

“பகுத்துண்டு பல்லுயிர் ஒம்புதல் நூலோர்
தொகுத்தவற்றுள் எல்லாந் தலை”

- திருவள்ளுவர்

ANNUAL ENVIRONMENT SURVEY REPORT 2019-2020



GOVERNMENT OF PUDUCHERRY
DEPARTMENT OF SCIENCE, TECHNOLOGY & ENVIRONMENT
PUDUCHERRY POLLUTION CONTROL COMMITTEE

WORLD ENVIRONMENT DAY

05.06.2020



WORLD
ENVIRONMENT
DAY



Editor

: **Dr. N. Ramesh**

Senior Environmental Engineer

Data Compilation : **R. Ilangovane**, D.E.O. **A. Abirami**, D.E.O.

C. Sarmila, D.E.O.



ANNUAL ENVIRONMENT SURVEY REPORT

2019 - 2020



**Government of Puducherry
Department of Science, Technology & Environment
Puducherry Pollution Control Committee**

**3rd Floor, Housing Board Building,
Anna Nagar, Puducherry – 605 005.**

✉ dste.pon@nic.in

☎ 0413 – 2201256

🌐 <https://dste.py.gov.in>

📞 0413 – 2203494

OUR VISION



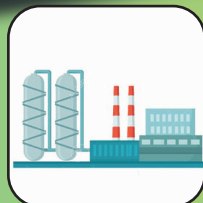
Creating Scientific & Environment awareness among the society & students

Enabling Knowledge generation by promoting basic scientific research



Protection and Conservation of Nature

Fostering Clean and Green Puducherry



Promoting sustainable Development Principles among industries and others

Annual Environment Survey Report - 2019-2020

V. NARAYANASAMY

Chief Minister



MESSAGE

The quality of environment and the quality of life are nearly synonymous. Maintaining the environment at an acceptable level of quality is the duty of Central, State and Local Governments and also the duty of all the citizens as per the provisions of the Constitution of India.

Our Government gives prime importance to environment protection in every step of progressing the State. All the development projects are evaluated for least environmental impacts.

I am very much pleased to note that Department of Science, Technology & Environment has released this Annual Environment Survey Report 2019-2020 on the eve of celebration of World Environment Day, It would be immense help to all concerned.

V. Narayanasamy

Puducherry

Date : 03.06.2020

Annual Environment Survey Report - 2019-2020

M. KANDASAMY

Minister for Environment



MESSAGE

Green and Clean Puducherry is vision of the Government. Pure air and non-polluted water are the two assets of the people. During the last year, thousands of tree saplings have been planted in the school campus and near water bodies. Many tanks and ponds have been rejuvenated.

Ban on Single Use Plastics, Online Consent Management, Online Environmental Monitoring System, Implementation of Barcode System in Biomedical Waste Management, Formation of Environmental Surveillance Squads, Formulation of various Action Plans for environment improvement are some of the notable achievement of the Department.

I appreciate the organization for bringing out this Annual Environmental Survey Report, 2019-2020.

M. Kandasamy

Puducherry

Date : 03.06.2020

Annual Environment Survey Report - 2019-2020

ASHWANI KUMAR, I.A.S

Chief Secretary to Government



MESSAGE

Environment protection has been enshrined in the Indian Constitution in the chapter IV-A that relates to Fundamental Duties. Human beings have worshipped the nature since time immemorial. Natural resources are not infinite, and conservation and their efficient use is the need of hour. Economic development and environment protection have to go hand in hand. In fact, development ultimately leads to better environment too.

This report by Department of Science, Technology and Environment brings out various activities and initiatives undertaken by it. I congratulate the department for this.

Ashwani Kumar, I.A.S

Puducherry

Date : 29.05.2020

Annual Environment Survey Report - 2019-2020

SMITHA R, I.A.S

Member Secretary /
Chairman (PPCC)



MESSAGE

Environment and Development are both sides of the same coin. Environment protection shall not diminish sustainable development of the society, similarly developmental activities cannot be allowed to affect the environment. Striking balance between the two issue is challenging task. Government of Puducherry is committed to protect the fragile environment of Puducherry.

Government of Puducherry has imposed ban on 10 types of single use plastic items since August, 2009 in the U.T. of Puducherry, shows its concern towards environment protection.


Performance Audit Team constituted under the direction of Hon'ble National Green Tribunal has placed Puducherry Pollution Control Committee in first place among the UTs and 7th position among all the SPCB. It reflects enthusiastic and dedicated work of the staff and degree of compliance of various provisions of Acts and Rules.

United Nation has declared this year World Environment Day theme as "Biodiversity - a call to action to combat the accelerating species loss and degradation of the natural world". Hence Department of Science, Technology & Environment will focus more activities on Biodiversity conservation.

I am sure that this Annual Environment Survey Report 2019-2020 forms an informative resource on Status of Environment of the U.T. of Puducherry.

Puducherry

Date : 28.05.2020


Smitha. R, I.A.S

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CHAPTER - 1

INTRODUCTION

Department of Science Technology and Environment (DSTE) is one of the prestigious department of Government of Puducherry. The following four autonomous bodies are functioning in DSTE:

- (i) Puducherry Pollution Control Committee (PPCC)
- (ii) Puducherry Coastal Zone Management Authority (PCZMA)
- (iii) State Level Environment Impact Assessment Authority (SEIAA)
- (iv) Puducherry Council for Science & Technology (PCS&T)

Puducherry Pollution control Committee is a statutory body which enforces various Acts, Rules and Notifications pertaining to environmental protection and natural conservation.

Puducherry Coastal Zone Management Authority is mandated with regulation of developmental activities in the coastal area.

State Level Environment Impact Assessment Authority was constituted under EIA Notification, 2006 and its main function is to issue of Environmental Clearance to Group 'B' project of Scheduled – I of the Notification.

Puducherry Council for Science, Technology is working towards creating scientific temper among the student community.

Intervention of Hon'ble National Green Tribunal in the field of environmental protection paved way for preparation of various Action Plans and its time bound implementation.

This report is collection and compilation of key activities of the Department and its autonomous bodies during the year 2019-2020, besides focusing on the existing scenario of various environmental factors viz. Ambient Air Quality, Surface and Ground Water Quality of U.T. of Puducherry.

This Annual Environment Survey Report is also prepared to comply with the provision of Section 39(2) of the Water (Prevention and Control of Pollution) Act, 1974 and Section 35(2) of the Air (Prevention and Control of Pollution) Act, 1981. It would be useful to student, Research Scholar and other related departments.



CHAPTER - 2

PUDUCHERRY POLLUTION CONTROL COMMITTEE

The Central Pollution Control Board has delegated the power and function vested with it to Puducherry Pollution Control Committee (PPCC) w.e.f. 01.04.1992 as per the provisions of Section 4 of the Water (Prevention and Control of Pollution) Act, 1974 and Section 6 of the Air (Prevention and Control of Pollution) Act, 1981. Subsequently PPCC has been reconstituted vide G.O 3-15/Envvt./2011 dt. 20.12.2011 as below :

- | | | | |
|----|--|---|------------------|
| 1. | Secretary to Government
(Science, Technology and Environment), Puducherry. | : | Chairman |
| 2. | Director of Industries
Puducherry. | : | Member |
| 3. | Director of Agriculture
Puducherry. | : | Member |
| 4. | Director of Health and Family Welfare Services
Puducherry. | : | Member |
| 5. | Commissioner, Puducherry Municipality | : | Member |
| 6. | Senior Town Planner
Town and Country Planning Department Puducherry. | : | Member |
| 7. | Commissioner, Karaikal Municipality | : | Member |
| 8. | Principal, Puducherry Engineering College | : | Member |
| 9. | Director
Science, Technology & Environment Puducherry. | : | Member Secretary |

**PUDUCHERRY POLLUTION CONTROL COMMITTEE
ORGANIZATION CHART**

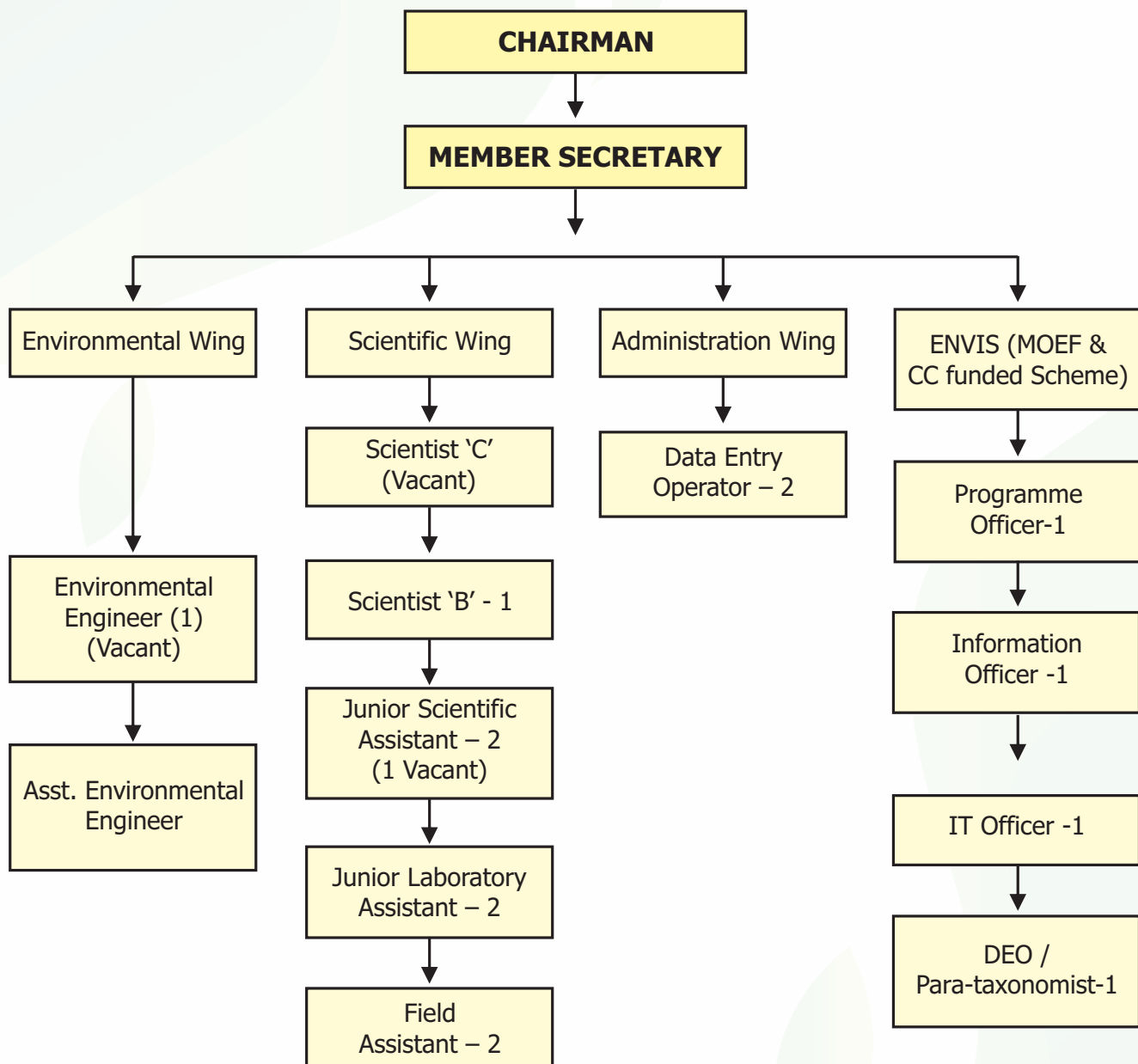


Fig : 1. PPCC Organization Chart

Table: 1. Details of PPCC meeting convened

No. of PPCC Meeting	Date of Convened
165th Meeting	08.08.2019
166th Meeting	04.12.2019

Functions of Puducherry Pollution Control Committee

- i) Planning comprehensive programme for the prevention and control of pollution.
- ii) Advise the State Government on framing environment and industrial policy.
- iii) Collect and disseminate information relating to natural resource, environment protection and pollution control.
- iv) Carrying research programmes in conservation and pollution control
- v) Collaborating with the Ministry of Environment, Forest and Climate Change and Central Pollution Control Board (CPCB) in organizing training related to prevention, control of pollution and to organize mass education programmes.
- vi) Scrutinize application and inspect the site and grant/reject Consent to Establish for industrial unit.
- vii) Ensure compliance of Consent to Establish conditions and issue Consent to Operate or initiate action against defaulter.
- viii) Keep strict vigil and monitoring on the industrial activity and performance of pollution control devices.
- ix) Evolving economical and reliable methods of treatment of sewage and trade effluent
- x) Encourage entrepreneur to pursue Corporate Social Responsibility (CSR) measures and adopt Clean Development Mechanism
- xi) Involving Self Help Groups, NGOs, Farmers and Students in environmental awareness creating programme.
- xii) Preparation of action plan on solid waste, biomedical waste, e-waste and hazardous waste management.

