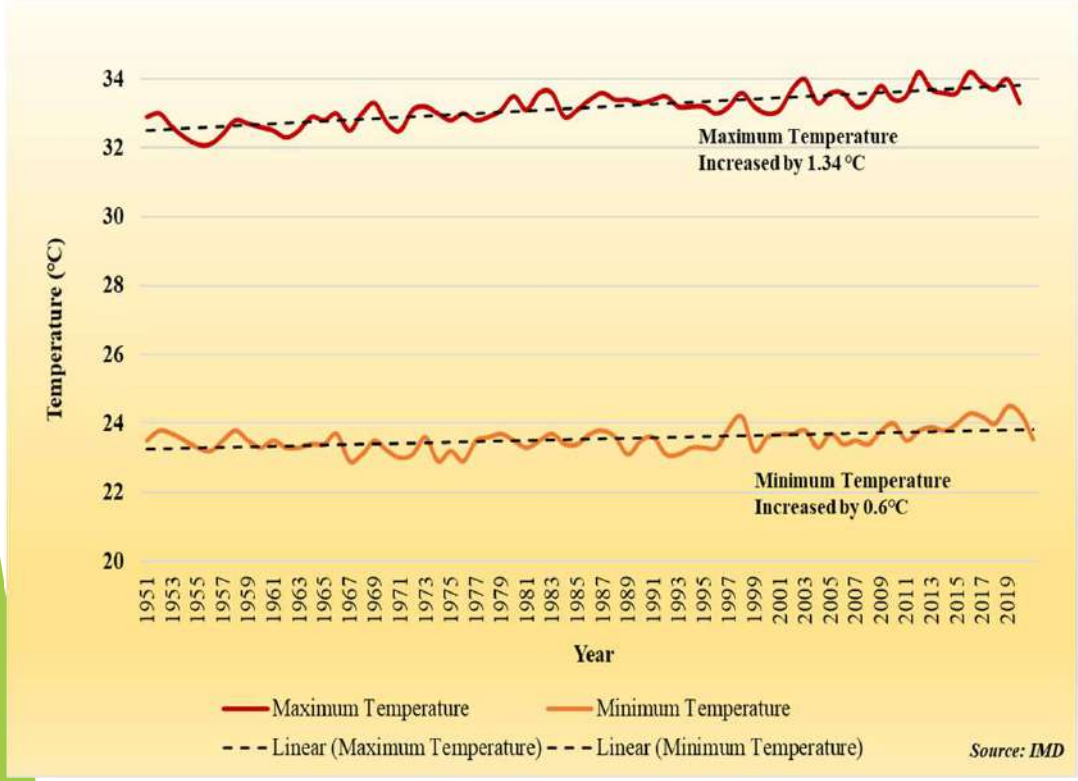
  (*Agriculture statistics, 2021*)
- **Forests:**
  - Moderately Dense Forest: 349.79 sq.km &
  - Very Dense Forest: 343.19 sq.km (*FSI 2021*)
- **Sustainable Habitat:**
  - Built up area 279.45 sq.km (*NRSC, 2015*),
  - Tirunelveli Corporation Area: 108.65 sq.km

  (District Statistical Handbook, 2021-22)

Climate Projection - Temperature

Observed Temperature Trend (1951-2020)

Annual average Maximum Temperature : 32.0 °C
Annual average Minimum Temperature : 23.2 °C



Temperature Projections with reference to baseline (1985-2014)

Projection Period	Increase in Annual Average Maximum Temperature (°C)	
	SSP2 4.5	SSP5 8.5
Near Century (2021-2050)	0.2	0.5
Mid Century (2051-2080)	0.5	0.8
End Century (2081-2100)	0.7	1.8

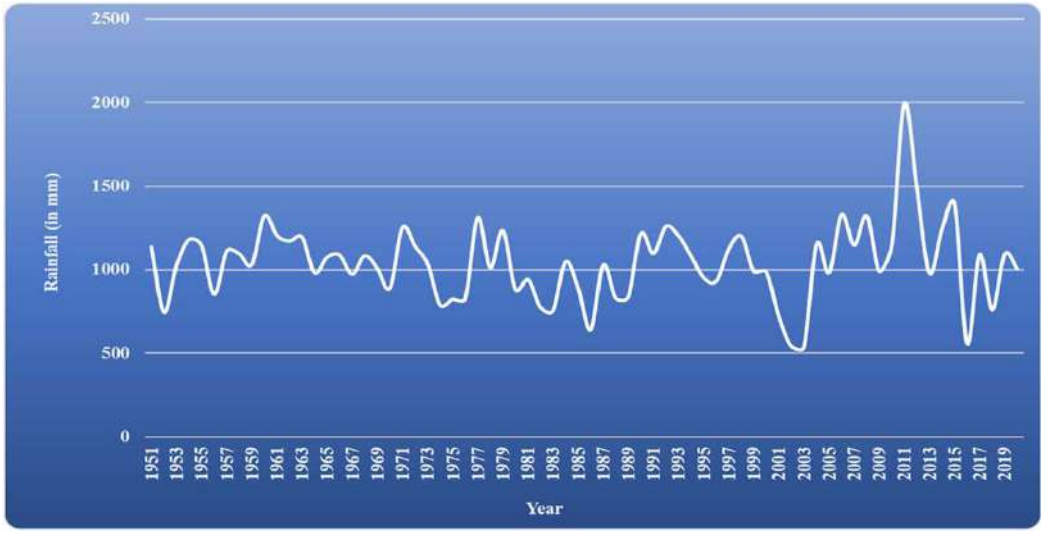
Projection Period	Increase in Annual Average Minimum Temperature (°C)	
	SSP2 4.5	SSP5 8.5
Near Century (2021-2050)	0.4	0.5
Mid Century (2051-2080)	0.8	1.2
End Century (2081-2100)	1.1	2.3

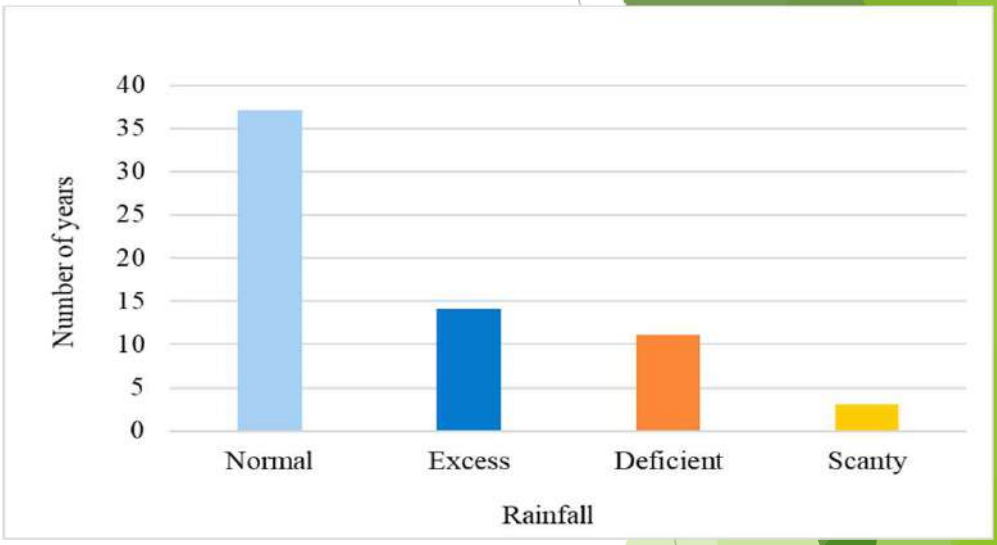
Source: CCCDM

Climate Projection - Rainfall

Observed Rainfall Trend (1951-2020)

Annual average Rainfall : 1041.7 mm





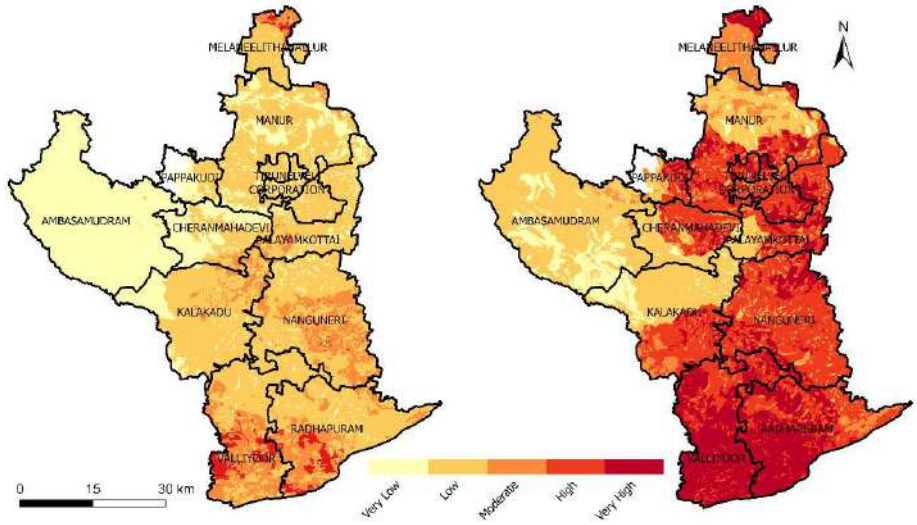
Rainfall Projections with reference to baseline (1985-2014)

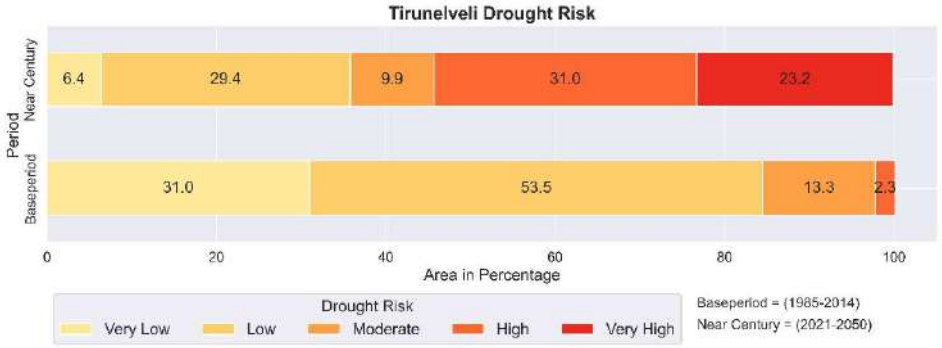
Parameter	SSP2 4.5 Scenario		
	Near Century (2021-2050)	Mid Century (2051-2080)	End Century (2081-2100)
Percentage Change in Annual Average Rainfall (%)	4.2	15.4	19.3