**The following Acts, Rules and Notifications are enforced by
Puducherry Pollution Control Committee in the U.T. of Puducherry**

1. The Water (Prevention and control of Pollution) Act, 1974
2. The Water (Prevention and Control of Pollution) Rules, 1975
3. The Air (Prevention and Control of Pollution) Act, 1981
4. The Air (Prevention and Control of Pollution) Rules, 1981
5. The Environment (Protection) Act, 1986
6. The Environment (Protection) Rules, 1986
7. The Manufacture, Storage and Import of Hazardous Chemical Rules, 1989
8. The Noise Pollution (Regulation and Control) Rules, 2000
9. The Ozone Depleting Substances (Regulation) Rules, 2000
10. The Batteries (Management & Handling) Rules, 2001
11. The Hazardous and Other Wastes (Management & Transboundary Movement) Rules, 2016
12. The Solid Waste Management Rules, 2016
13. The Plastic Waste Management Rules, 2016
14. The Bio-Medical Waste Management Rules, 2016
15. The E-Waste Management Rules, 2016
16. The Construction and Demolition Waste Management Rules, 2016
17. The Public Liability Insurance Act, 1991
18. Fly Ash Notification, 1991
19. Environmental Impact Assessment Notification, 2006
20. Notification on Coastal Regulation Zones, 2011

CHAPTER - 3

INDUSTRY SCENARIO OF PUDUCHERRY

Availability of good transport network, quality ground water potential, availability of technical manpower and conducive political atmosphere paved way of rapid industrialization in Puducherry.

Table: 2. UAM Registered units Details

Sl. No.	Months	Total No. of units filed	Industrial units
1	April 2018	196	53
2	May 2018	205	33
3	June 2018	161	26
4	July 2018	244	34
5	August 2018	186	21
6	September 2018	154	30
7	October 2018	172	36
8	November 2018	168	24
9	December 2018	182	33
10	January 2019	176	29
11	February 2019	248	33
12	March 2019	217	39
	Total	2307	391

Table: 3. UAM Registered units Details

Sl. No.	Months	Total No. of units filed	Industrial units	Employment (Nos.)	Investment (in Lakhs)
1	April 2019	100	22	103	280
2	May 2019	112	28	358	142
3	June 2019	105	26	350	135
4	July 2019	100	13	82	262
5	August 2019	198	29	112	338
6	September 2019	296	30	147	1529
7	October 2019	100	9	55	172
8	November 2010	95	10	43	43
9	December 2019	245	31	385	455

CHAPTER - 4

CONSENT MECHANISM

Based on the Guidelines of Central Pollution Control Board (CPCB), industries located in the U.T. of Puducherry have been categorized into four types based on Pollution Index Score as given below:

Table: 4. Sector wise Categorization of Industry

Pollution Index Score	Category	No. of Industries
Above 60	Red	174
41-59	Orange	1681
21-40	Green	2778
Upto 20	White	71
Total		4704

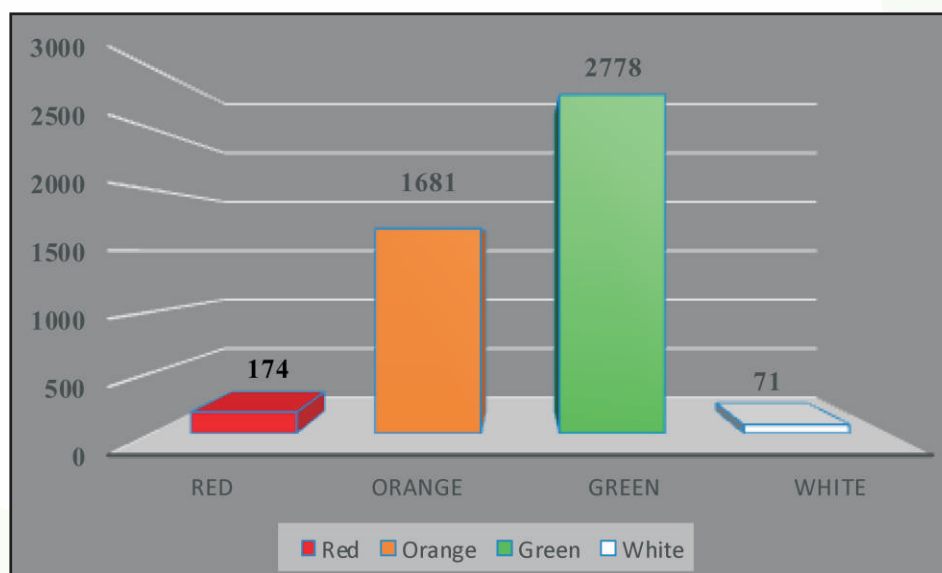


Fig: 2. Category wise Industries located in Puducherry

a. Consent to Establish (No Objection Certificate)

Application will be forwarded by Industries Department (Red Category) and through Single Window Committee (Green and Orange). PPCC consider the following aspects for considering the proposal for issue of consent to establish:

- Pollution potential and its abatement measures.
- Site Clearance from Town & Country Planning Department.
- Power feasibility issued by the Electricity Department.
- Ground Water Clearance from Ground Water Authority.
- Land Conversion from State Land Use Board.

b. Consent to Operate

Based on the compliance of Consent to Establish conditions, Consent to Operate is issued.

c. Renewal of Consent

Table: 5. Periodicity of Renewal

Category	Period
Green	15 years
Orange	10 years
Red	5 years

d. Delegation of power

In order to simplify and expedite the consent procedure, power has been delegated at different levels as given below:

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Table: 6. Delegation of Power for issue of Consent

Sl.No	Category	Size	Issue of NOC	Issue of Consent Operate	Issue of Consent Renewal
1	Red	Large, Medium & Small	Committee	Chairman	Chairman
2	Orange	Large, Medium	Chairman	Member Secretary	Member Secretary
		Small	Member Secretary		
3	Green	Large & Medium	Member Secretary		
		Small	Member Secretary	Exempted from obtaining Consent to operate and renewal of consent	

PPCC introduced Online Consent Management and Monitoring Systems (OCMMS). Entrepreneur can apply through online for Consent to Establish and Renewal of Consent in <https://ponocmms.nic.in/>

PPCC has issued 121 Consent To Establish during the year 2019-2020.

Table: 7. Details of Consent to Establish, Operate and Renewal Issued

Sl.No	Month	Consent to Establish/NOC	Consent to Operate	Consent Renewal
1.	April 2019	7	0	0
2.	May 2019	5	1	5
3.	June 2019	10	0	4
4.	July 2019	11	0	8
5.	August 2019	17	0	10
6.	September 2019	6	1	4
7.	October 2019	6	3	3
8.	November 2010	12	2	9
19.	December 2019	13	2	8
10.	January 2020	5	1	6
11.	February 2020	11	0	3
12.	March 2020	19	3	6
	Total	121	13	66

CHAPTER - 5

LABORATORY

Department of Science, Technology & Environment is equipped with Laboratory housed in a separate building. The Environmental Analytical Laboratory is assessed and accredited by National Accreditation Board for Testing and Calibration Laboratories (NABL), Haryana in accordance with the standard ISO/IEC 17025:2017 in the field of testing.

		National Accreditation Board for Testing and Calibration Laboratories (A Constituent Board of Quality Council of India)	
<u>CERTIFICATE OF ACCREDITATION</u>			
ENVIRONMENTAL ANALYTICAL LABORATORY, DEPARTMENT OF SCIENCE, TECHNOLOGY & ENVIRONMENT, PUDUCHERRY POLLUTION CONTROL COMMITTEE,			
has been assessed and accredited in accordance with the standard			
ISO/IEC 17025:2017			
"General Requirements for the Competence of Testing & Calibration Laboratories"			
for its facilities at			
R.S.NO. 189, GARAGE BUILDING, IYYANAR KOIL STREET, MARIE OULGARET, METTUPALAYAM, OZHUKARAI, PUDUCHERRY, INDIA			
in the field of			
TESTING			
Certificate Number:	TC-6480		
Issue Date:	03/11/2019	Valid Until:	02/11/2021
This certificate remains valid for the Scope of Accreditation as specified in the annexure subject to continued satisfactory compliance to the above standard & the relevant requirements of NABL. (To see the scope of accreditation of this laboratory, you may also visit NABL website www.nabl-india.org)			
Signed for and on behalf of NABL			
	 N. Venkateswaran Chief Executive Officer		

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Activities

- Ambient Air Quality and Stack Monitoring
- Ambient Air Quality Monitoring under National Ambient Air Quality Monitoring Programme (NAMP)
- Industrial Effluent Monitoring
- Water Quality Monitoring under National Water Quality Monitoring Programme (NWMP)
- Surface and Ground water quality monitoring
- Monitoring on festival occasion
- Noise Monitoring

Table: 8. Details of monitoring conducted during 2019 – 2020

S.No	Type of Monitoring	No. of Monitoring
1	Ambient	57
2	Stack	07
3	Noise	11
4	Effluent	113



Fig: 3. Sampling in oxidation pond, Lawspet



Fig: 4. Ambient air quality monitoring



Fig: 5. Noise monitoring



Fig: 6. River water sampling

Participation in the training programme by the Laboratory Staff



Fig: 7. Dr. V. R. Sumathi and Tmt. G. Rukmani, Scientists participated in "Analysis of Pesticides & Other Organic Chemicals in Environmental Samples" organized by CSIR-Indian Institute of Toxicology Research.



Fig: 8. Thiru. P. Sathiamurugan, participated Indoor and Outdoor Air Pollution: Standards and Impact on Human Health – Case Studies" organized by PGIMER, Punjab University, Chandigarh.



Fig: 9. Thiru J. Ilango, JLA participated CPCB sponsored training programme on 'Clean Technologies' at Kanpur.



Fig: 10. Thiru L. Xavier Kennedy, JSA attended Water Quality Monitoring Workshop Organized by Central Pollution Control Board (South Zone) at Bangalore from July 10th to 12th 2019.



Fig:11. Training on "Air Quality Monitoring (Ambient & Source) and Continuous Ambient Air Quality Monitoring (CAAQM) from 14th to 18th October – 2019 at ROHC (South), Bangalore.

CHAPTER - 6

STATUS OF AMBIENT AIR QUALITY

Puducherry Pollution Control Committee is carrying out ambient air quality monitoring at the following six locations in the U.T. of Puducherry under the 'National Air quality Monitoring Programme (NAMP) of Central Pollution Control Board (CPCB). The monitoring of pollutants are carried out for 24 hours (4-hourly sampling for gaseous pollutants and 8-hourly sampling for particulate matter) with a frequency of twice in a week.

Table: 9. Location of NAMP Stations

Sl. No.	Location Name	Location Type	Source of Pollution
1	Local Administrative Department Building , Suffren Street, Puducherry.	Residential area	Vehicle emission and natural dust from road
2	Dept of Science Technology and Environment Building, Anna Nagar, Puducherry.	Residential cum Commercial area	Vehicle emission and natural dust from road
3	Electricity Department, Mettupalayam Industrial Estate, Puducherry.	Industrial area	Industrial Pollution and vehicular pollution.
4	B.Ed. College, Nehru Nagar, Karaikal	Residential area	Vehicle emission and natural dust from road
5	Govt. Guest House, Kovilpathu, Karaikal	Residential cum Commercial area	Vehicle emission and natural dust from road
6	PPCL, Polagam, T.R. Pattinam, Karaikal	Industrial area	Industrial Pollution and vehicular pollution.

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Table: 10. Annual Average Concentration of Pollutants at the Six Locations in the U.T. of Puducherry for the year 2019

Sl. No.	Location	Pollutant in $\mu\text{g}/\text{m}^3$		
		PM ₁₀	SO ₂	NO ₂
1	LAD	34	3.8	10.0
2	DSTE	46	4.6	12.8
3	PIPDIC	50	4.8	12.5
4	B.Ed college	34	2.2	5.0
5	Govt Tourist Home	45	2.0	5.5
6	PPCL	42	2.1	5.4
		60	50	40

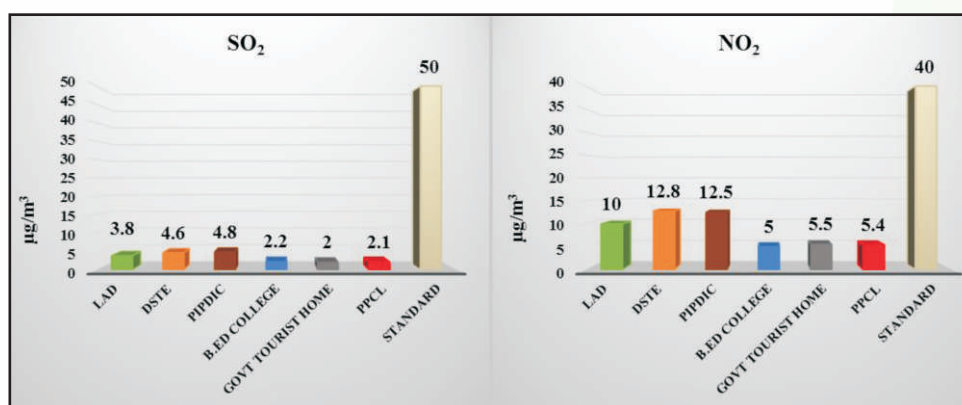


Fig: 12. Concentration of SO₂

Fig: 13. Concentration of NO₂

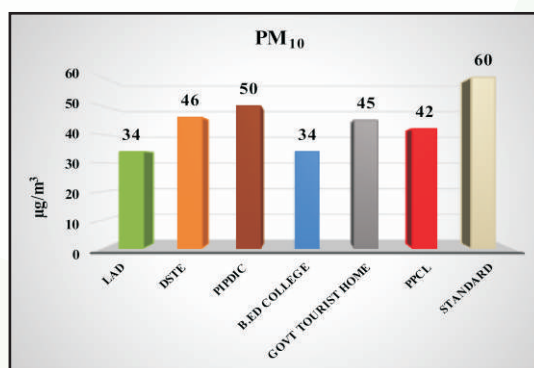


Fig: 14. Concentration of PM₁₀

- The monitoring result reveals that 24 Hourly average concentration of Particulate Matter (Size less than 10 μm) - PM_{10} measured in all the six locations are within the prescribed standard limit of 100 $\mu\text{g}/\text{m}^3$.
- Annual average concentration of PM_{10} measured in all the six locations are in the ranges from 34 – 50 ($\mu\text{g}/\text{m}^3$) which is within the prescribed standard limit of 60 $\mu\text{g}/\text{m}^3$.
- The annual average concentrations of the pollutants viz., SO_2 & NO_2 in all the six locations are within the prescribed standard limits.
- Reasons for low levels of pollution in coastal cities like Puducherry is that it has excellent dilution effects due to sea and land breezes which reduces pollution levels.

Air Quality Index

Air Quality Index is a tool for effective communication of air quality status to people in terms which are easy to understand. It transforms complex air quality data of various pollutants into a single number (index value), nomenclature and colour.

There are six AQI categories, namely Good, Satisfactory, Moderately, Poor, Very Poor, and Severe. Each of these categories is decided based on ambient concentration values of air pollutants and their likely health impacts (known as health breakpoints). AQ sub-index and health breakpoints are evolved for eight pollutants (PM_{10} , $\text{PM}_{2.5}$, NO_2 , SO_2 , CO , O_3 , NH_3 , and Pb) for which short-term (upto 24-hours) National Ambient Air Quality Standards are prescribed.

Based on the measured ambient concentrations of a pollutant, sub-index is calculated and the worst sub-index determines the overall AQI.

Air Quality Index in the U.T. of Puducherry is reported for three parameters. The key pollutant is PM_{10}

Table: 11. Breakpoints for AQI Scale 0-500 (units: $\mu\text{g}/\text{m}^3$)

AQI	PM₁₀	NO₂	SO₂
Good (0-50)	0-50	0-40	0-40
Satisfactory (51 - 100)	51-100	41-80	41-80
Moderate (101 - 200)	101-250	81-180	81-380
Poor (201 -300)	251-350	181-280	381-800
Very Poor (301-400)	351-430	281-400	8.1-1600
Severe (>400)	430+	400+	1600+

Table: 12. Status of Category-wise numbers of AQI in the U.T. of Puducherry for the year 2019

AQI Category	AQI Range $\mu\text{g}/\text{m}^3$	Colour Code	Numbe of AQI Values in Different Catego ry		Pollutant-wise Number of AQI Values in AQI Category	Possible Health Impacts
			No of AQI Value	% of AQI Value	PM₁₀	
Good	0-50		413	76.2	413	Minimal Impact
Satisfactory	51-100		128	23.6	128	Minor breathing discomfort to sensitive people
Moderate	101-200		1	0.2	1	Breathing discomfort to the people with lung disease, heart disease to the children and older adults
Total AQI Value			542	100	542	

Table: 13. Health Statement for AQI Category

AQI	Possible Health Impacts
Good (0-50)	Minimal Impact
Satisfactory (51 - 100)	Minor breathing discomfort to sensitive people
Moderate (101 - 200)	Breathing discomfort to the people with lung disease, heart disease to the children and older adults
Poor (201 -300)	Breathing discomfort to people on prolonged exposure
Very Poor (301-400)	Respiratory illness to people on prolonged exposure
Severe(>400)	Respiratory effects even on healthy people

The calculated AQI values for 24 hourly average concentrations are categorized as Good to Satisfactory for the year 2019 at all the six locations. The Prominent parameter is PM₁₀. The AQI value calculated for the two cities for PM₁₀ showed that 76.2 % of AQI value i.e. 413 AQI values out of total 542 AQI values revealed by Good Category 23.6 % of AQI value i.e. 128 AQI values showed Satisfactory Category and 0.2 % of the AQI values i.e.1 AQI values reported as Moderate Category.

The overall AQI can give clear view about ambient air and the report reveals that PM₁₀ is mainly responsible to determine the air quality which can be easier for a common man to understand. The PM₁₀ concentration in the Puducherry and Karaikal region is sourced predominantly from the anthropogenic activity, which may be due to vehicle movement, road dust and industrial activity.

Broad guidelines for Public:

AQI is an initiative intended to enhance public awareness and involvement in efforts to improve air quality. People can contribute by maintaining vehicles properly (e.g. get PUC checks, replace car air filter, maintain proper tyre pressure), following lane discipline & speed limits, avoiding prolonged idling and turning off engines at red traffic signals.

In addition to the above, during severe or very poor AQI, people should minimize travel, avoid using private vehicles and instead use public transport, bikes or walk, and carpool.

Ambient Air and Noise Pollution Levels – Diwali 2019

Every year Puducherry Pollution Control Committee conducts Ambient Air Quality as well as Noise monitoring to ascertain the impact of bursting of crackers during Diwali festival. This year also, Puducherry Pollution Control Committee had conducted Ambient Air Quality and Noise monitoring on normal day and on Diwali day to assess the environmental impact of bursting of crackers on the Environment.

The Noise survey reveals that there is an increase in ambient noise level on the day of Diwali [83.3 Leq dB (A)] in comparison to the normal day [68.03 Leq dB (A)]. The main cause of increase in the ambient noise level on the Diwali day is due to bursting of crackers and vehicular movement. However, the measured noise levels on Diwali day were found to be within the Hon'ble Supreme Court directive on noise level of 125 dB(A).

In Puducherry, Air Quality Monitoring for the year 2019 reveals that the concentration of Particulate Matter (PM_{10}) was found significantly higher $175 \mu g/m^3$ on the day of Diwali when compared to normal day $45 \mu g/m^3$. Whereas at Karaikal the concentration of Particulate Matter (PM_{10}) is $77 \mu g/m^3$ on the day of Diwali and is higher when compared to normal day $39 \mu g/m^3$.

The concentration of Particulate Matter (PM_{10}) on Diwali day 2018 in Puducherry and Karaikal is $124 \mu g/m^3$ and $73 \mu g/m^3$ respectively. There is no much deviation in the concentration of gaseous pollutants viz., SO_2 and NO_2 on Diwali day when compared to normal day.

Air Quality Index (AQI) in Puducherry on Diwali day falls under Moderate category and on Normal day in good category and in Karaikal it falls in good category on Normal day and satisfactory category on Diwali day.

Table: 14. Ambient Air Quality Level on Normal Day & Diwali Day 2019 in Puducherry & Karaikal

Monitoring Location	Parameters Monitored					
	Normal Day (24.10.2019)			Diwali Day (27.10.2019)		
	SO_2	NO_2	PM_{10}	SO_2	NO_2	PM_{10}
Anna Nagar, Puducherry	6.1	17.3	45	2.8	10.2	175
Kovilpathu, Karaikal	2	5.4	39	5.8	10.2	77
NAAQ Standards	80	80	100	80	80	100

(Concentration expressed in $\mu g/m^3$)

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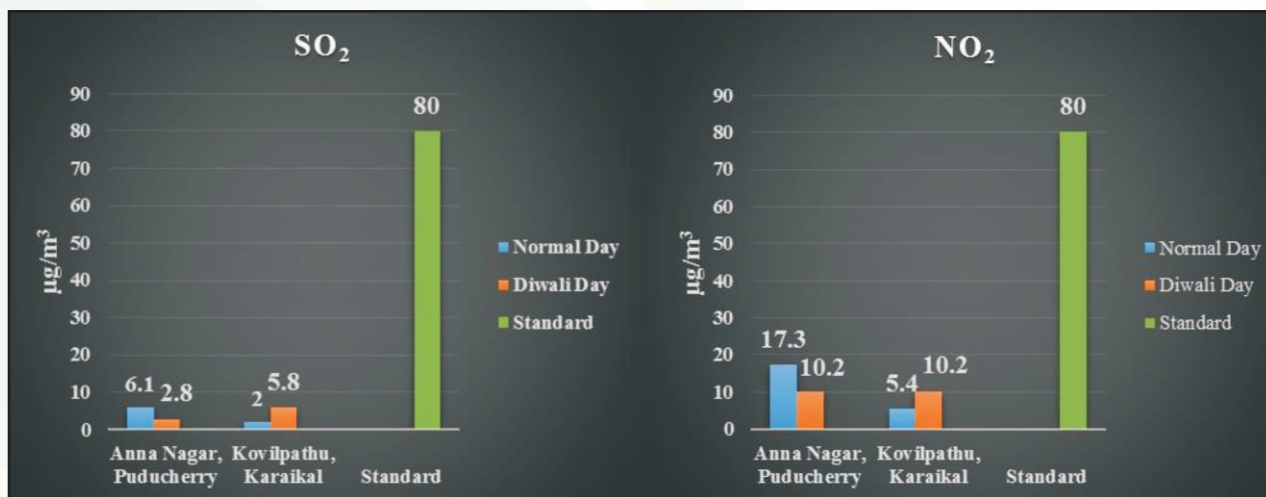


Fig. 15. SO₂ Concentration

Fig. 16. NO₂ Concentration

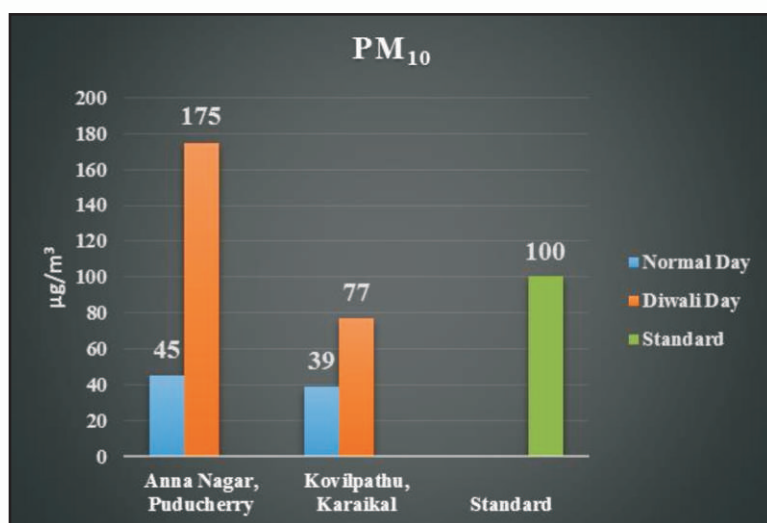


Fig. 17. PM₁₀ Concentration



Table: 15. Ambient Noise Level Monitored on Normal Day & Diwali Day 2019

Time Duration 18.00 to 24.00 Hr	Normal Day (21.10.2019)	Diwali Day (27.10.2019)
LeqdB(A)	68.03	83.33
LmaxdB(A)	87.73	108.92
LmindB(A)	50.82	55.80

Compliance of Hon'ble Supreme Court Judgement dated 23.10.2018

Puducherry Pollution Control Committee conducted short term ambient air quality monitoring in Puducherry for 14 days (Commencing from 7 days prior to Diwali and 7 days after Diwali) for the parameters namely particulate matters such as PM₁₀, PM_{2.5}, Sulphur Dioxide(SO₂), Nitrogen Dioxide(NO₂), Lead(Pb), Arsenic(As), Nickel(Ni), Aluminum(Al), Barium(Ba), Iron(Fe), Strontium(Sr) and Sulphur(S) as instructed by Central Pollution Control Board for compliance of Hon'ble Supreme Court Judgement dated 23.10.2018.