Source: CCCDM

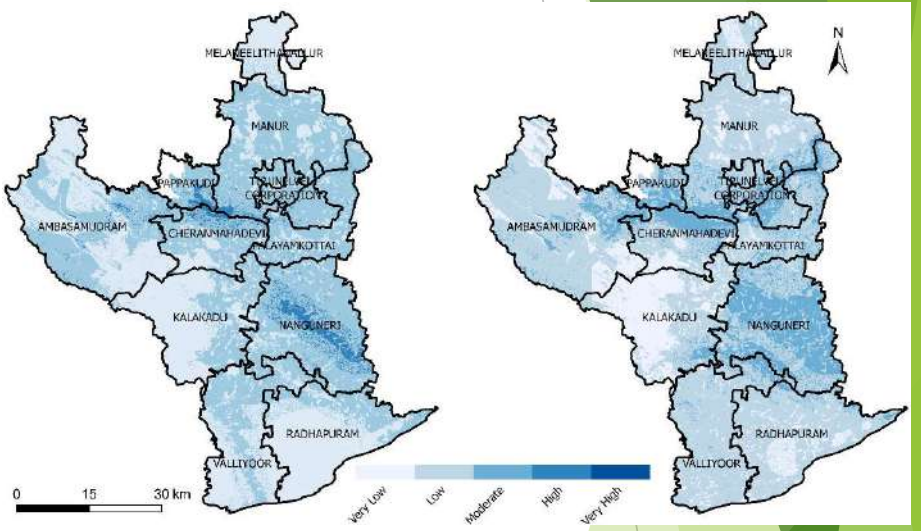
CLIMATE CHANGE IMPACTS - WATER RESOURCES

Base period (1985-2014) **Near Century (2021-2050)**



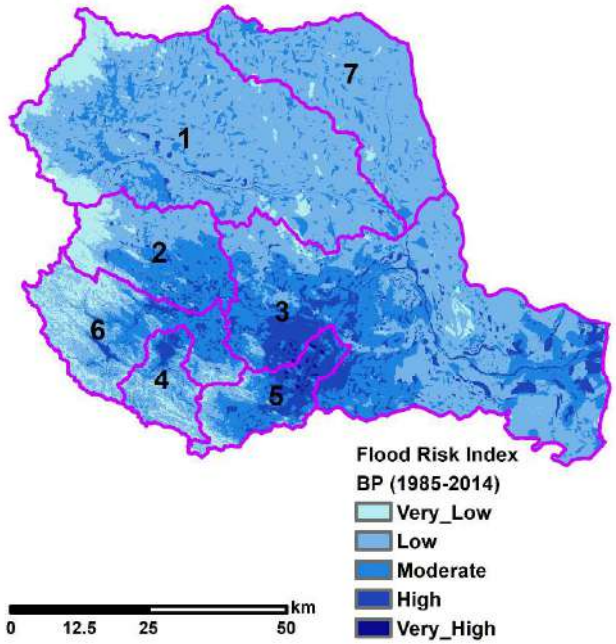


Base period (1985-2014) **Near Century (2021-2050)**

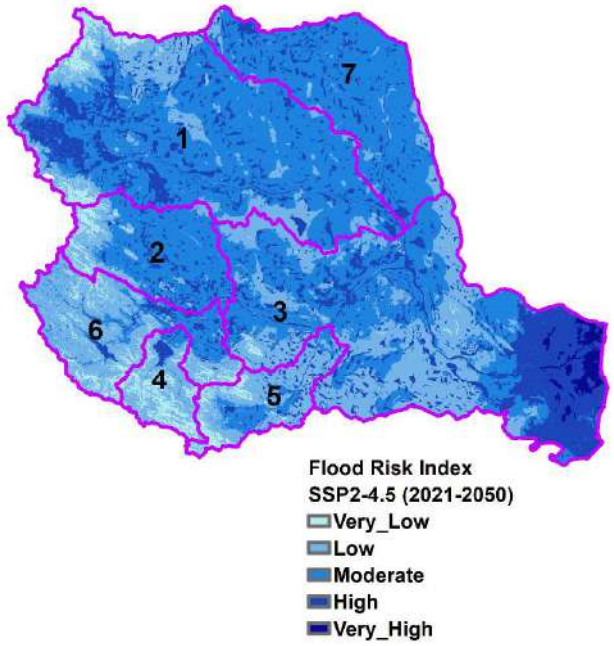


Source: CCCDM

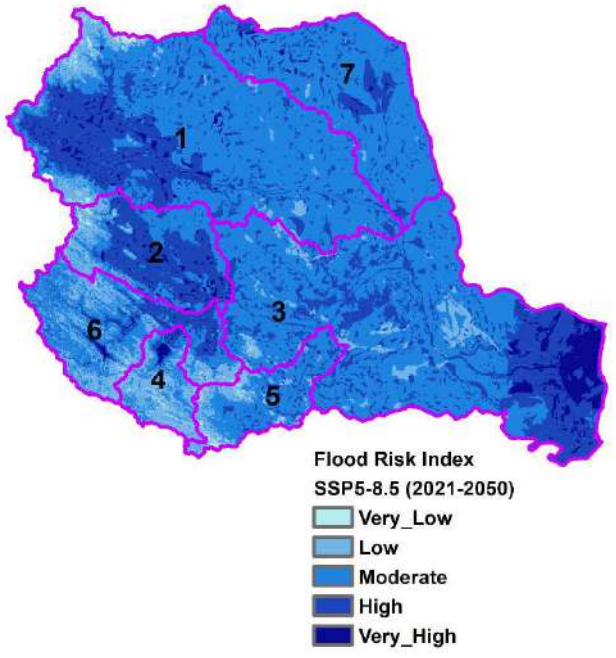
FRI_BP (1985-2014)



FRI_FP SSP2-4.5 (2021-2050)



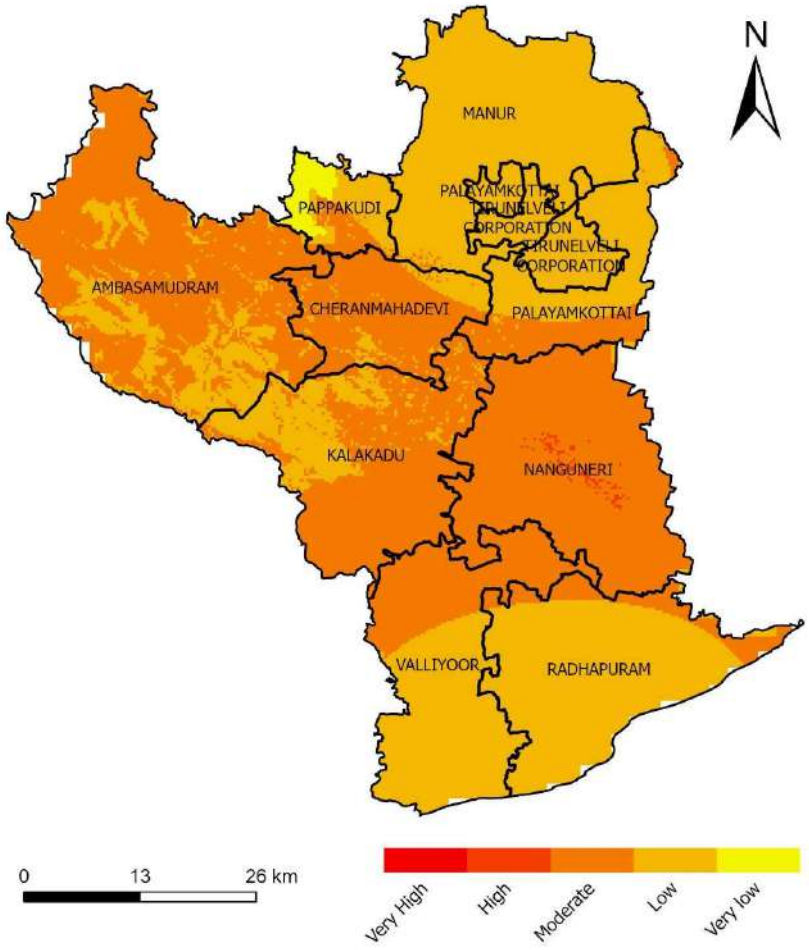
FRI_FP SSP5-8.5 (2021-2050)



Highest 24-hour-rainfall in Tamil Nadu

Date	Place	Rainfall (in cm)
14 Nov, 1992	Kakkachi (Tirunelveli)	96.5
18 Dec, 2023	Kayalpattinam (Thoothukudi)	94.6
9 Aug, 2019	Avalanchi (Nilgiris)	91.1
10 Nov, 2009	Ketti (Nilgris	82

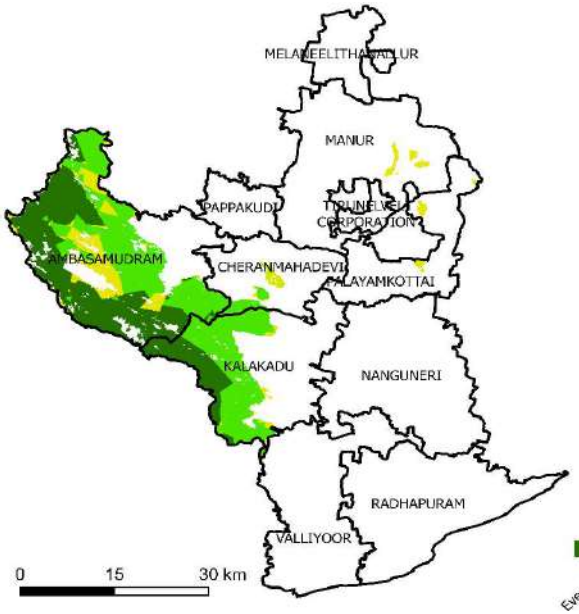
CLIMATE CHANGE IMPACTS - AGRICULTURE



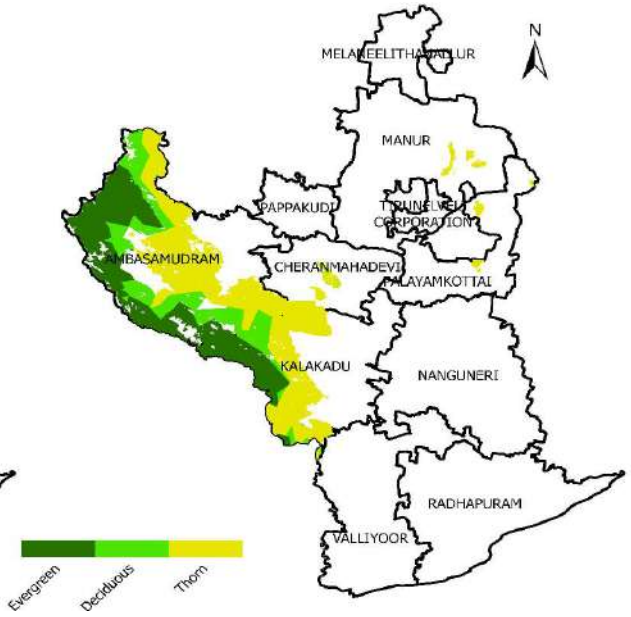
Major Crop	Base Period (1985-2014) Yield (kg/ha)	Near Century (2021-2050) Yield (kg/ha)	Change (%)
Rice	5649	5071	-10.2
Maize	4087	3734	-8.6
Sorghum	2365	2063	-12.8
Black gram	679	626	-7.8
Groundnut	2257	1994	-11.6

CLIMATE CHANGE IMPACTS – FOREST BIODIVERSITY

Base period (1985-2014)