Accordingly, 14 days monitoring was conducted at two locations viz., (i) Balaji Nagar, Reddiarpalayam and (ii) Mudaliarpet. The analysis report reveals the following :

- ♦ The increase in concentration of PM₁₀ and PM_{2.5} is observed at both locations on the day of Deepawali.
- ♦ The concentration of PM₁₀ monitored at location I on 26.10.2019, 27.10.2019 and 28.10.2019 was 117 µg/m³, 133 µg/m³ and 185 µg/m³ respectively. and at location II on 27.10.2019 133 µg/m³ are higher than the prescribed standard limit and on the eve of Diwali i.e. on 26.10.2019 the value was 99µg/m³, nearest to the standard limit 100 µg/m³. Aftermath of Diwali the PM₁₀ level was reduced which is noted from the results of 28.10.2019 (88 µg/m³).
- ♦ The concentration of PM_{2.5} monitored at location I on 27.10.2019 (99 µg/m³) on the day of Diwali and 28.10.2019 (86 µg/m³) and at location II on 27.10.2019 the day of Diwali (88 µg/m³) are higher than the prescribed standard limit and on the eve of Diwali i.e. on 26.10.2019 the value is 59 µg/m³ of nearest to the standard limit of 60 µg/m³.
- ♦ The concentration of SO₂ and NO₂ remains within the prescribed standard limit of 80 µg/m³ in all the days.
- ♦ Arsenic, Barium, Iron and Strontium are below detectable limit in ambient air samples in all the days of monitoring.
- ♦ Lead is present in the sample on few days. But within the prescribed standard limit of 1 µg/m³. Nickel also present in the sample on few days ranges from (1.2 - 7.7 µg/m³) and (1.2 - 8.6 µg/m³) at location I and location II respectively.

CHAPTER - 7

STATUS OF WATER QUALITY

Department of Science, Technology & Environment / Puducherry Pollution Control Committee has been monitoring Water quality periodically at 31 locations with financial assistance from Central Pollution Control Board under National Water Quality Monitoring Programme (NWMP). Monitoring is carried out on quarterly basis in surface water bodies in Puducherry and Karaikal regions, annually in Mahe and Yanam regions and during pre and post monsoon in the case of ground water.

Objectives of Water Quality Monitoring

The water quality monitoring is performed with the following main objectives:

- To understand the nature and extent of Anthropogenic effect on water quality.
- To evaluate the extent of pollution control system required and its effectiveness.
- To assess water quality trends over a period of time.
- To determine assimilative capacity of a water body.
- To understand the environmental fate of different pollutants.
- To examine the fitness of water for different uses.

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Table: 16. List of Water Quality Monitoring Stations

Puducherry Region:

S.No	Location	Type	Latitude	Longitude	Date of Inception
1	Ousteri	Lake	11° 57'01.9" N	79° 44' 47.7" E	11-01-90
2	Kanagan Lake	Lake	11° 56' 50.4"N	79° 45' 58.9"E	05-09-18
3	Bahour	Lake	11° 49'47.8" N	79° 44' 35.3" E	15-05-02
4	Chunnambar	River	11° 52'59.9" N	79° 47' 57.0" E	15-05-02
5	Mission St.,- ChettyKoil	Openwell	11° 56'12.9" N	79° 49' 51.7" E	15-05-02
6	Krishna Nagar	Borewell	11° 57'10.88" N	79° 49' 12.68" E	11-01-90
7	Thengaithittu	Borewell	11° 54'37.24" N	79° 49' 03.10" E	11-01-90
8	Muthirappalayam	Borewell	11° 56'17.26" N	79° 46' 47.73" E	01-01-92
9	Pondicherry University, Kalapet	Borewell	12°01'01.43" N	79° 51'02.74" E	01-01-92
10	Katterikuppam	Borewell	12° 00'17.03" N	79° 42' 02.92" E	15-05-02
11	Kurumbapet	Borewell	11° 55'49.81" N	79° 45' 41.50" E	16-05-06
12	Mettupalayam	Borewell	11° 56'35.64" N	79° 47' 07.64" E	15-05-06
13	Uruvaiyar (Old Location)	Borewell	11°53'29.45" N	79° 45'06.95" E	15-05-06
	Uruvaiyar (New Location)	Borewell	11°53'10.7" N	79° 45'03.7" E	17-09-19
14	Maruthi school, Karuvadikuppam	Borewell	11° 58'04.79" N	79° 49'02.03" E	15-05-06
15	Echandadu, Kirumambakkam	Borewell	11° 49'17.29" N	79° 47'46.42" E	12-09-17
16	Nearby Lake, Bahour	Borewell	11° 48'42.87" N	79° 44'44.77" E	12-09-17
17	Chevalier Sellane Govt. Higher Secondary School, Kalapet	Borewell	12° 02'16.88" N	79° 51'56.60" E	11-09-17
18	DhandayarKulam, Sedarapet	Borewell	11° 59'25.5" N	79° 45'19.0" E	12-09-17
19	Kothapurinatham,Thiruvandarkoil	Borewell	11° 55'49.8" N	79° 39'42.1" E	12-09-17
20	Thirukkanur	Borewell	11° 59' 28.03"N	79° 38' 23.07"E	16-09-19
21	Madukarai	Borewell	11° 52' 17.07"N	79° 36' 13.35"E	16-09-19
22	Panithittu	Borewell	11° 49' 46.19"N	79° 48' 11.05"E	16-09-19

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Karaikal Region :

S.No	Location	Type	Latitude	Longitude	Date of Inception
1	Arasalar	River	10° 54' 34.2" N	79 ° 49' 4.2" E	15-05-2002
2	T.R.Pattinam	Borewell	10° 50' 28.6" N	79 ° 49' 55.6" E	16-05-2006
3	Vadamattam	Borewell	11° 58' 5.7" N	79 ° 47' 43.8" E	16-05-2006

Yanam Region :

S.No	Location	Type	Latitude	Longitude	Date of Inception
1	Gautami - Godavari River Near Balayogi Bridge	River	16° 43' 30.25" N	82 ° 12' 21.46"E	07-01-2009
2	Gautami - Godavari River Near Adavipolam	River	16° 42' 52.54" N	82 ° 15' 41.53"E	07-01-2009
3	Coringa River (Tidal Lock)	River	16° 43' 48.6" N	82 ° 13' 2.6" E	07-01-2009

Mahe Region :

S.No	Location	Type	Latitude	Longitude	Date of Inception
1	Mahe river	River	11° 42' 36.88" N	75 ° 32' 11.22" E	07-01-2009
2	Pallur	Openwell	11° 43' 58.06" N	75 ° 32' 16.95" E	07-01-2009
3	Panthakkal	Openwell	11° 45' 40.24" N	75 ° 32' 13.02" E	07-01-2009

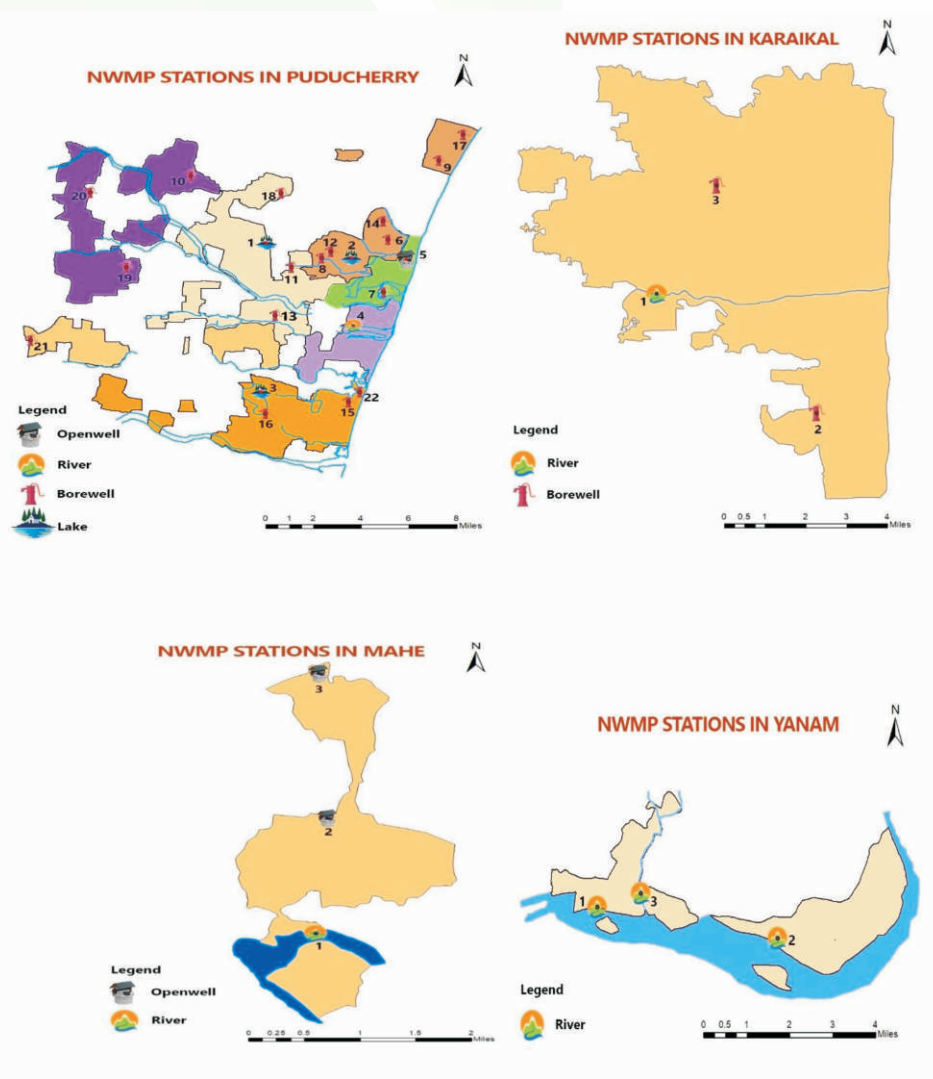


Fig. 18. Water Quality Monitoring Stations

Type of Water Quality Monitoring Stations

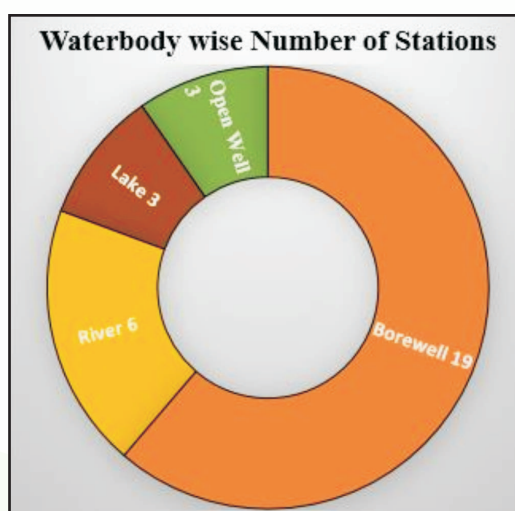


Fig. 19. Waterbody Stations

Status of Surface Water Quality - Pondicherry and Karaikal 2019 -2020

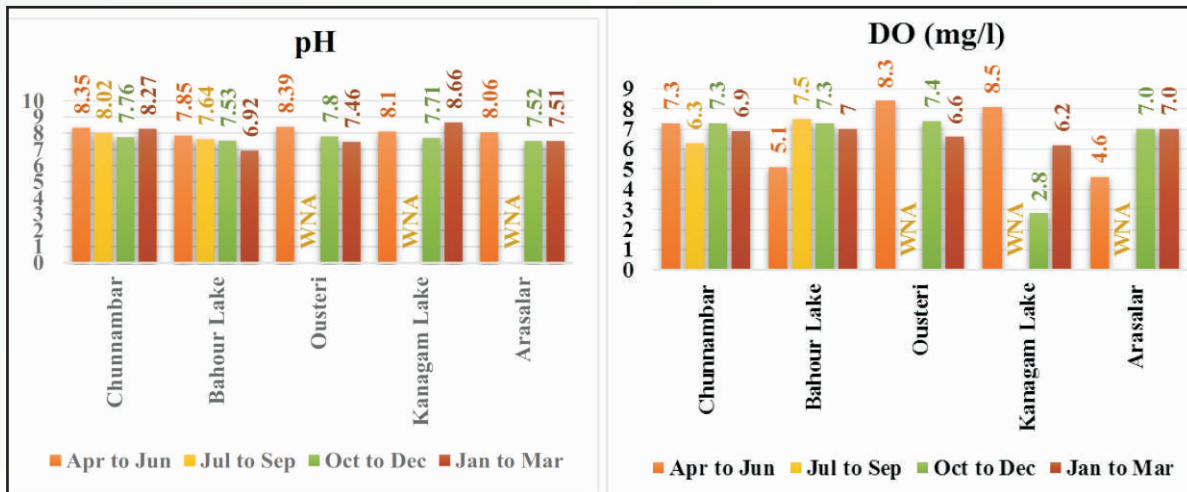


Fig. 20. pH

Fig. 21. DO (mg/l)

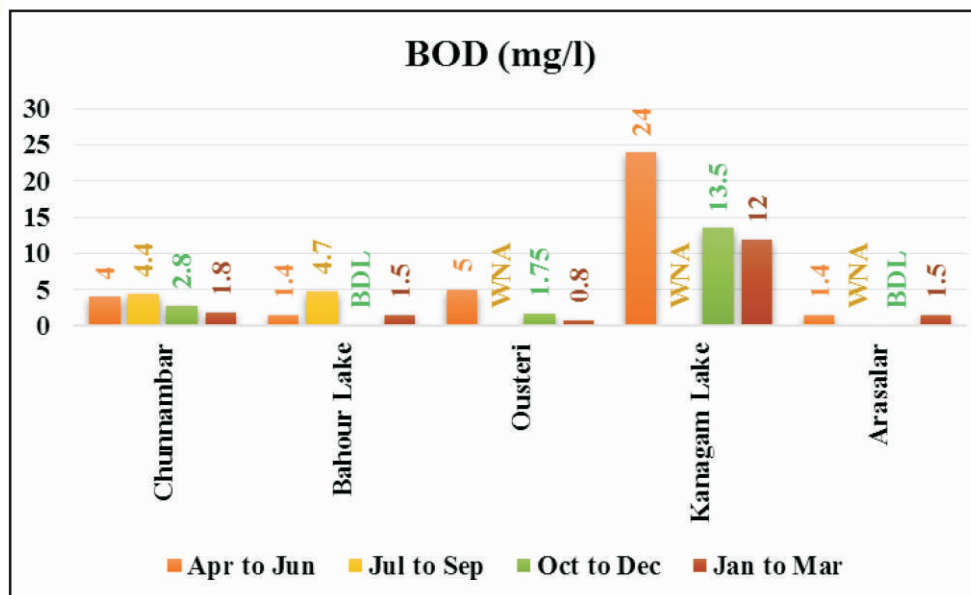
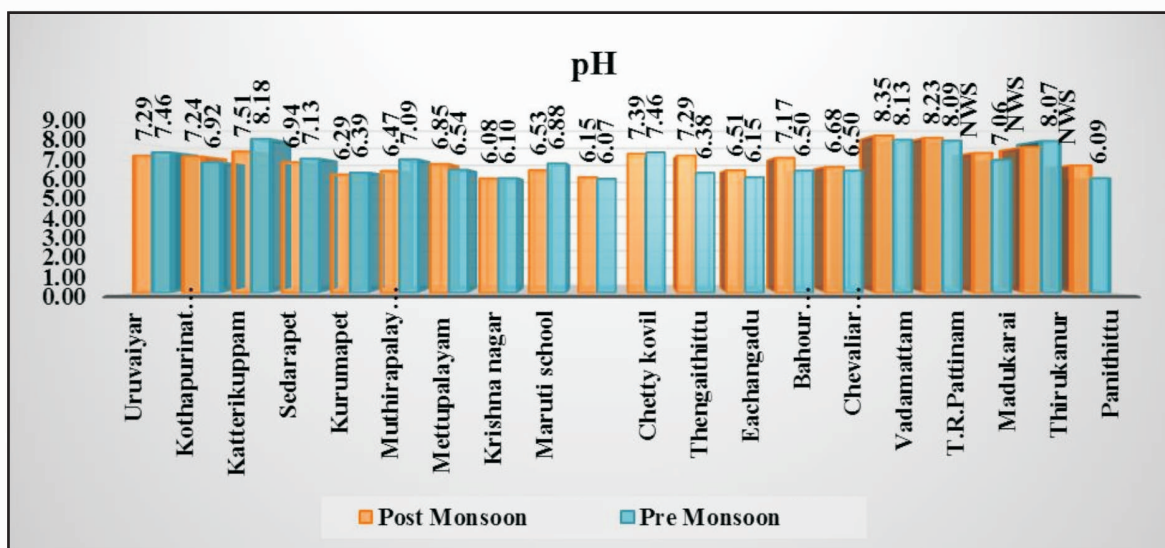


Fig: 22. BOD (mg/l)

Note:

- BDL - Below Detection Limit
- WNA - Water is not available for sampling in Ouster lake, Kanagan Lake and in Arasalar river during July-September quarter, 2019
- As per the Primary Water Quality Criteria for bathing water of Class B, pH should be 6.5 - 8.5; DO 5mg/l or more; BOD 3mg/l or less

Status of Water Quality in Borewell – Puducherry and Karaikal Comparative Study of Post monsoon and Pre Monsoon



Permissible Limit - 6.5 to 8.5

Fig: 23. pH

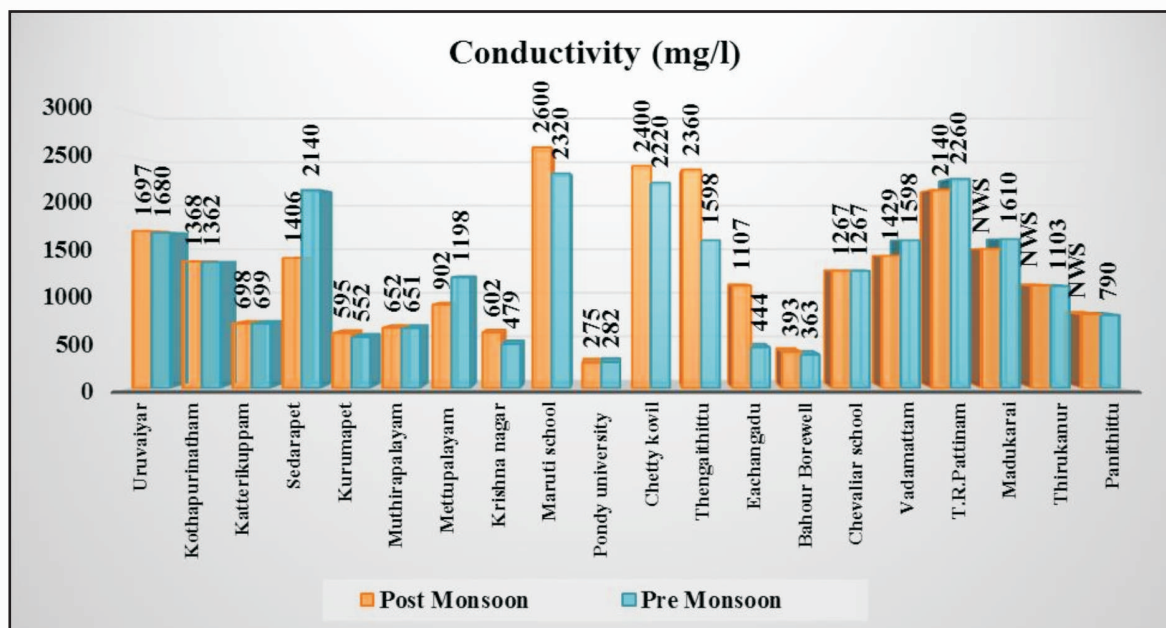
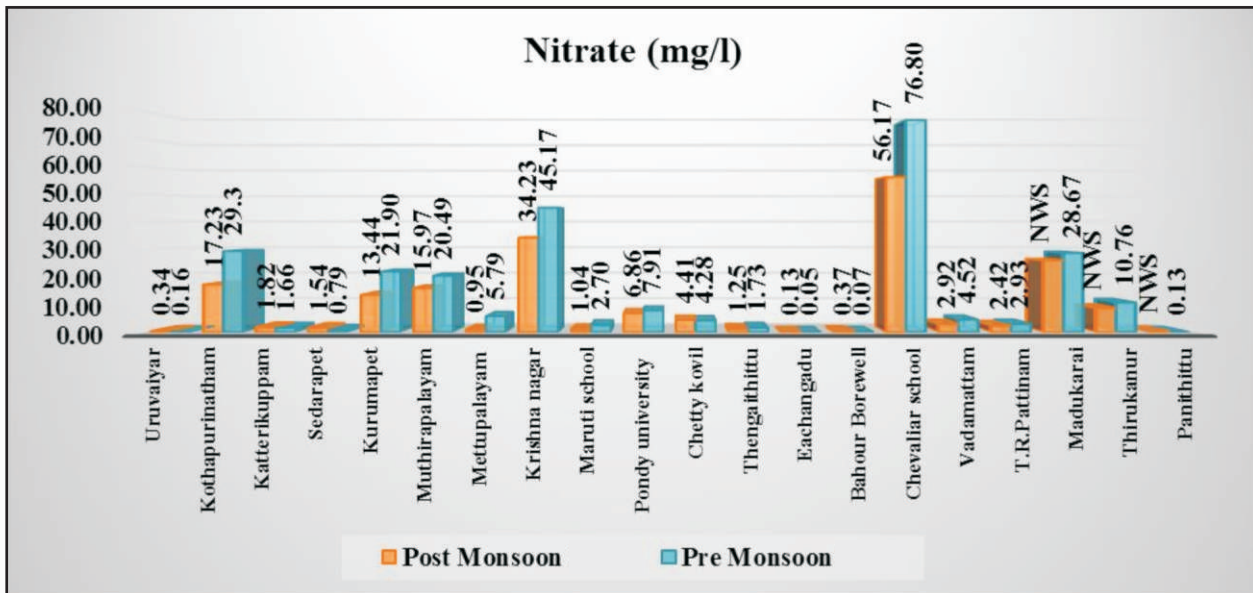


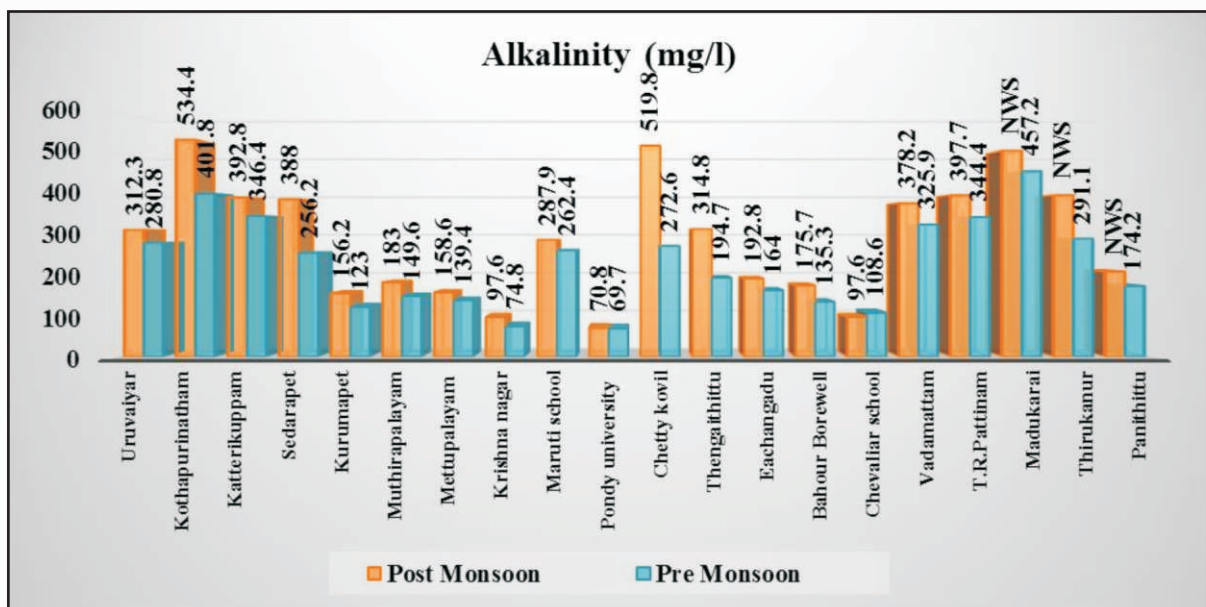
Fig: 24. Conductivity ($\mu\text{mho/cm}$)

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Permissible Limit– 45(mg/l)