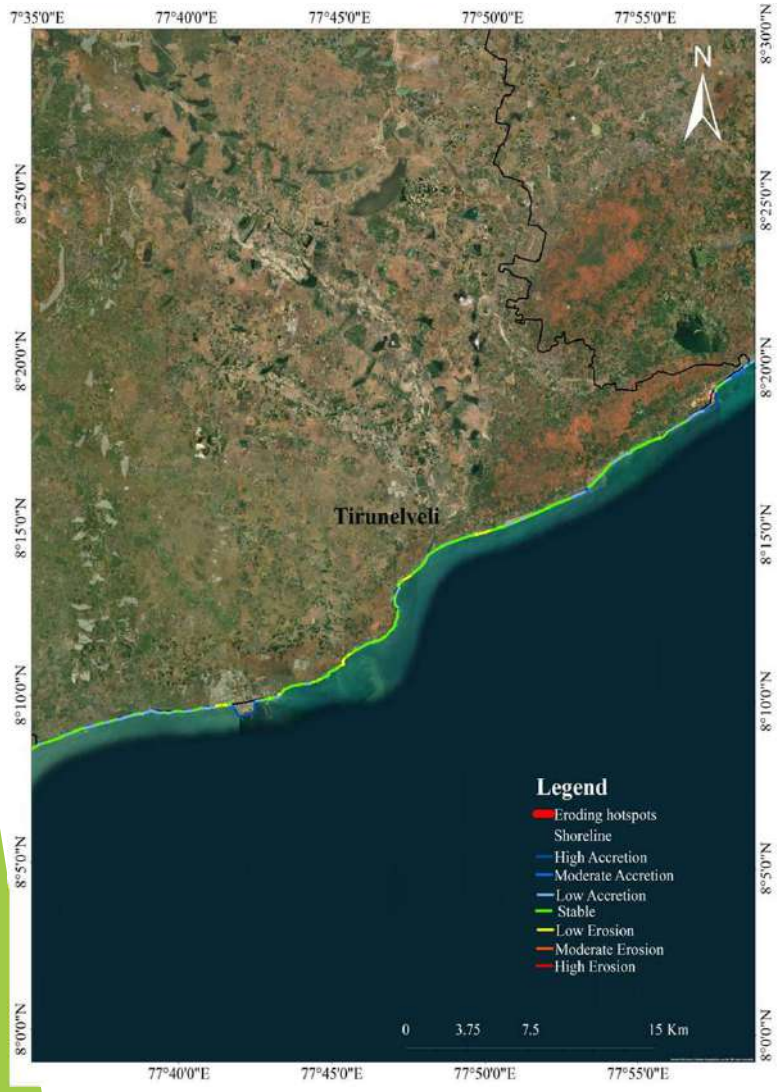
Near Century (2021-2050)



S. No	Reserve forest	S. No	Reserve forest
1	COURTALLAM	9	PAPANASAM
2	GANGAIKONDAN	10	SIVALAPERI
3	KALAKKADU	11	THALAIYUTHU
4	KALAMALAI	12	THERKUMALAI EAST
5	KOLUNDHUMALAI	13	THERKUVEERAVANALLUR
6	MAHENDRAGIRI	14	VALLIYUR
7	MANPOTHAI	15	VIRAPULI
8	MELAPATTAM	16	WOLF HILL

Forest types	Baseline period (1985-2014)	Near Century (2021-2050)	Area changes
Area in sq.km			
Evergreen	317.28	290.71	26.57(-)
Deciduous	372.58	278.54	94.04(-)
Thorn	71.59	192.19	120.61(+)

CLIMATE CHANGE IMPACTS – COASTAL ECOSYSTEM



Sl.No	District	Block Name	Coast Length in Km	High Erosion	Moderate Erosion	Low Erosion	Stable	Low Accretion	Moderate Accretion	High Accretion
1	Tirunelveli	Radhapuram	42.70	0.00	0.00	6.04	18.70	12.40	1.97	3.58
2		Valliyoor	10.40	0.00	0.00	0.00	7.22	3.17	0.00	0.00
3	Tirunelveli	Total	53.10	0.00	0.00	6.04	25.93	15.57	1.97	3.58

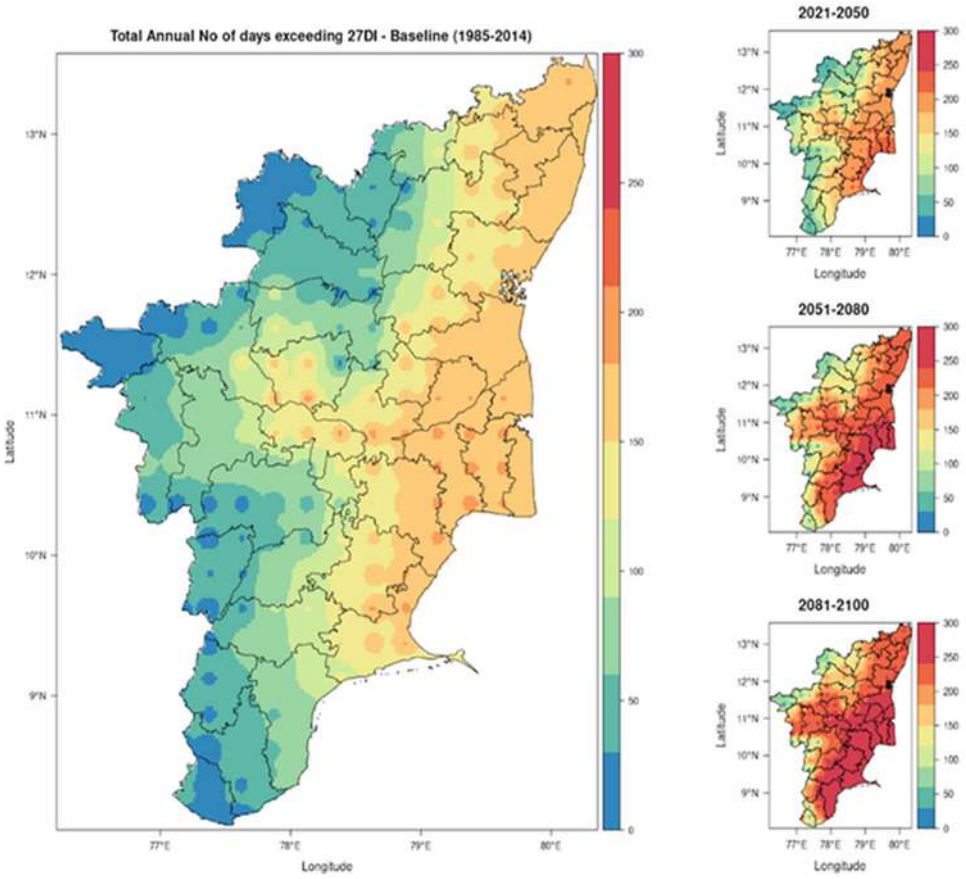
Land loss and Land gain Assessment for Tirunelveli- (1992-2022)

- Land loss : 38.28 (ha)
- Land gain : 172.66 (ha)

Sea-Level Rise (SLR) from 2006 - 2022: 5.64 cm

CLIMATE CHANGE IMPACTS - URBAN HABITAT

ANNUAL AVERAGE DAYS WITH DISCOMFORT CONDITIONS

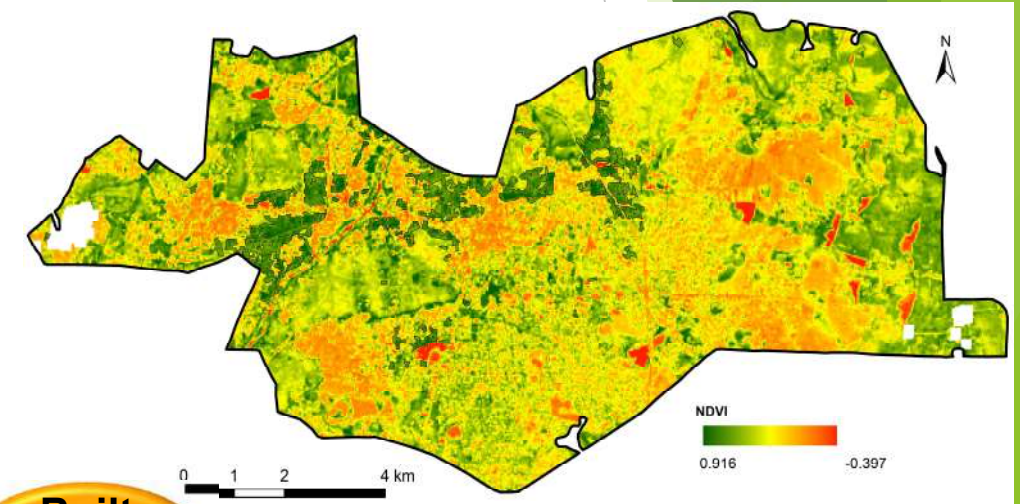


Discomfort days increasing across northern coastal regions (100-125 days), projected to increase (200-300 days) per year

URBAN GREEN COVER IN TIRUNELVELI CITY

5%

TREE COVER



Built up area 55%

Tirunelveli city – 7% Open Space is available
Need to demarcate potential areas for afforestation activities – for City Master Plans

Source: CCCDM

GLOBAL INDICATOR FRAMEWORK: GOAL ORIENTED

248 Indicators

17 Goals with targets upto specific timeline

231 unique indicators

13

indicators repeat under two or three different targets

Goals and targets (from the 2030 Agenda for Sustainable Development)	Indicators	UNSD Indicator Codes†
Goal 1. End poverty in all its forms everywhere		
1.1 By 2030, eradicate extreme poverty for all people everywhere, currently measured as people living on less than $1.25 a day	1.1.1 Proportion of the population living below the international poverty line by sex, age, employment status and geographic location (urban/rural)	C010101
1.2 By 2030, reduce at least by half the proportion of men, women and children of all ages living in poverty in all its dimensions according to national definitions	1.2.1 Proportion of population living below the national poverty line, by sex and age	C010201
	1.2.2 Proportion of men, women and children of all ages living in poverty in all its dimensions according to national definitions	C010202

Statistics Division, Department of Economic and Social Affairs, United Nations

SECTOR TO FOCUS ?

National Action Plan on Climate Change (NAPCC), 2008

1.National Solar Mission

2.National Mission for Enhanced Energy Efficiency

3.National Mission on Sustainable Habitat

4.National Water Mission

5.National Mission for Sustaining the Himalayan Ecosystem

6.National Mission for a Green India

7.National Mission for Sustainable Agriculture

8.National Mission on Strategic Knowledge for Climate Change

Tamil Nadu State Action Plan on Climate Change

VULNERABLE SECTORS

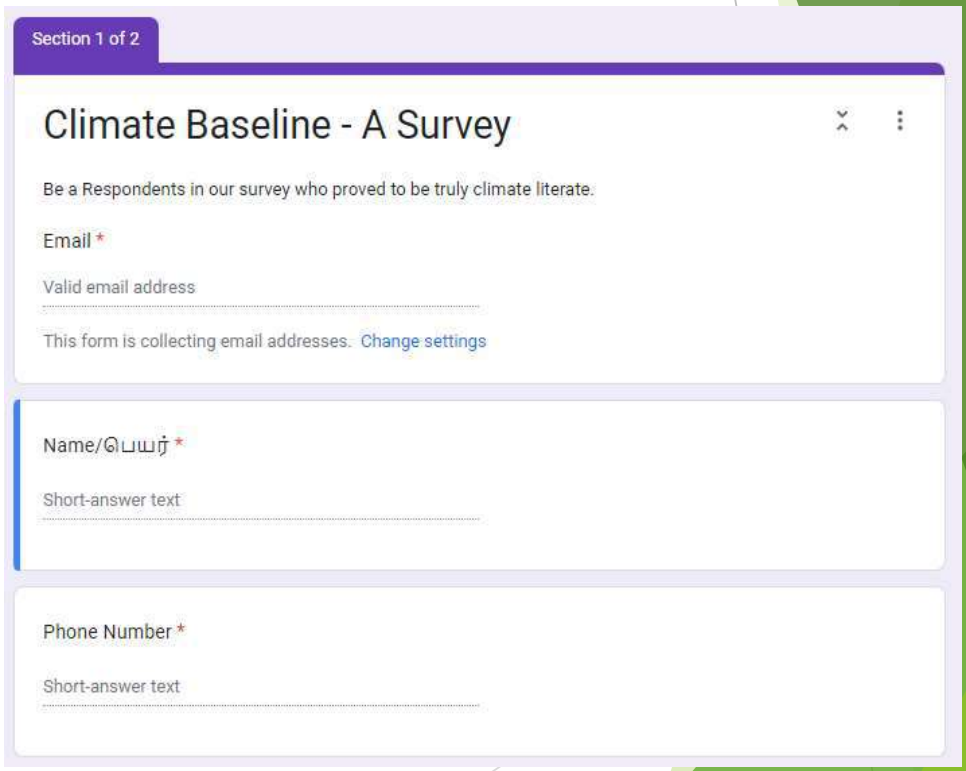
1. Sustainable Agriculture
2. Water Resources
3. Forest And Biodiversity
4. Coastal Area Management
5. Energy Efficiency
6. Sustainable Habitat
7. Knowledge Management

Climate Survey and Session Feedback

Scan me for Climate Survey

Fill up the Survey

https://forms.gle/QeTB2fSbTVHtwcqb7



CCCDM

Connect with us.

Email
dr.malarvizhiramaswamy22@gmail.com

Centre for Climate Change and Disaster Management
@Climate Studio

Call us
7904485989 - Dr. R. Malarvizhi

Climate Smart Agriculture

Dr. S. Srinivasan., Dip. In Water Management (Israel), Water Resource Monitoring, Climate forecast and Hydrological Modelling (Dept. of Global Environment and Disaster Prevention Sciences, Japan)

Professor and Head

Dept. of Crop Physiology and Biochemistry

Tamil Nadu Agricultural University

V.O.C. Agrl. College and Research Institute, Killikulam

International Plant Nutrition Institute Awardee – 12 times

FAO – Plant Nutrition Awardee – 1 time

Climate is affected by many factors

ABIOTIC FACTORS:

Ocean Currents

Solar Radiation

Evaporation

Volcanic Activity

BIOTIC FACTORS:

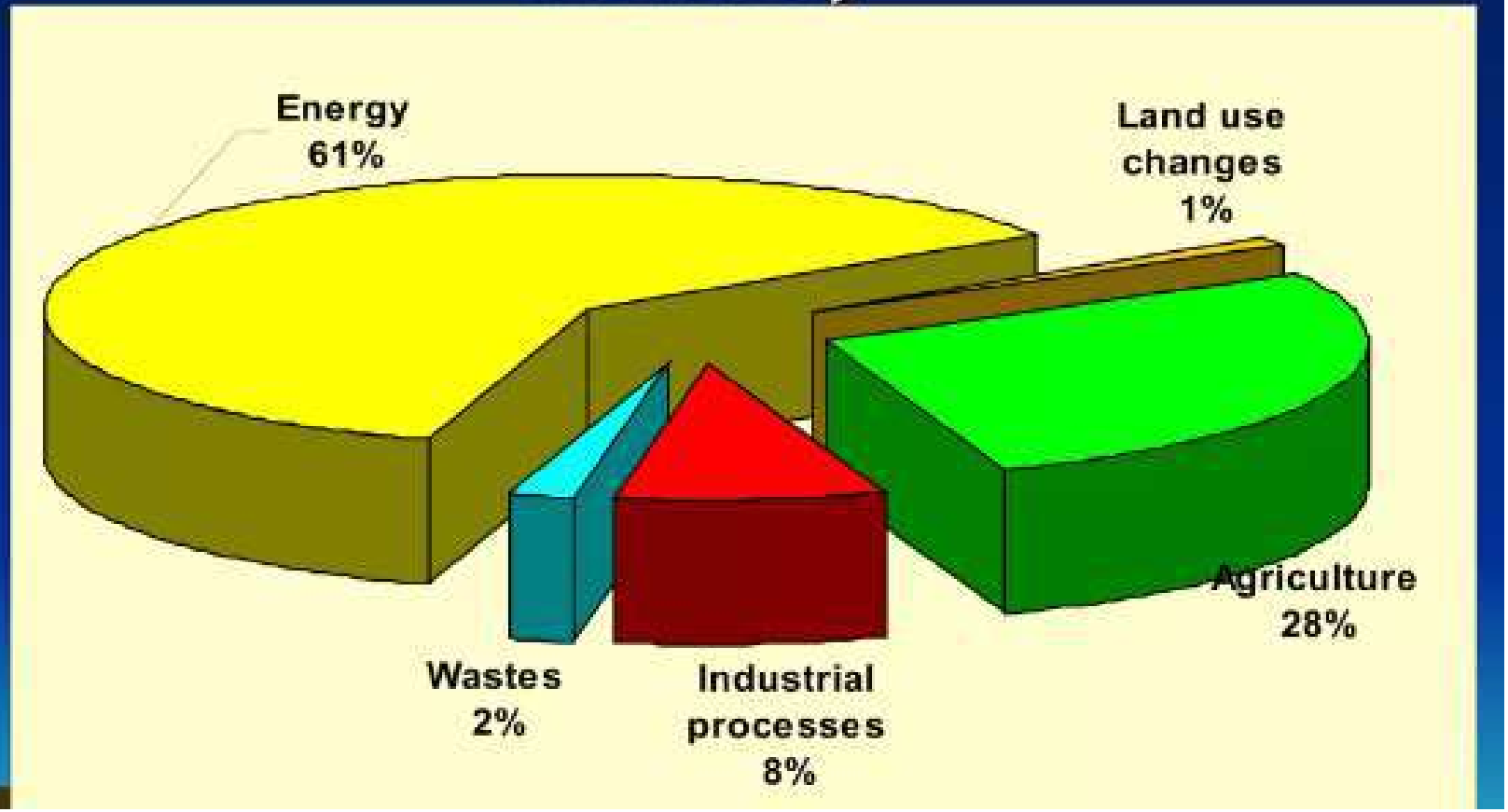
Transpiration

Respiration

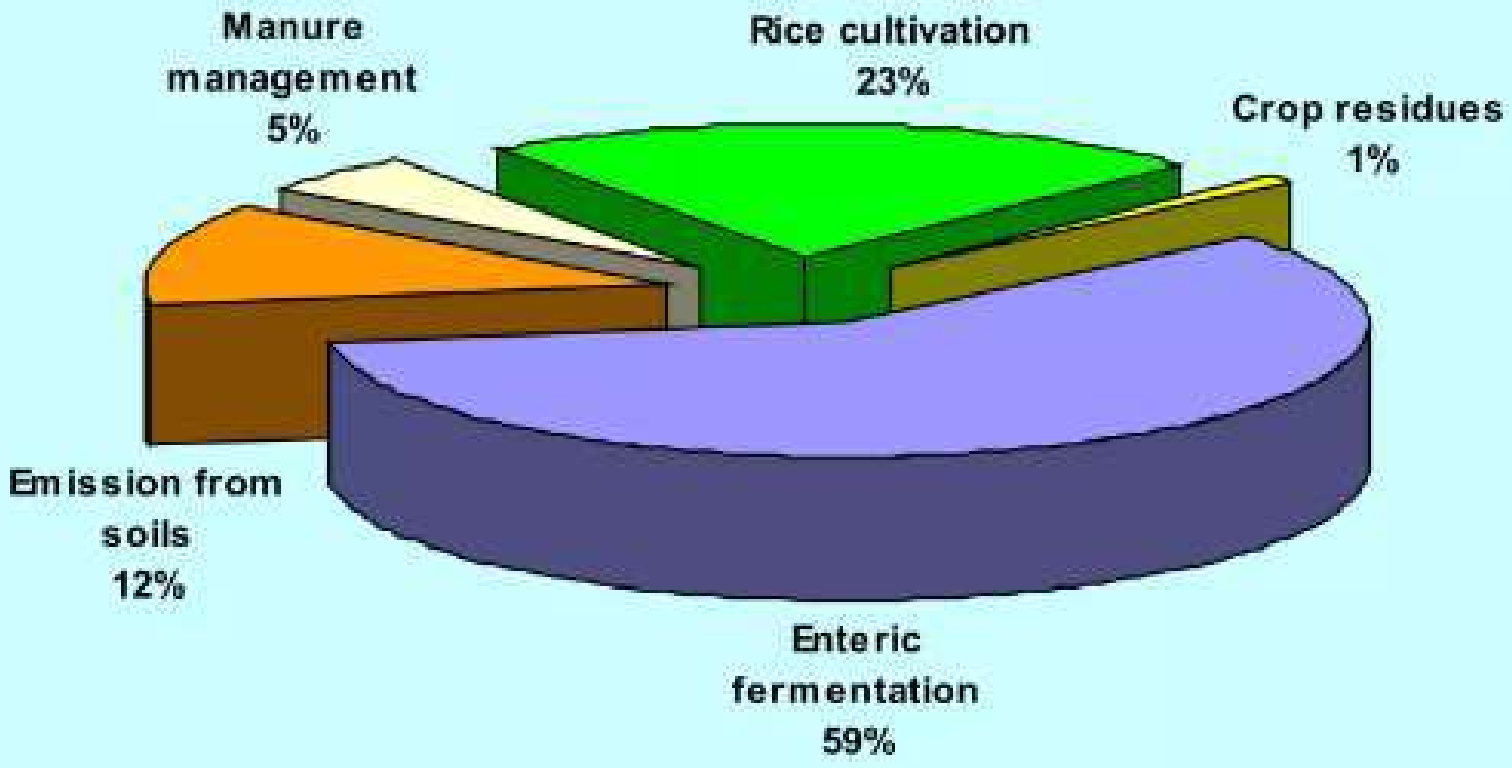
Photosynthesis

Decomposition

What is the contribution of different sectors in India to climate change? (Sources of greenhouse gas emissions in India)



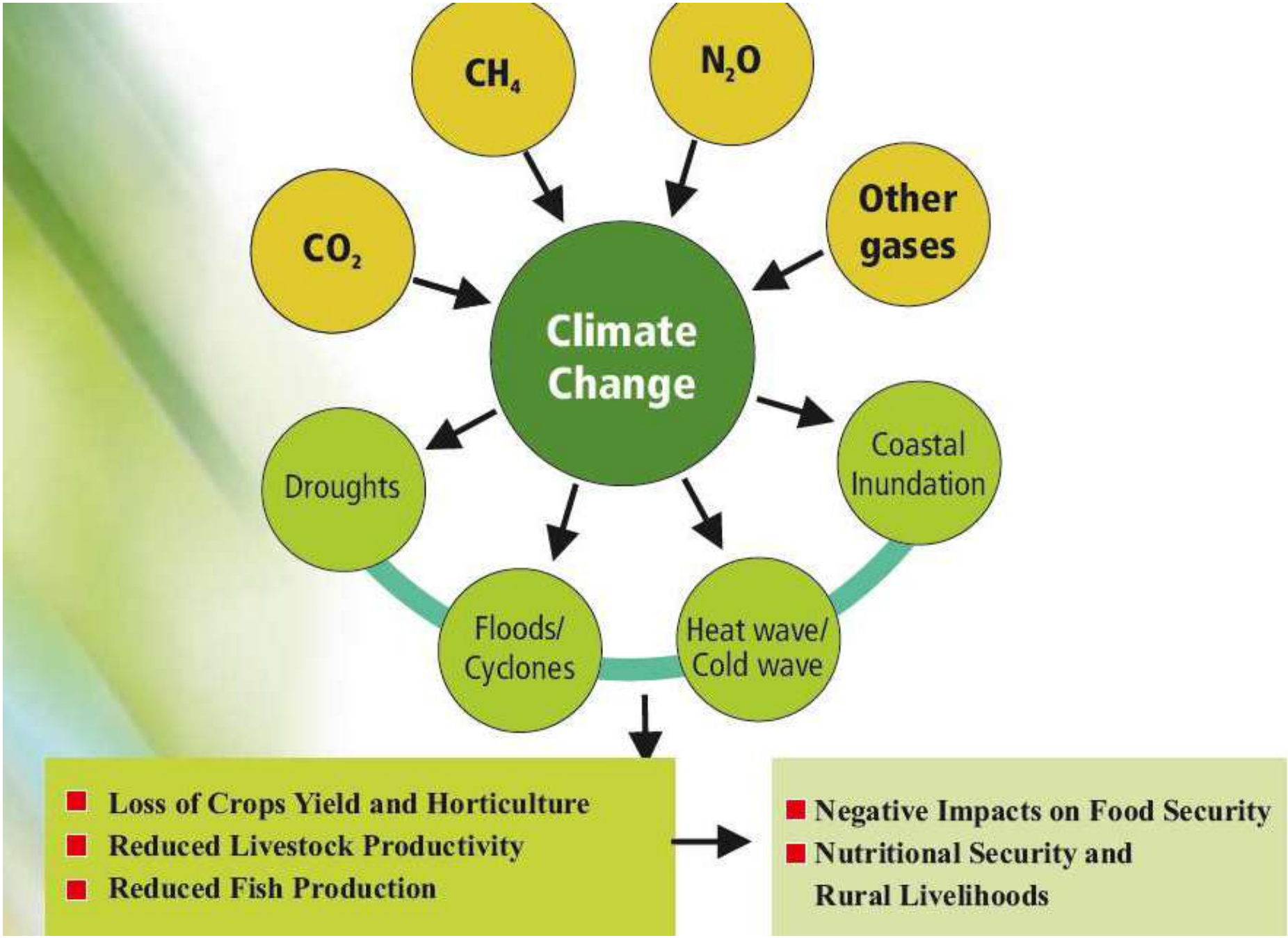
What sectors of agriculture in India contribute to climate change?