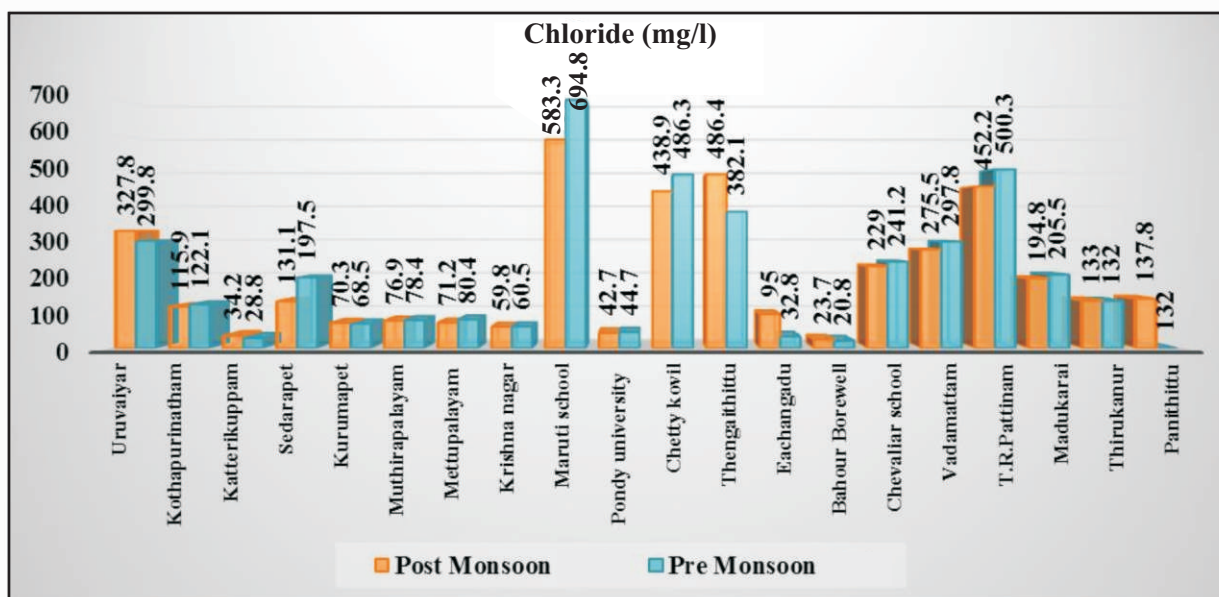
Fig: 25. Nitrate (mg/l)



Permissible Limit– 600(mg/l)

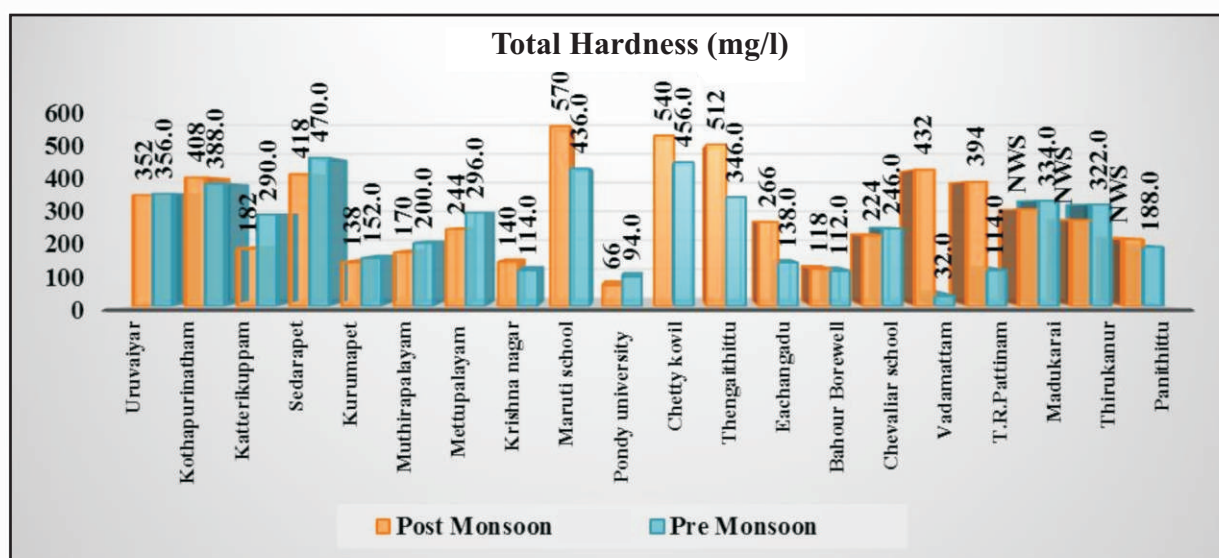
Fig: 26. Alkalinity (mg/l)

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Permissible Limit-1000(mg/l)

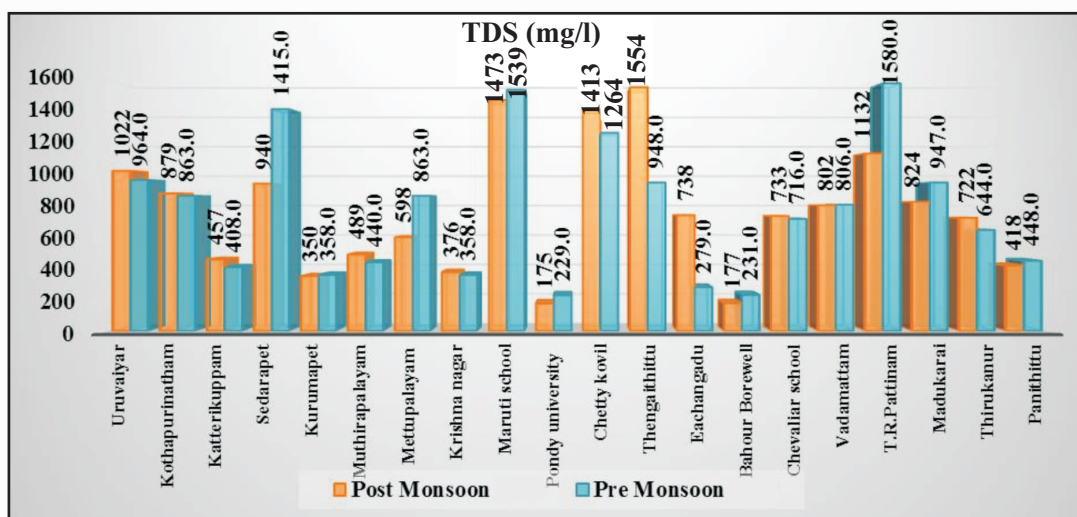
Fig: 27. Chloride (mg/l)



Permissible Limit-600(mg/l)

Fig: 28. Total Hardness (mg/l)

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Permissible Limit– 2000(mg/l)

Fig: 29. TDS (mg/l)

Table: 17. Surface Water Quality in Yanam Region 2019

Sl. No.	Parameters	Gowtami - Godavari River Near Adavipolam	Coringa River (Tidal Lock)	Gowtami - Godavari River Near Balayogi Bridge
1	Temperature °C	26.5	26.5	27
2	DOmg/l	6.6	6.6	7
3	pH	7.51	7.68	7.67
4	Conductivity µmho/cm	12940	7190	9110
5	BOD mg/l	0.1	0.2	0.2
6	Nitrate - N mg/l	0.33	0.36	0.33
7	Nitrate mg/l	1.46	1.6	1.44
8	Nitrite - N mg/l	0.006	0.007	0.008
9	Turbidity NTU	4.2	7	3.8
10	Bi- Carbonate asCaCO ₃ mg/l	121.5	111.7	117.6
11	Carbonate as CaCO ₃ mg/l	NIL	NIL	NIL
12	Chloride mg/l	4208.8	2175.6	2764.7
13	COD mg/l	20	20	20

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Sl. No.	Parameters	Gowtami - Godavari River Near Adavipolam	Coringa River (Tidal Lock)	Gowtami - Godavari River Near Balayogi Bridge
14	Total Hardness mg/l	1152	824	964
15	Calcium Hardness mg/l	684	464	578
16	Calcium as Ca++ mg/l	273.6	185.6	231.2
17	Magnesium Hardness mg/l	468	360	386
18	Magnesium as Mg++ mg/l	113.7	87.5	93.8
19	Sulphate mg/l	496	453	307
20	Orthophosphate mg/l	0.02	0.03	0.02
21	TDS mg/l	7888	4245	5493
22	TSS mg/l	32.0	14.0	12.0
23	FDS/TFS mg/l	6634	3429	4515
24	Ammonia - N mg/l	BDL	BDL	BDL
25	Sodium mg/l	2586.0	1132.4	1660.0
26	Potassium mg/l	83.9	44.4	59.2
27	Hexavalent Chromium mg/l	BDL	BDL	BDL
28	% Sodium	81.7	73.6	77.6
29	SAR	33.0	17.1	23.2
30	P/R Ratio	7.0	6.0	2.0
31	Arsenic mg/l	0.014	0.0072	0.0061
32	Cadmium mg/l	BDL	BDL	BDL
33	Copper mg/l	0.02	0.015	0.034
34	Lead mg/l	BDL	BDL	0.0094
35	Total Chromium mg/l	BDL	BDL	BDL
36	Mercury mg/l	BDL	BDL	BDL
37	Nickel mg/l	BDL	BDL	0.052
38	Zinc mg/l	BDL	BDL	0.532
39	Iron mg/l	0.374	0.496	0.310

Table: 18. Water Quality in Mahe Region 2019

Sl. No.	Parameters	Ground Water		Surface Water
		Pallur	Pandakkal	Mahe River
1	Temperature °C	28	28.5	29
2	pH	6.31	6.80	7.4
3	Conductivity µmho/cm	174.3	82.2	2940.00
4	DO mg/l	-	-	6.3
5	BOD mg/l	BDL	BDL	BDL
6	Nitrate - N mg/l	0.37	0.69	0.24
7	Nitrate mg/l	1.6	3.0	1.00
8	Nitrite - N mg/l	0.001	0.009	0.0
9	Turbidity NTU	0.4	17.4	18.600
10	Bi- Carbonate as CaCO ₃ mg/l	10.6	25.5	38.2
11	Carbonate as CaCO ₃ mg/l	NIL	NIL	NIL
12	Chloride mg/l	27.7	10.6	893.3
13	COD mg/l	NIL	NIL	NIL
14	Total Hardness mg/l	28.0	18.0	298
15	Calcium Hardness mg/l	22.0	18.0	74.0
16	Calcium as Ca ⁺⁺ mg/l	8.8	7.2	29.6
17	Magnesium Hardness mg/l	6	0	224.0
18	Magnesium as Mg ⁺⁺ mg/l	1.46	0	54.4
19	Sulphate mg/l	4.9	5.3	114.0
20	Ortho Phosphate mg/l	0.007	0.022	0.037
21	TDS mg/l	98	48	1694
22	TSS mg/l	BDL	BDL	20
23	FDS mg/l	49	34	1483.0
24	Sodium mg/l	14.7	5.2	486.0
25	Potassium mg/l	4.8	1.0	18.9
26	Hexavalent Chromium mg/l	BDL	BDL	BDL
27	% Sodium	48.4	37.0	76.5

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Sl. No.	Parameters	Ground Water		Surface Water
		Pallur	Pandakkal	Mahe River
28	SAR	1.2	0.5	12.2
29	Arsenic mg/L	BDL	BDL	BDL
30	Cadmium mg/L	BDL	BDL	BDL
31	Copper mg/L	BDL	BDL	BDL
32	Lead mg/L	BDL	BDL	BDL
33	Total Chromium mg/L	BDL	BDL	BDL
34	Mercury mg/L	BDL	BDL	BDL
35	Nickel mg/L	BDL	BDL	BDL
36	Zinc mg/L	BDL	BDL	BDL
37	Iron mg/L	0.1	1.6	2.1

Surface Water

The Level of pH in surface water bodies is within the range 6.5-8.5 of primary water quality criteria for bathing water of Class B. DO is less in Kanagan Lake during December quarter, 2019 and in Arasalar River during January quarter, 2020. BOD in some of the quarters ranges between 4.0 and 5.0 mg/l at Chunnambar River, Bahour Lake and Ousteri Lake which is slightly higher than 3 mg/l as per the primary water quality criteria for bathing water of Class B. In Kanaganeri lake BOD is high during April quarter, 2019 (24mg/l) October quarter, 2019 (13.5mg/l) and in January quarter 2020 (12.0 mg/l). The reason may be due to water stagnation and decomposition of Bio mass. In Surface water bodies at Yanam and Mahe Region pH, DO and BOD are meeting the primary water quality criteria for bathing water of Class B.

Ground Water

Nitrate concentration in Krishna Nagar borewell and in the borewell of Chevaliar School is higher than the permissible limit. The reason may be due to discharge of sewage and disposal of solid waste. The other parameters are within the permissible limit.

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Pesticides and trace metals viz., Copper mg/L, Nickel mg/L, Cadmium mg/L, Lead mg/L, Total Chromium mg/L, Iron mg/L, Zinc mg/L, Arsenic mg/L, Mercury mg/L are Below Detectable Limit in almost all the locations. Except in Thengaithitu (postmonsoon 1.07mg/l and premonsoon 3.02 mg/l), Bahour borewell (postmonsoon 0.59mg/l) and in Eachangadu (premonsoon 5.1 mg/l) the concentration of iron is higher than the permissible limit.