Key adaptation strategies

- Assisting farmers in coping with current climatic risks
- Intensifying food production systems
- Improving land and water management


Climate Change Adaptation Technologies
Water Management
Water Saving Rice Systems
Rain Water Harvesting
Farm Ponds
Micro Irrigation
Crop Based Diversification
Tolerant Crops/Systems
Legume Intercrops
Relay Cropping
Cover Crops
Horticulture
Agro-Forestry
Integrated Farming System (IFS)
Fishery
Feed
Better Oxidation
Water Quality Feed
Technology Dissemination
Agro-Advisory
Decision Support System
Farm Mechanization
Mechanized/ Efficient Water Lifting
Solar Systems
Small Holder Machines
Gender Sensitive
Livestock & Poultry
Tolerant Breed
Green Fodder
Feed Mixtures
Shelter Management
Quality Water/ Vaccination
Soil Nutrient Management
Conservation Agriculture
SSNM/Soil Health Card
Neem Coated Urea
Foliar Nutrition
Biochar
Residue Recycling
Biogas


CH_4
N_2O
CO_2
Other gases
Climate Change
Droughts
Coastal Inundation
Floods/ Cyclones
Heat wave/ Cold wave
Loss of Crops Yield and Horticulture
Reduced Livestock Productivity
Reduced Fish Production
Negative Impacts on Food Security
Nutritional Security and Rural Livelihoods

Alternate Wetting and Drying

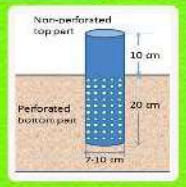
தமிழ்நாடு வேளாண்மை பல்கலைக்கழகம்

நீர்வள நிலவளத் திட்டம் - TNIAMP கீழ் தாமிரபரணி உப வடிநிலம் - Lower Tamiraparani Sub Basin

வயல் நீர் குழாய் பயன்கள்

- விவசாயிகளின் வருமானத்தை பெருக்குகிறது.
- நீர் பாசனத்திற்கு உண்டான செலவை குறைக்கிறது.
- வேர்களின் வளர்ச்சியை ஊக்குவிக்கிறது.
- கார்பன் வரவினங்களுக்கு வழிவகை செய்கிறது.
- இந்த தொழில்நுட்பம் மூலம் உற்பத்தி 15 சதவீதம் அதிகரிக்கும்.
- ஒரு கிலோ நெல் உற்பத்தி செய்ய வழக்கமான முறையில் 2000 லிட்டர் நீர் தேவைப்படும்.
- வயல் நீர் குழாய் முறையில் 1400 லிட்டர் நீர் மட்டுமே தேவைப்படுகிறது.
- துத்தநாக சத்துவின் கிடைக்க தன்மையை அதிகப்படுத்துகிறது.
- இரும்பு சத்து நச்சுத்தன்மையை குறைக்கிறது.

வயல் நீர் குழாயை பொருத்தும் முறை



- வயல் நீர் குழாயை சுமார் 24 செ.மீ-க்கு துளையிடப்பட்ட பகுதியை மட்டும் மண்ணில் வயலுக்குள் பதிக்க வேண்டும்.
- குழாயின் உள்ளே இருந்து மண்ணை அகற்ற வேண்டும்.
- நீர் மட்டம் மண்ணின் மேற்பரப்பிற்கு கீழே சுமார் 15 செ.மீக்கு கீழே இறங்கும்போது சுமார் 5 செ.மீ உயரத்திற்கு நிலத்துக்கு மேல் நீர் பாசனம் செய்ய வேண்டும்.
- இந்த குழாயை வயலின் வரப்புகளில் இருந்து 1மீட்டர் உட்புறம் வைக்க வேண்டும்.
- இந்த குழாயை நடவு செய்த 10-வது நாள் வைக்க வேண்டும்.
- ஒரு ஏக்கருக்கு ஒரு குழாய் போதுமானது.

புவி வெப்பமயமாதல்

புவி வெப்பமயமாதல் என்பது புவி மேற்புற பகுதியின் சராசரி வெப்பநிலையில் ஏற்பட்டிருக்கும் சீரான வெப்பநிலை உயர்வை குறிக்கும்.

வயல் நீர் குழாய் எவ்வாறு புவி வெப்பமயமாதலை கட்டுப்படுத்துகிறது?

சாதாரண முறையில் நாம் நீர் பாய்ச்சும் போது வயலில் நீர் தேங்கி காற்றில்லா சுவாசம் எனும் முறையின் மூலம் மீத்தேன் வாயு வெளிப்படும் இது புவி வெப்பமயமாதலுக்கு வழிவகுக்கிறது. ஆனால் இந்த காய்ச்சலும் பாய்ச்சலும் தொழில்நுட்பத்தின் மூலம் மீத்தேன் வாயு வெளிப்படுவது குறைகிறது.

வேளாண்மை கல்லூரி மற்றும் ஆராய்ச்சி நிலையம் உழவியல் துறை, கிள்ளிகுளம்

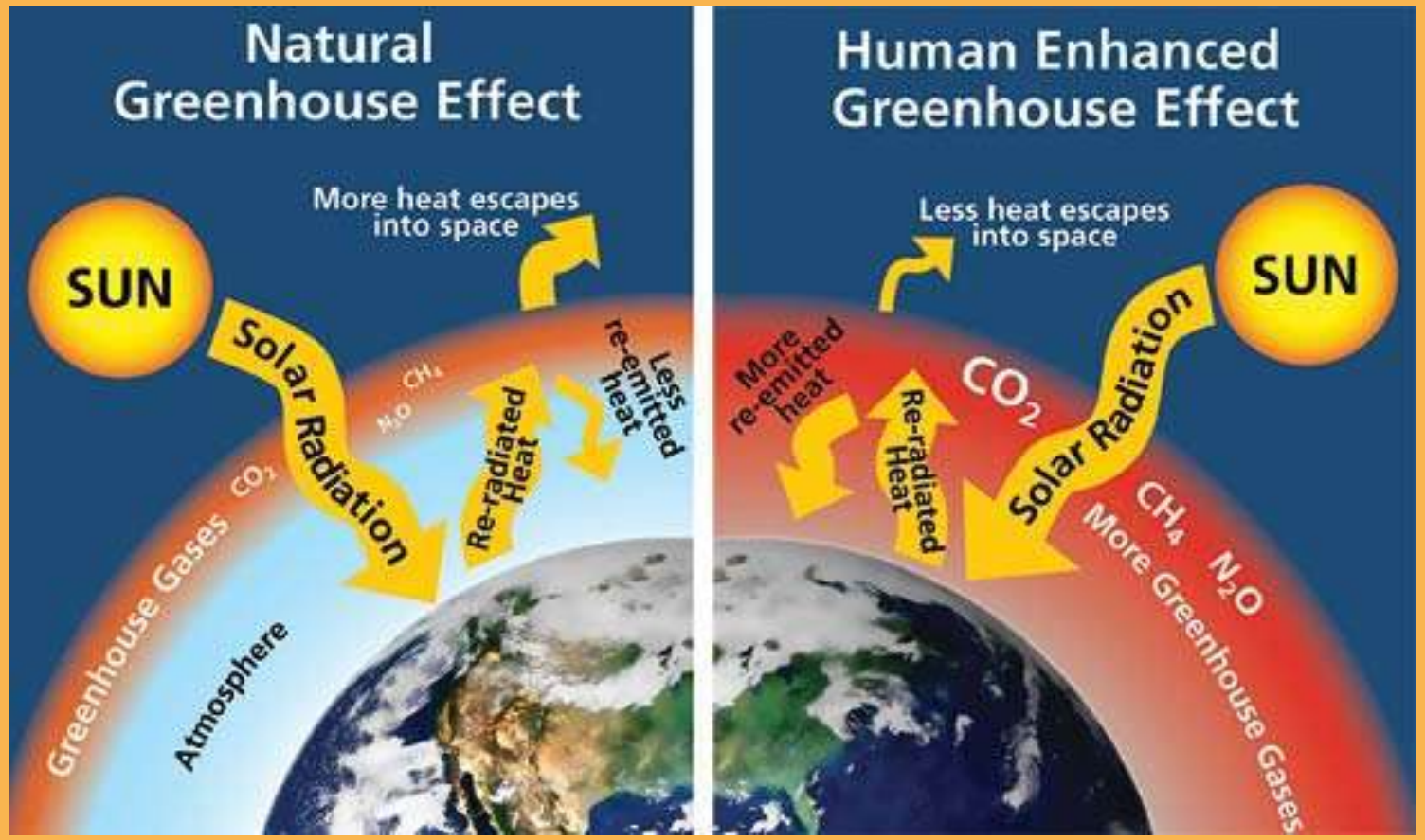

தமிழ்நாடு வேளாண்மை பல்கலைக்கழகம்
airtel


GLOBAL
WARMING
MANAGE
WATER
MANAGE
CLIMATE
CHANGE

Demystifying the concept of Climate Change

Prabhakaran Veerarasu
Environmental Engineer
Poovulagin Nanbargal

1. What is Climate Change ?


Natural
Greenhouse Effect
More heat escapes
into space
SUN
Solar Radiation
Re-radiated
Heat
Less
re-emitted
heat
CH_4
N_2O
CO_2
Greenhouse Gases
Atmosphere
Human Enhanced
Greenhouse Effect
Less heat escapes
into space
SUN
More
re-emitted
heat
Re-radiated
Heat
CO_2
Solar Radiation
CH_4 N_2O
More Greenhouse Gases

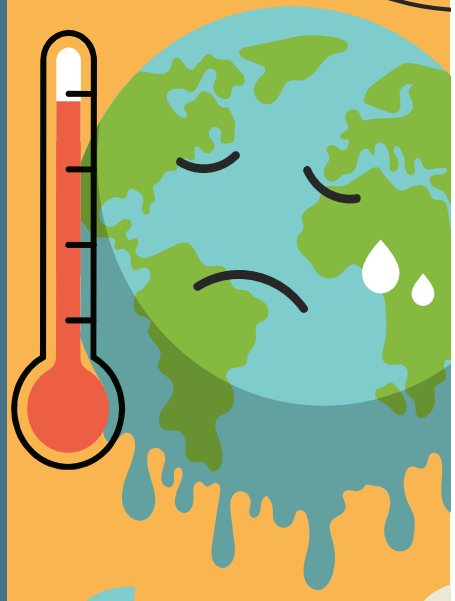
Causes and Effects of Climate Change

Causes

- Rapid industrialization
- Energy use
- Agricultural practices
- Deforestation
- Consumer practices
- Livestock
- Transport
- Resource extraction
- Pollution

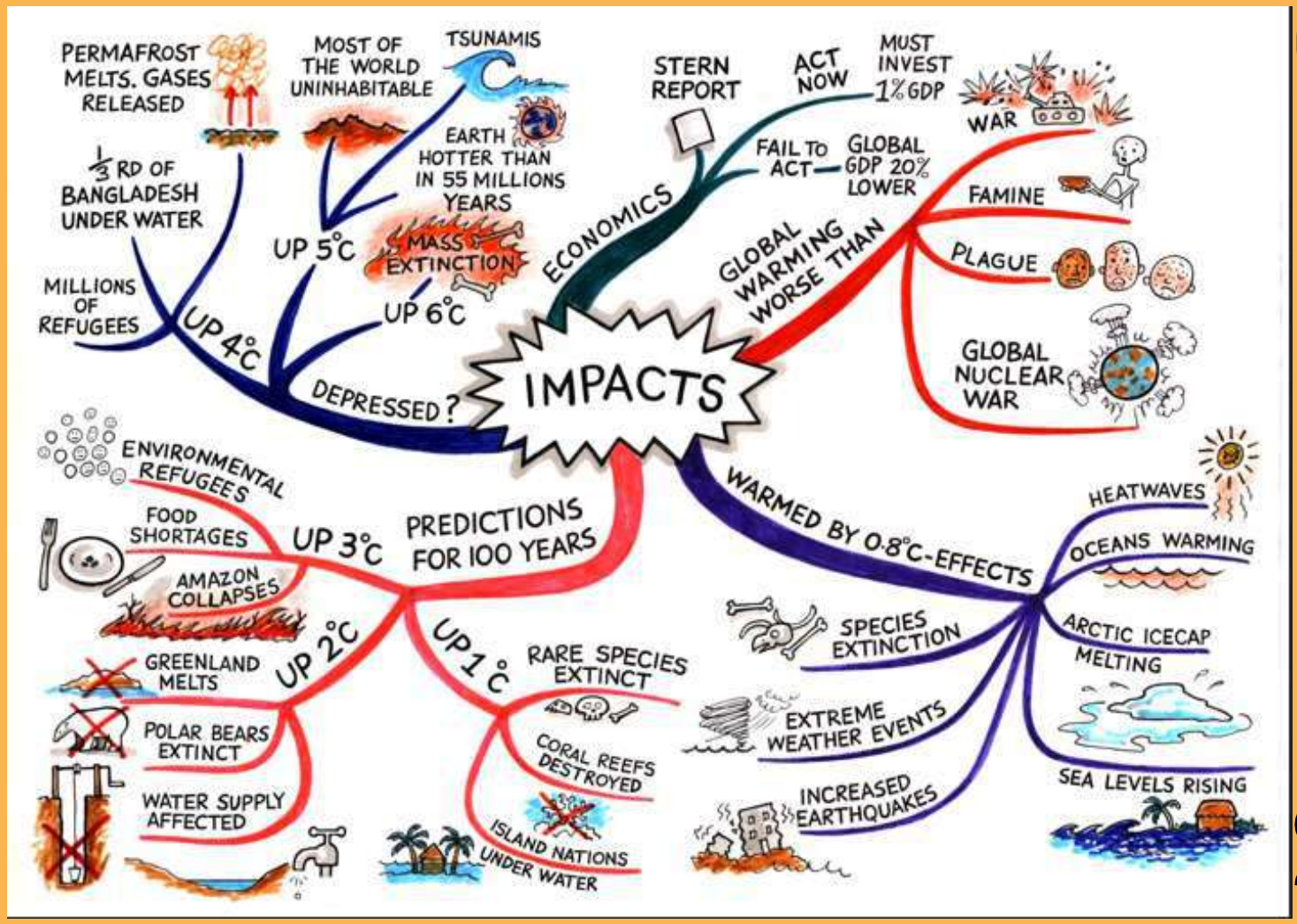
Effects

- Rising temperatures
- Rising sea levels
- Unpredictable weather patterns
- Increase in extreme weather events
- Land degradation
- Loss of wildlife and biodiversity



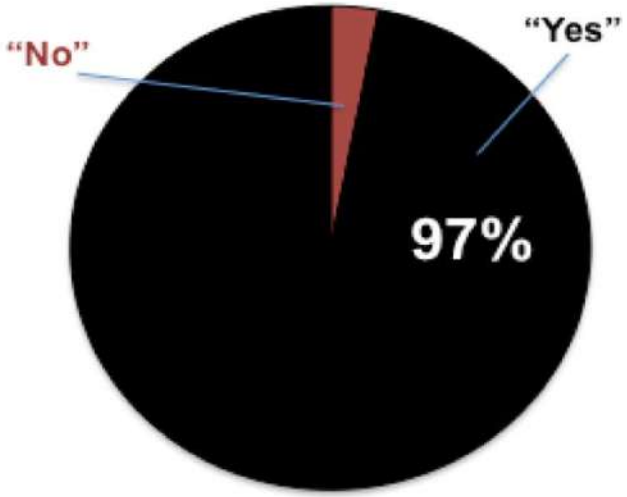
What are the social impacts of climate change?

Displaced people. Poverty. Loss of livelihood. Hunger. Malnutrition. Increased risk of diseases. Global food and water shortages.


IMPACTS
PERMAFROST MELTS. GASES RELEASED
MOST OF THE WORLD UNINHABITABLE
TSUNAMIS
EARTH HOTTER THAN IN 55 MILLIONS YEARS
1/3 RD OF BANGLADESH UNDER WATER
MILLIONS OF REFUGEES
UP 4°C
UP 5°C
MASS EXTINCTION
UP 6°C
DEPRESSED?
ECONOMICS
STERN REPORT
ACT NOW
MUST INVEST 1% GDP
FAIL TO ACT
GLOBAL GDP 20% LOWER
GLOBAL WARMING WORSE THAN
WAR
FAMINE
PLAGUE
GLOBAL NUCLEAR WAR
ENVIRONMENTAL REFUGEES
FOOD SHORTAGES
AMAZON COLLAPSES
UP 3°C
PREDICTIONS FOR 100 YEARS
GREENLAND MELTS
POLAR BEARS EXTINCT
WATER SUPPLY AFFECTED
UP 2°C
UP 1°C
RARE SPECIES EXTINCT
CORAL REEFS DESTROYED
ISLAND NATIONS UNDER WATER
WARMED BY 0.8°C-EFFECTS
HEATWAVES
OCEANS WARMING
SPECIES EXTINCTION
ARCTIC ICECAP MELTING
EXTREME WEATHER EVENTS
INCREASED EARTHQUAKES
SEA LEVELS RISING

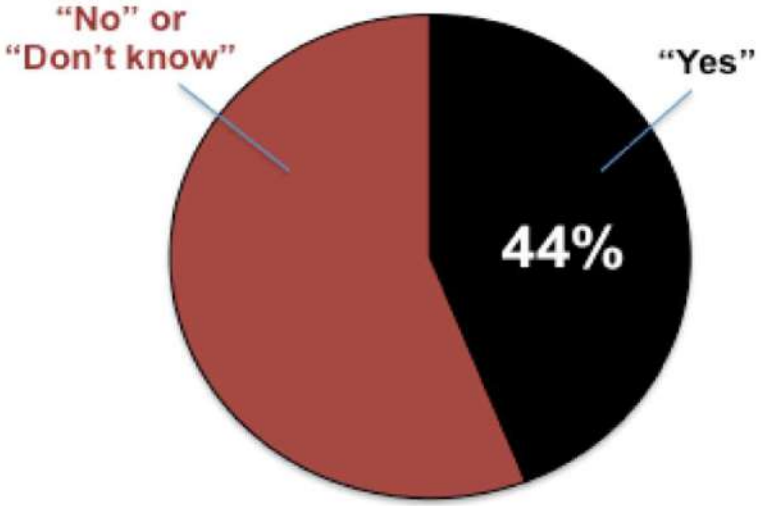
2. Is Climate Change True ?

Climate Scientists[1] say…



[1]Proportion of peer-reviewed papers that stated a position on the reality of human-caused global warming and said it is happening and human caused

The American Public[2] says…



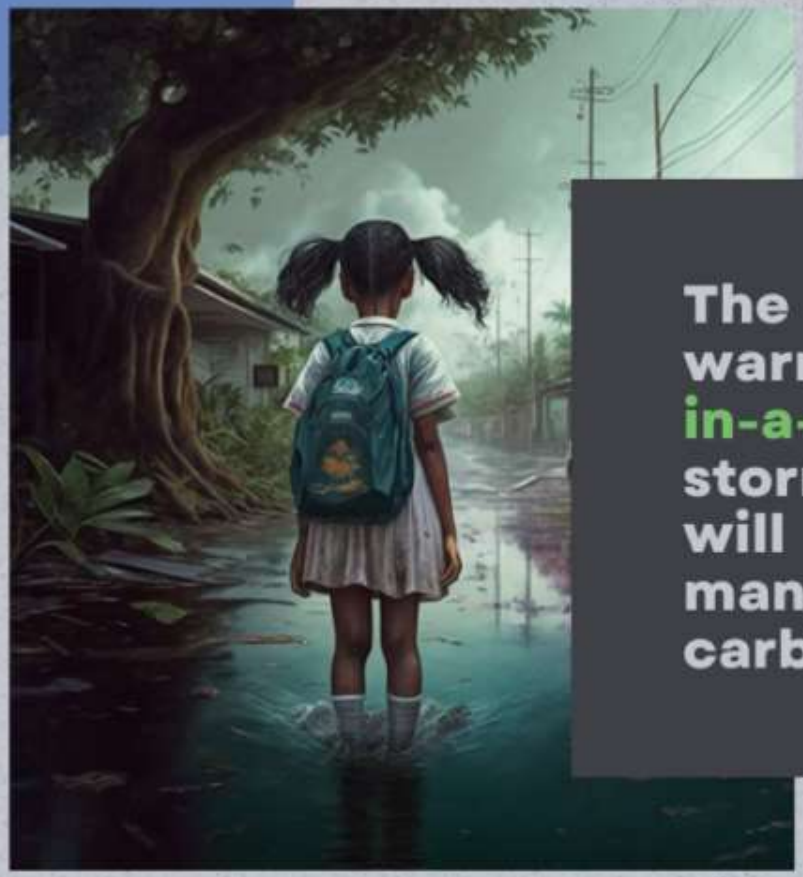
[2]Question asked of Americans (18+): Assuming global warming is happening, do you think it is caused mostly by human activities; caused mostly by natural changes in the environment;


CLIMATE CHANGE IS A HOAX!
GLOBAL WARMING WAS CREATED BY THE CHINESE!
CLIMATE SCIENCE IS NONSENSE!
AND YOU CALL ME A LOON!
www.greenhumour.com


IT'S FREEZING IN HERE, AND WE'RE STILL TALKING ABOUT GLOBAL WARMING!
NBC NEWS CALLED IT THE "GREAT FREEZE", AND WE'RE STILL TALKING ABOUT GLOBAL WARMING!
HECK, THERE'S ICE IN MY FREEZER, AND WE'RE STILL TALKING ABOUT GLOBAL WARMING!
SO LET'S PULL OUT OF THE PARIS CLIMATE AGREEMENT, IMPOSE RESTRICTIONS ON THE EPA & CLIMATE SCIENTISTS, AND REMOVE EVERY MENTION OF CLIMATE CHANGE FROM THE WHITE HOUSE RECORDS...
BECAUSE CLIMATE CHANGE IS A BIG, FAT HOA...
SPLAT!
THUD!
SOMEWHERE IN THE ARCTIC...
MAN! THAT WAS SOME THROW!
IT JUST HAD TO BE DONE.
www.greenhumour.com