Table: 19. Status of Sea Water Quality on the occasion of Vinayagachaturthi festival 2019

Puducherry

S. No.	Parameter	Pre Immersion		During Immersion		Post Immersion	
		Sample-I	Sample-II	Sample-I	Sample-II	Sample-I	Sample-II
		Reference Point	Immersion Point	Reference Point	Immersion Point	Reference Point	Immersion Point
1	Dt. of Sampling	26.08.2019	26.08.2019	06.09.2019	06.09.2019	09.09.2019	09.09.2019
2	Time	05.00 PM	05.45PM	05.45 PM	09.30 PM	05.30 PM	06.00 PM
3	Temperature °C	28	27	26	25	26.5	26
4	pH	7.90	7.90	7.69	7.96	7.96	7.88
5	Conductivity ms/cm	51.0	50.4	52.0	51.6	51.9	49.9
6	COD mg/l	BDL	BDL	BDL	BDL	BDL	BDL
7	BOD mg/l	1.25	BDL	BDL	2.55	BDL	2.05
8	TS mg/l	36448	36325	38468	39148	36516	35909
9	TDS mg/l	36428	36292	38344	39020	36430	35792
10	TSS mg/l	20	33	124	128	86	117
11	Arsenic (as As) mg/l	BDL	BDL	BDL	BDL	BDL	BDL
12	Cadmium (as Cd) mg/l	BDL	BDL	BDL	BDL	BDL	BDL

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S. No.	Parameter	Pre Immersion		During Immersion		Post Immersion	
		Sample-I	Sample-II	Sample-I	Sample-II	Sample-I	Sample-II
		Reference Point	Immersion Point	Reference Point	Immersion Point	Reference Point	Immersion Point
13	Copper (as Cu) mg/l	BDL	BDL	BDL	BDL	BDL	BDL
14	Lead (as Pb) mg/l	BDL	BDL	BDL	BDL	BDL	BDL
15	Chromium (as Cr) mg/l	BDL	BDL	BDL	BDL	BDL	BDL
16	Nickel (as Ni) mg/l	BDL	BDL	BDL	BDL	BDL	BDL
17	Zinc (as Zn) mg/l	0.109	0.088	0.066	0.201	0.037	0.054
18	Iron (as Fe) mg/l	0.39	1.19	0.24	0.91	0.10	0.02
19	Dissolved Oxygen mg/l	6.2	6.3	6.8	6.6	6.7	6.6

No significant changes in the concentration of parameters are noticed.

Karaikal

S. No.	Parameter	Pre Immersion		During Immersion		Post Immersion	
		Sample-I	Sample-II	Sample-I	Sample-II	Sample-I	Sample-II
		Reference Point	Immersion Point	Reference Point	Immersion Point	Reference Point	Immersion Point
1	Dt. of Sampling	26.08.2019	26.08.2019	05.09.2019	05.09.2019	09.09.2019	09.09.2019
2	Time	04.30 P.M	05.00 P.M	09.20 A.M	09.40 A.M	08.30 A.M	09.00 A.M
3	Temperature °C	30.9	30.8	31.6	31.9	29.4	29.2
4	pH	7.91	7.92	8.19	8.20	8.05	8.04
5	Conductivity ms/cm	52.2	52.5	53.2	52.9	52.3	52.1

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S. No.	Parameter	Pre Immersion		During Immersion		Post Immersion	
		Sample-I	Sample-II	Sample-I	Sample-II	Sample-I	Sample-II
		Reference Point	Immersion Point	Reference Point	Immersion Point	Reference Point	Immersion Point
6	COD mg/l	NIL	NIL	NIL	NIL	NIL	NIL
7	BOD mg/l	BDL	BDL	BDL	BDL	BDL	BDL
8	TS mg/l	38276	37867	42949	38798	37137	37257
9	TDS mg/l	38234	37818	42812	38582	36922	37030
10	TSS mg/l	42	49	137	216	215	227
11	Arsenic (as As) mg/l	BDL	BDL	BDL	BDL	BDL	BDL
12	Cadmium (as Cd) mg/l	BDL	BDL	BDL	BDL	BDL	BDL
13	Copper (as Cu) mg/l	BDL	BDL	BDL	BDL	BDL	BDL
14	Lead (as Pb) mg/l	BDL	BDL	BDL	BDL	BDL	BDL
15	Chromium (as Cr) mg/l	BDL	BDL	BDL	BDL	BDL	BDL
16	Nickel (as Ni) mg/l	BDL	BDL	BDL	BDL	BDL	BDL
17	Zinc (as Zn) mg/l	0.034	0.112	0.019	0.017	BDL	BDL
18	Iron (as Fe) mg/l	3.06	2.63	1.81	1.95	1.74	0.23
19	Dissolved Oxygen mg/l	6.1	6.1	6.4	6.3	6.1	5.9

No significant changes in the concentration of parameters are noticed.

CHAPTER - 8

SOLID WASTE MANAGEMENT

U.T. of Puducherry consists of 2 Urban Local bodies of above 1 lakhs population viz. Pondicherry Municipality, and Oulgarat Municipality. Solid waste generated from Pondicherry and Oulgarate Municipality are collected, transported and disposed at Kurumbapet Resource Recovery Park. Wherein recyclable waste is segregated by authorised rag picker. 1 TPD Bio - methanation plant is in operation of pilot scale.

Out of 5 municipalities, 3 municipalities are coming under below one lakh population category.

- a. In Karaikal Municipal area, the solid waste collected and transported are made into compost by aerobic windrows. 1MT Bio-gas plant and vermin composting unit are functioning.
- b. In Mahe Municipal area, the non-bio degradable wastes are collected and transported to the existing RRP at Palloor in Pandakkal revenue village. The waste are further segregated into different categories such as plastic, rubber, glass etc. and earning revenue to Mahe Municipality. All the Bio-degradable wastes are used by the households themselves for kitchen garden manure through bio gas plants and pipe composting methods.
- c. In Yanam Municipality, Collection & transportation are being done. As of now, no processing of solid waste is being done. Hence DPR for integrated SWM programme is submitted to the Ministry of Housing & Urban Affairs, New Delhi to an amount of Rs. 331.44 lakhs vide Lt. No. 1001/PUDA/SBM (V), dt. 28.08.2019 to release grant.

Table: 20. Details of Solid Waste Generation in Municipalities

Sl. No	Name of the Municipality	Total Population as per census 2011	Total Quantity of waste generation in TPD
1	Puducherry	2,44,700	170
2	Oulgaret	3,00,104	170
3	Karaikal	86,838	40
4	Mahe	41,816	10
5	Yanam	55,628	16
	Total	7,29,086	406

Table: 21. Details of Solid Waste Generation in Commune Panchayats

Sl. No	Name of the Commune Panchayats	Total Quantity of waste generation in TPD
1.	Villianur	29
2.	Ariyankuppam	26
3.	Bahour	20
4.	Nettapakkam	12
5.	Mannadipet	16
6.	Kottucherry	08
7.	Nedungadu	5.5
8.	Neravy	4.5
9.	Thirunallar	10
10.	T.R. Pattinam	7.5
	Total	138.5

*Total Quantity generated in U.T. of Puducherry = 406 + 138.5 = 544.5 TPD

There are 5 Urban Local Bodies and 10 Commune Panchayats in the U.T. of Puducherry. All the local bodies obtained authorisation for Material Recovery Facility (MRF) and Sanitary Land Filling (SLF) under Solid waste Management Rules, 2016. All local bodies are having buffer zones in the MRFs. At present the segregated plastic waste are being disposed through registered plastic recycling units. All Local bodies have identified site and established waste deposition centres for Domestic Hazardous Waste. Provision for setting up of solid waste processing and disposal facility has been incorporated in Comprehensive Development Plan for Puducherry Planning Area.

Bye laws are notified by Municipalities for levying of penalty for violation. Puducherry Municipality has collected Rs.2,61,885/- for 5,874 violations and Oulgaret Municipality has collected Rs. 3,32,195/- for 3,661 violations from Jan'19 to June, 19.



Fig: 30. State Level Monitoring Committee meeting of Solid Waste Management chaired by the Chief Secretary.

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In compliance with Hon'ble NGT order viz - Puducherry, Karaikal & Mahe 3 model cities and 3 model Villages - Bahour, Villianur & Thirunallar have been identified.



Fig. 31. Progress achieved through model cities

Table: 22. Components of model villages

I	Source segregation of waste
II	Waste Processing
III	Domestic Hazardous Waste Deposition centre
IV	Plastic free village
V	20% of Greenery
VI	100% ODF
VII	Gray water treatment system
VIII	No Agriculture residues burning
IX	Bio-medical waste disposal
X	Rain water harvesting

Table: 23. Material Recovery Facility in Commune Panchayats

S.No	Commune	Location
1	Ariyankuppam Commune Panchayat	R.S. No.77 T.N. Palayam Revenue Village.
2	Bahour Commune Panchayat	i) R.S. No. 18/3, Bahour Revenue Village. ii) R.S. No. 83, Karaiyambuthur Revenue Village.
3	Villianur Commune Panchayat	i) R.S. No. 46/14, No 50, Sathamangalam Revenue Village. ii)R.S. No. 21/1, No 22, Sedarapet Revenue Village.
4	Nettapakkam Commune Panchayat	i) R.S. No. 148/8 Eripakkam Revenue Village. ii) R.S. No. 48/5, Korkadu Revenue Village.
5	Mannadipet Commune Panchayat	i) R.S. No. 38/2, Sorapet Revenue Village. ii) R.S. No. 18/4A/1, Sanyasikuppam Revenue Village.
6	Kottucherry Commune Panchayat	R.S. No. 211/2, Varichikudy Revenue Village.
7	Nedungadu Commune Panchayat	i) R.S. No. 11/3 Melakasukudy Revenue Village. ii) R.S. No. 300/1, Surakudy Revenue Village.
8	Neravy Commune Panchayat	R.S. No. 143/4, Nervy G.P Land.
9	Thirunallar Commune Panchayat	i) R.S. No. 97, Ambagarathur. ii) R.S. No. 157/5B, Pettai.
10	T.R. Pattinam Commune Panchayat	R.S. No. 24/2, Muthampallapet (Padutharkollai)

Table: 24. Domestic Hazardous Waste Deposition Centres

Sl. No.	Name of local body	Domestic Hazardous Waste Deposition Centre
1.	Pondicherry Municipality	R.S. No. 108, Thattanchavady Revenue Village.
2.	Oulgaret Municipality	R.S. No. 108, Thattanchavady Revenue Village.
3.	Karaikal Municipality	R.S. No. 53, Keezzhaveli Revenue Village, Karaikal.
4.	Mahe Municipality	Municipal Building at Erattaipilakool, Palloor.
5.	Yanam Municipality	T.S. No.E/2/14/2, Kursampeta beside Hindu burial ground.
6.	Villianur Commune Panchayat	R.s. No. 123/3, Kottaimedu Main Road, Villianur.
7.	Ariyankuppam Commune Panchayat	R.S. No. 23/1, Ariyankuppam Rev. Village, Modern Rice mill Road, Swarna Nagar.
8.	Bahour Commune Panchayat	R.S. No. 11/10, located at Seliamedu, Tank Street, Seliamedu.
9.	Nettapakkam Commune Panchayat	R.S. No. 24, Location at Eripakkam, Main Road, Eripakkam.
10.	Mannadipet Commune Panchayat	R.S. No. 57/1, Sanniyasikuppam Village adjacent to Amman Koil Pond.
11.	Kottucherry Commune Panchayat	R.S. No. 260/5B, Commune Panchayat Building (26 sq.m) , Devanoor Salai, Varichikudi Village.
12.	Nedungadu Commune Panchayat	R.S. No. 217, Commune Panchayat Building (25 sq.m.), Mariamman Koil street, Nedungadu.
13.	Neravy Commune Panchayat	Rs. No. 130, Ozhiyaphatu Main Road
14.	Thirunallar Commune Panchayat	Rs. No. 32/10, Surakudy
15.	T.R. Pattinam Commune Panchayat	Rs. No. 24/2, Padutharkollai Village

CHAPTER - 9

BIO-MEDICAL WASTE MANAGEMENT

Scientific disposal of Bio-Medical Waste is of prime importance as it involves large scale public health issue. Identification of source of waste will help for its proper collection and disposal. Health Care Facilities are of various categories viz. hospital, clinic, laboratory, blood bank etc., generation of Bio-Medical Waste is also varied.