THE MANY FACES OF CLIMATE CHANGE THIS YEAR
RECORD-SHATTERING WILDFIRES IN CANADA
SLOVENIA'S WORST FLOODING
A BURNING IBERIAN PENINSULA
ICE DISAPPEARING AT ALARMING LEVELS FROM THE ARCTIC
AN UNRECOGNIZABLE ANTARCTICA
TORRENTIAL RAIN & FLASH FLOODS IN HIMACHAL, INDIA
CRIPPLING FLOODS IN CHINA
CATASTROPHIC WILDFIRES IN MAUI, HAWAII
A DROUGHT-STRICKEN HORN OF AFRICA
CLIMATE CHANGE, YOU PLAY SO MANY ROLES EFFORTLESSLY, ALL AT ONCE! HOW DO YOU PULL IT OFF YEAR AFTER YEAR?
WELL, MY PRODUCERS ARE REALLY WELL-FUNDED!
www.greenhumour.com


THIS WEEK'S ENVIRONMENTAL HEADLINES:
FLOODS DEVASTATE THE HENAN PROVINCE OF CHINA...
EUROPE'S FLOOD DEATH TOLL CONTINUES TO RISE...
WILDFIRES RAGE ACROSS SIBERIA...
SEVERE HEAT WAVES CONTINUE IN PARTS OF THE USA, CANADA & SCANDINAVIA..
UNUSUALLY HEAVY RAINS & FLOODS DISRUPT LIFE IN VARIOUS PARTS OF INDIA...
THE BILLIONAIRE SPACE RACE ADDS A STAGGERING LOAD OF EMISSIONS TO THE ATMOSPHERE...
FOSSIL FUEL GIANTS CONTINUE RECEIVING SUBSIDIES FROM THE WORLD'S BIGGEST GOVERNMENTS..
ZEROWASTE ZINDA HAS SET OUT TO SAVE THE PLANET WITH HER BAMBOO TOOTHBRUSH.



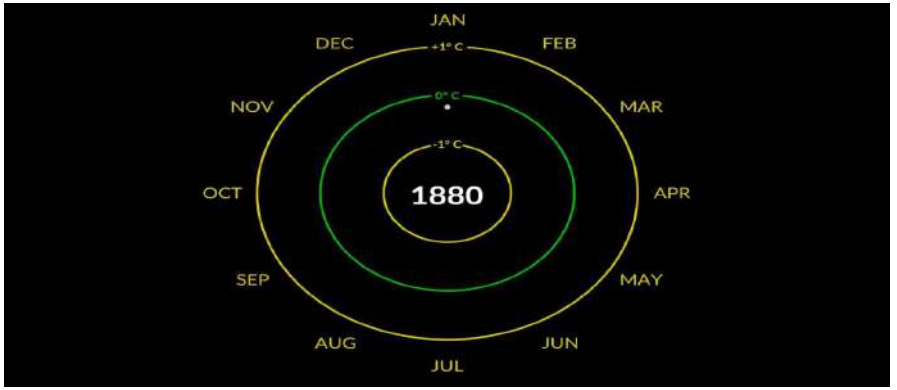
IPCC AR6 SYNTHESIS REPORT

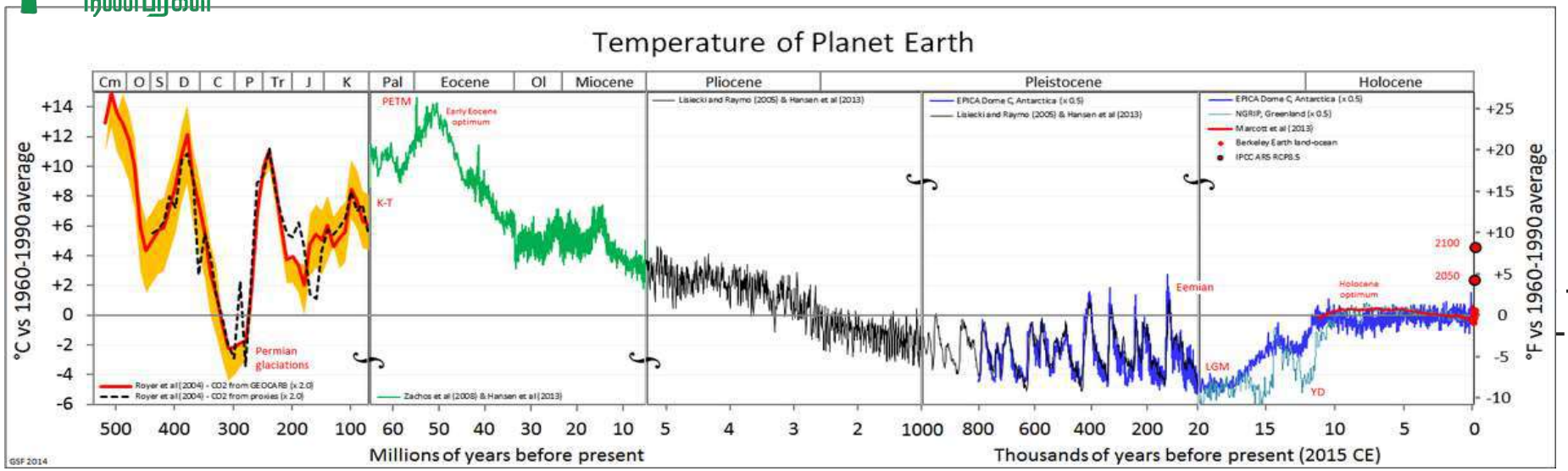
The IPCC Synthesis Report report warns that what is currently a **one-in-a-century event** with regards to storms, sea level rise and flooding, will become an **annual event** in many places unless the world cuts carbon immediately.

3. Who is responsible for Climate Change ?

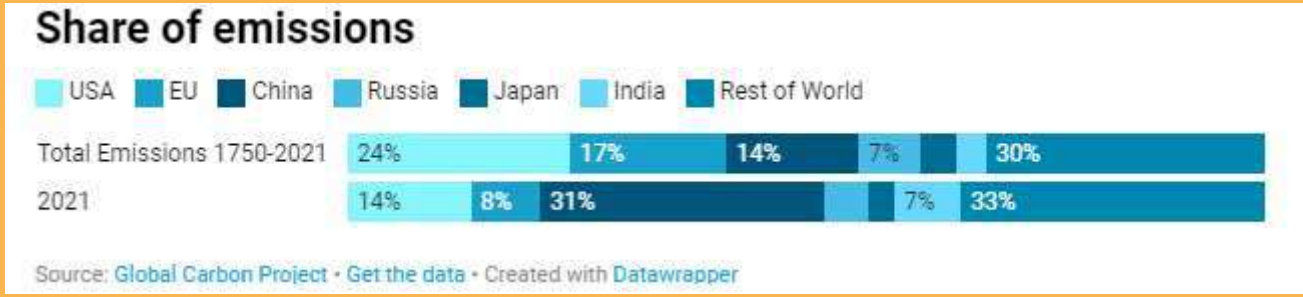
Anthropogenic emission

Emissions of greenhouse gases (GHGs), precursors of GHGs and aerosols caused by human activities. These activities include the burning of fossil fuels, deforestation, land use and land-use changes (LULUC), livestock production, fertilization, waste management and industrial processes





Historical Emission



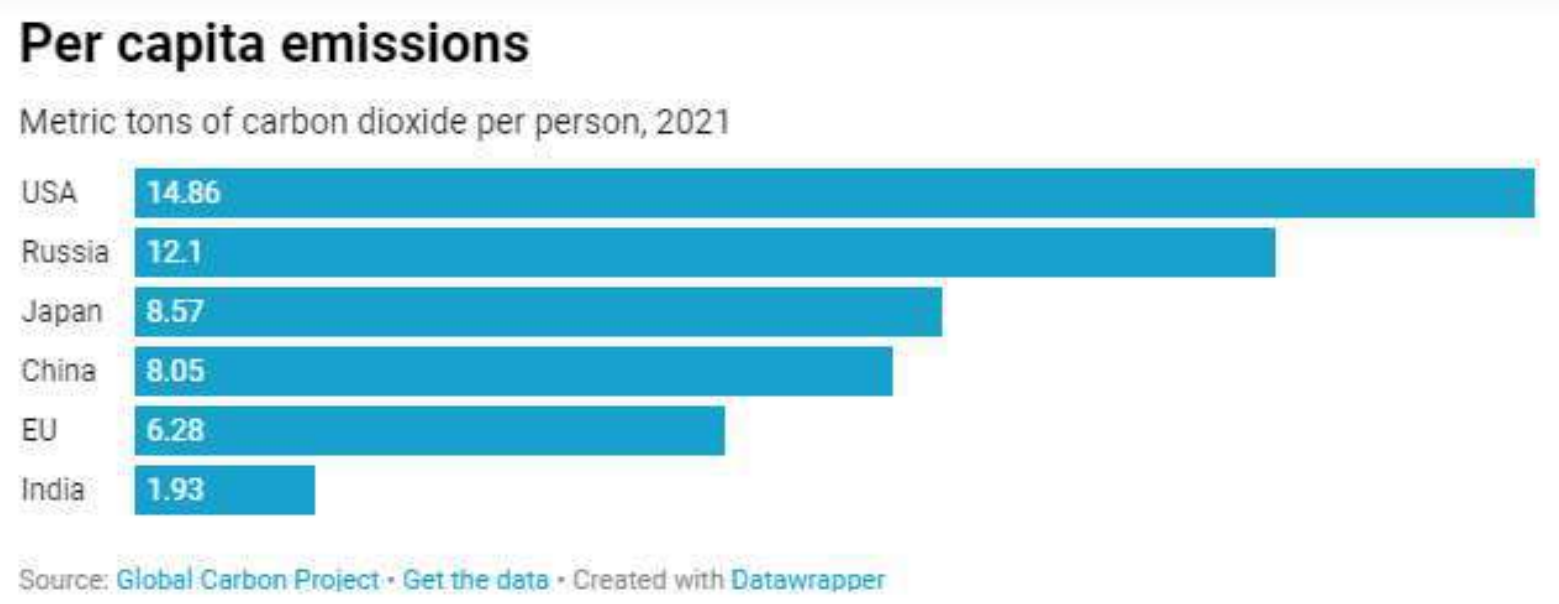
Historical Emissions from 1750-2021

USA + European Union + China + Russia + Japan +India = 70 %
Others = 30%

Emissions in 2021

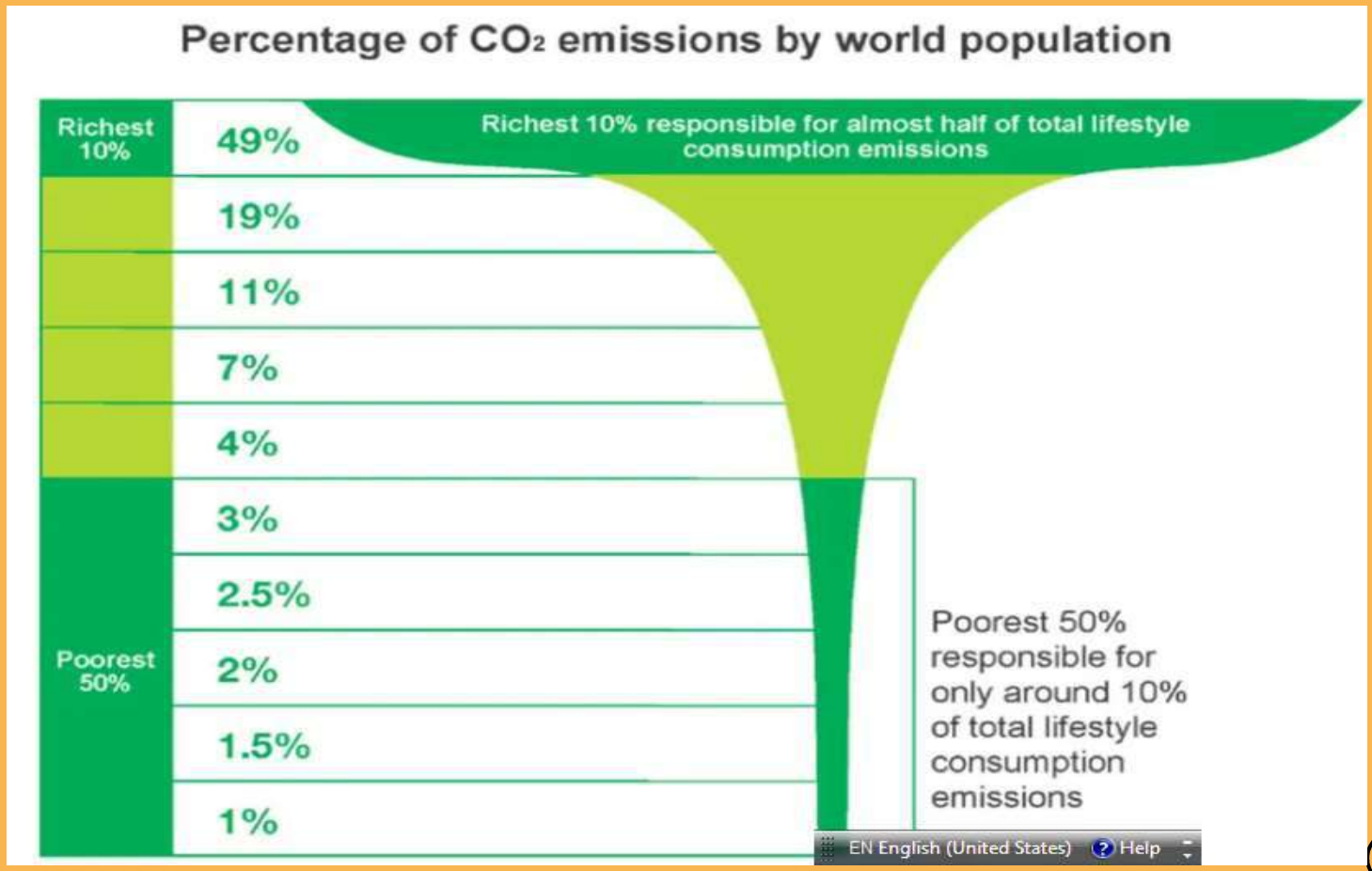
USA + European Union + China + Russia + Japan +India = 67%
Others = 33%

Per Captia Emissions

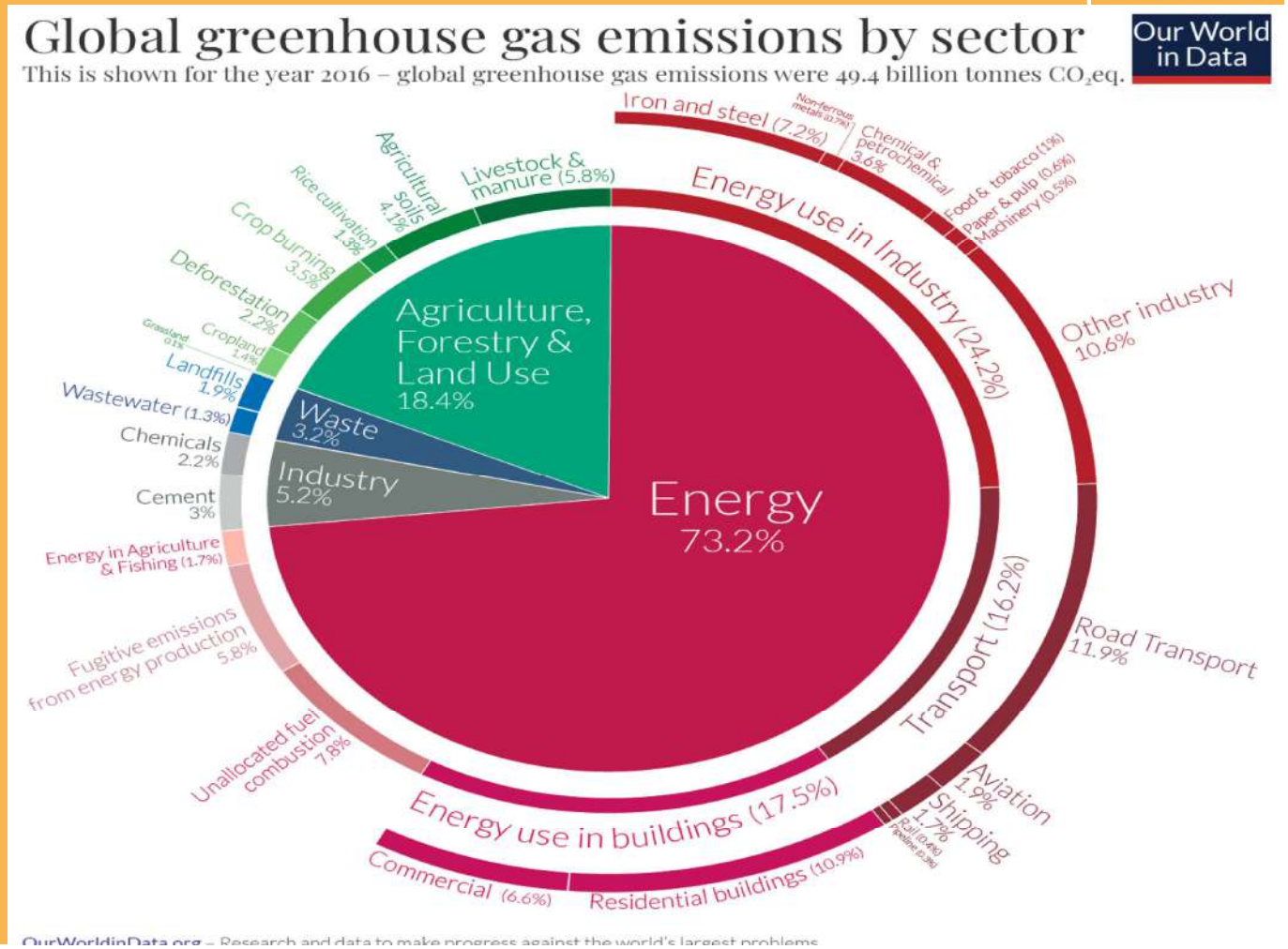


Emission By Cities

The global share of emissions that can be attributed to urban areas is increasing. In 2015, urban emissions were estimated to be 25 GtCO2-eq (about 62% of the global share) and in 2020, 29 GtCO2-eq (72% of the global share). -IPCC

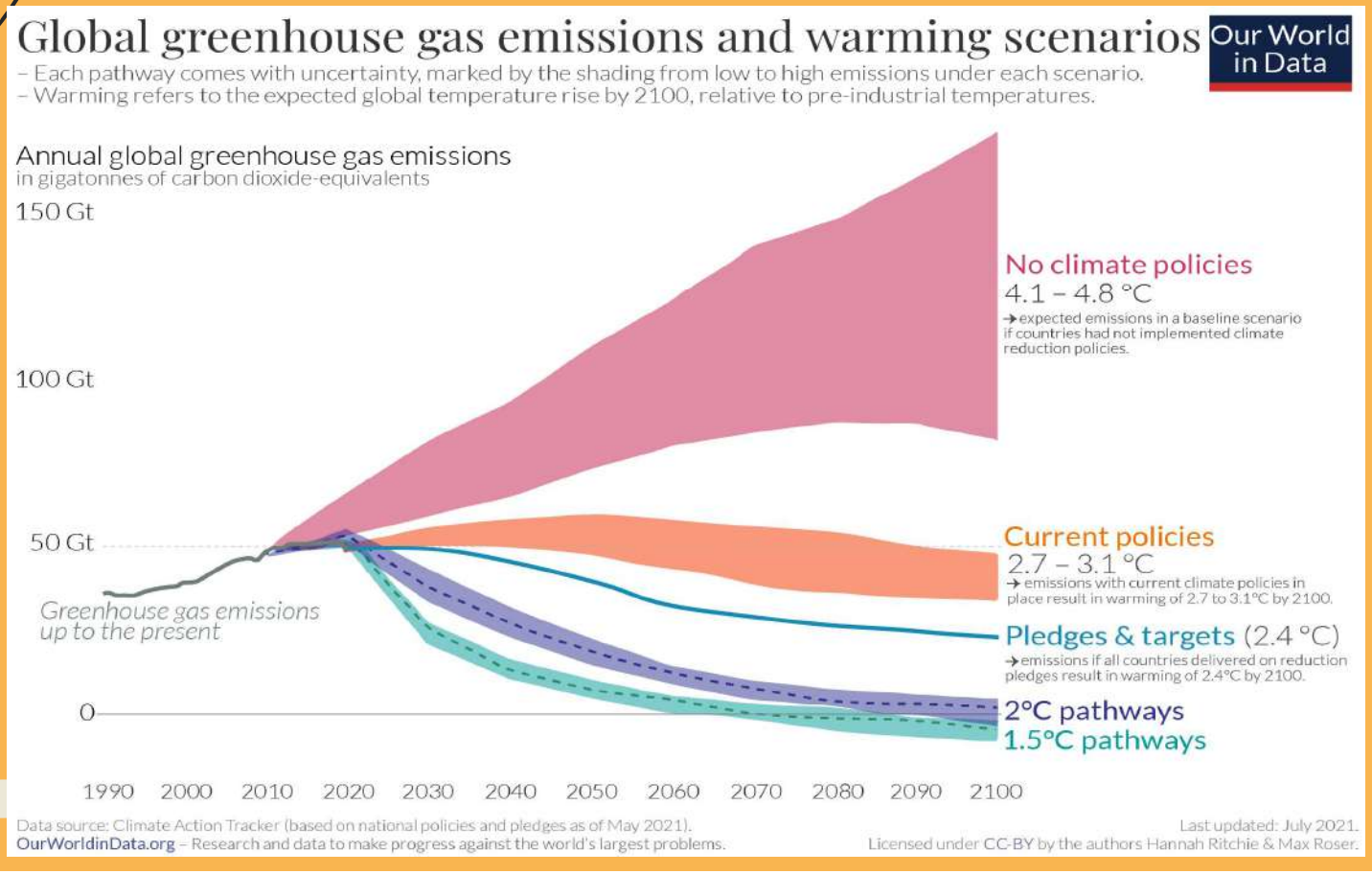

Percentage of CO_2 emissions by world population
Richest 10%
49%
Richest 10% responsible for almost half of total lifestyle consumption emissions
19%
11%
7%
4%
Poorest 50%
3%
2.5%
2%
1.5%
1%
Poorest 50% responsible for only around 10% of total lifestyle consumption emissions
EN English (United States)
Help

Sector wise Greenhouse Gas Emission



4. What is the status of Climate Change now?

Pathways to achieve 1.5ºC or 2.0ºC



Pathways to achieve 1.5ºC or 2.0ºC

Comparison of scenarios if global temperature is at 1.5ºC, 2.0ºC and 3.0ºC

5. What is the solution for Climate Change?

“

The science is clear.

Any further delay in concerted global action will miss a brief and rapidly closing window to secure a liveable future

”

- IPCC

பூவுலகின் நண்பர்கள்