Puducherry is one of the preferable health destination. There are 9 Medical Colleges including renowned JIPMER, besides 380 Health Care Facilities (HCF) located in the U.T. of Puducherry. Though it gives pride to the U.T, proper disposal of Bio-medical waste (BMW) is a challenging task to the Government. Though the first Bio-medical waste management Rules, 1998 was notified more than 2 decades ago, scientific mode of Bio-medical waste disposal could not be achieved completely as witnessed in other parts of the country. Revised Bio-medical Waste Management Rules, was notified in the year 2016, which gives more teeth to the implementing authorities. Phasing out of chlorinated bags, adaptation of Bar coding system and fixation of GPS in the vehicle are ensured proper segregation, collection, transportation and disposal of BMW.

As per BMW Rules, 2016, it is the duty of SPCBs and PCCs to prepare an Inventory on Health Care Facilities (HCF) and Biomedical waste management of the State/U.T. In the absence of guidelines for the preparation of the Inventorization, non availability of required data and limited manpower of the SPCB/Committee, it is difficult task for completion of Inventorization within the stipulated time limit.

Hon'ble National Green Tribunal (NGT), Principal Bench, New Delhi intervention in waste management scenario made more streamlining of this task. Hon'ble NGT, in the matter of O.A. No. 710-713 of 2017 directed to complete Inventorization of HCF in all the States in order to assess current scenario in BMW generation and disposal. Thus Inventorization of HCF located in the U.T. of Puducherry has been prepared.

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Table: 25. Colour Coded Waste Category

Colour Coding	Type of Container	Waste category
Yellow	Plastic Bag	Human Anatomical waste/animal Waste, Microbiology and Biotechnology waste and soiled waste
Red	Disinfected container/ Plastic bag	Tubing, Bottles, Syringes and Bags
Blue	Cardboard Boxes	Broken Glassware
White (or) Translucent	Plastic Bag / Puncture - Proof Containers	Waste sharps, solid waste



Fig: 32. Bio medical waste management inspection by Tmt. J. Selvanayaki, JSA Health Care Facilities

387 Health Care Facilities are present in the U.T. of Puducherry. Among them 86 are bedded and 301 are non-bedded. Details are given, below:

Table: 26. Details of Health Care Facilities

Total No. of HCFs	387
No. of bedded HCFs	86
No. of non-bedded HCFs	301
Clinics, dispensaries	25
Veterinary institutions	1
Animal houses & dispensaries	17
Pathological laboratories	213
Blood bank	3
Clinical establishment	14
Research Institutions	4
Ayush	24
Total No. of Beds	12112

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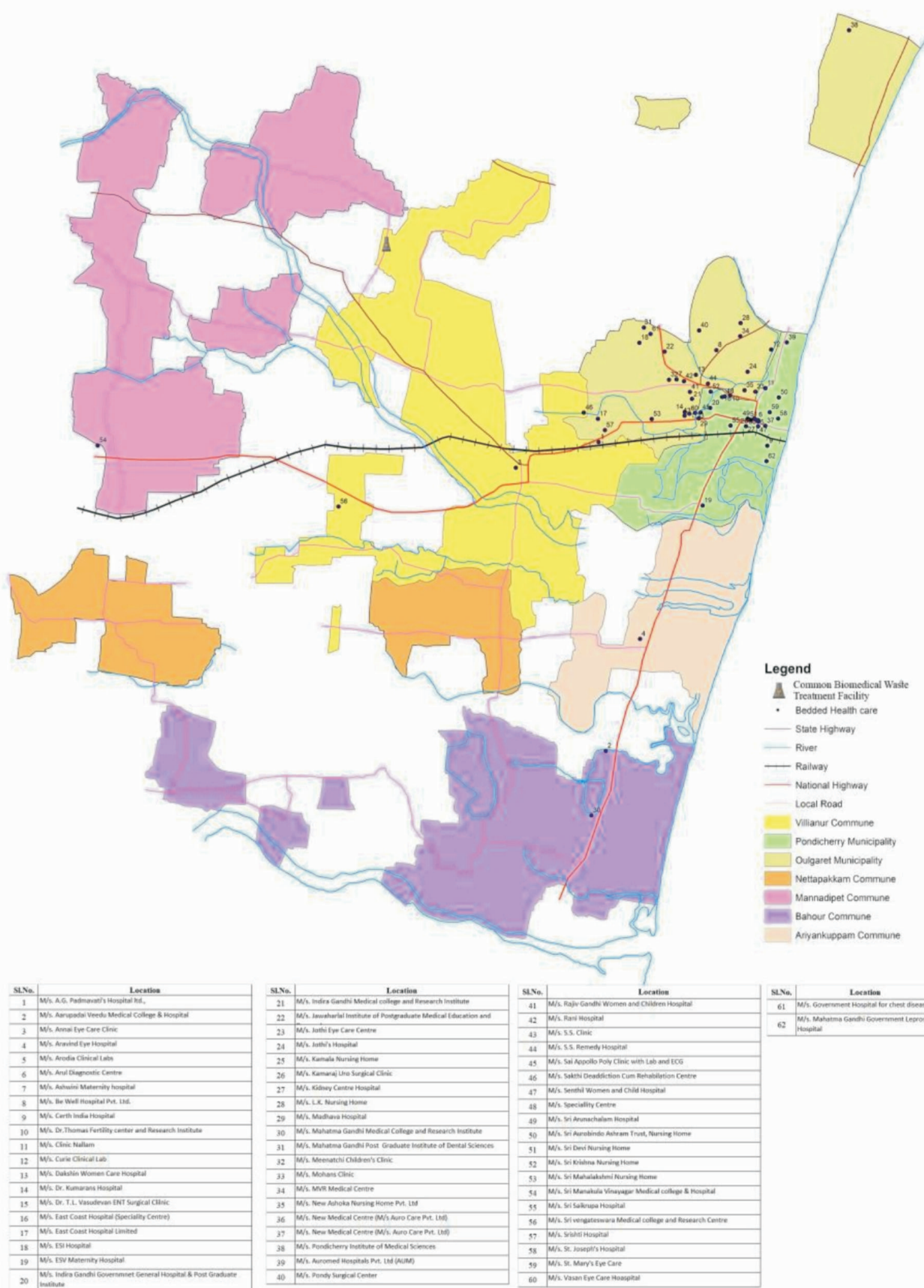


Fig:33. Location of Bedded Health Care Facilities

Bio-Medical Waste Generation Scenario

Total Bio-medical waste generation in the U. T. Of Puducherry is estimated as 5.24 TPD. One HCF is having captive biomedical waste treatment and disposal facility in General Hospital, Mahe which are involved in treatment and disposal of 28.6 Kgs /day bio-medical waste. One Common Bio-Medical Waste Treatment Facilities (CBWTF) is operating in Puducherry Region and treating and disposing the Bio-Medical Waste generated in Puducherry and Karaikal region. BMW generated from Yanam Region is being disposed in CBMWTF located at Rajmundry.

Public Complaints were received against M/s. Aarupadai Veedu Medical College & Hospital for discharge of untreated waste water into adjacent irrigation canal. PPCC officials conducted periodical surprise inspections and collected water sample from the Effluent Treatment Plant of the hospital. Considering continuous violation of Medical College in exercise of power conferred under Section 5 of Environment (Protection) Act, 1986 directed Superintendent Engineer, of Electricity Department to disconnect the power supply of the medical college, excluding hospital activities. After stoppage of discharge in the canal and initiation of up gradation of Effluent Treatment Plant, power supply was restored.



Fig: 34. Dr. Ragunathan, DD, PH and Dr. N. Ramesh, SEE organized Interaction session on management of BMW in laboratory

COVID -19 WASTE MANAGEMENT

Impact of corona is felt by all the sectors including in waste management. PPCC has organized a stackholder meeting and evolved Action Plan to tackle the COVID-19 waste management issue. Necessary training to handle the waste were given to waste handlers. To create awareness to the Health Care Facilities, a Public Notice on Do's and Don'ts has been posted in PPCC website. Around 0.5 TPD of COVID waste is generated from 10 isolated wards and quarantine camp and households in the U.T. of Puducherry. All the waste are collected in yellow coloured double bags and disposed through incinerators of Common Bio Medical Waste Treatment Facility and captive incinerator available at M/s. Indira Gandhi Medical College and Research Institute, Puducherry, General Hospital, Karaikal and Mahe.

Collection, transportation and disposal of COVID waste is ensured by waste tracking app developed by Central Pollution Control Board. Details of everyday waste collected and generated is submitted to CPCB and hosted in PPCC website.



Fig: 35. Consultation meeting for COVID-Waste Management

CHAPTER - 10

PLASTIC WASTE MANAGEMENT

The total quantity of plastic waste generated in the U.T. of Puducherry is 23.0 TPD. All ULBs are having Material Recovery Facility and Plastic Waste Management System.

Table: 27. Plastic waste generation in the U.T.of Puducherry

Sl. No	Region	Plastic Waste generation in TPD
1	Puducherry	20
2.	Karaikal	2.5
3.	Mahe	0.2
4.	Yanam	0.3
	Total	23.0

Plastic Waste generation from Industrial sector are channelized through 15 Authorized Plastic Waste Reprocessors / Recyclers.

Ban on single use Plastics in the U.T. of Puducherry:

Like other States of Country, single use plastic pose challenge to Government of Puducherry. GOP has imposed total ban on manufacture, transport, sale and usage of 8 single use plastic articles with effect from 2nd August 2019.

புதுவை அரசு

அறிவியல், தொழில்நுட்பம் மற்றும் சுற்றுச்சூழல் துறை
புதுச்சேரி மாசுகட்டுப்பாட்டு குழுமம்

புதுவையில் ஆகஸ்ட், 2ஆம் தேதி முதல்
தடை செய்யப்பட்ட பிளாஸ்டிக் பொருட்கள்

பாலித்தின் /
பிளாஸ்டிக்/
பாலிபிரொப்பிலீன்
தூக்குப்பைகள்

பாலித்தின் /
பிளாஸ்டிக்
குவளைகள்

பாலித்தின் /
பிளாஸ்டிக்
தட்டுகள்

ஸ்டைரோஃபோம்
(தொர்மக்கோல்)
தட்டுகள்

ஸ்டைரோஃபோம்
(தொர்மக்கோல்)
குவளைகள்

உணவுப்பொருட்களை
கட்ட உபயோகிக்கும்
பிளாஸ்டிக் பைகள்

உணவு அருந்தும்
மேஜையின் மேல்
விரிக்கப்படும்
பிளாஸ்டிக் தாள்

நீர் நிரப்ப
பயன்படும்
பைகள்

பிளாஸ்டிக்
உறிஞ்சு குழல்கள்

பிளாஸ்டிக்
கொடி

புதுவையில் அனுமதிக்கப்பட்ட
பிளாஸ்டிக் பொருட்கள்

நெய்யப்படாத
பாலிபிரொப்பிலீன்
பைகள்

பிளாஸ்டிக் பூசப்பட்ட
காகித குவளைகள்

தண்ணீர் பாட்டில்

தொழிற்சாலைகளில்
உற்பத்தி செய்யும்
பொருட்களை மூடுவதற்கு
பயன்படும்
பிளாஸ்டிக் தாள்கள்

பருப்பு வகைகள், தானியங்கள்,
மருந்துகள் மற்றும் பால் ஆகியவைகளை
விற்பனை செய்ய பயன்படும் பைகள்

பல அடுக்கு
பேக்கேஜிங்
பொருட்கள்

ஒட்டும் நெகிழி

திட மற்றும் உயிர் மருத்துவ கழிவு
சேகரிக்க பயன்படும் (40x50) செமீ
அளவு உள்ள பைகள்

தோட்டக்கலை
நாற்றுக்குருகளுக்கு பயன்படும்
பிளாஸ்டிக் பைகள்/தாள்கள்

தடை செய்யப்பட்ட பிளாஸ்டிக் பொருட்களை உற்பத்தி செய்வது, பயன்படுத்துவது, விற்பனை செய்வது மற்றும் சுற்றுச்சூழல் பாதுகாப்பு சட்டம் 1986-ன்படி குற்றமாகும். பிற்பாளர் தண்டிக்கப்படுவீர்கள்.

Surprise inspections





Fig. 37. Surprise Inspection in Plastic stockist, Puducherry



Fig: 38. Surprise Inspection in Plastic stockist, Karaikal.

- Surprise inspections were carried out with a team consists of official of PPCC & Puducherry and Karaikal Municipality and seized 8 and 5 bundles of plastic carry bags from major stockists.
- Surprise inspections were carried out under the chairman of Hon'ble Environment Minister and seized 68 bundles of plastic carry bags from three major stockists.
- Five Plastic Manufacturing Units were issued closure direction with disconnection of power for violation of Provision of PWM Rules, 2016.



Fig: 39. Hon'ble Environment Minister, Secretary (Env't.) and District Collector inspecting the plastic stockiest

Special Environment Squad:

In compliance with the order of Hon'ble NGT in the matter of O.A. No. 247 of 2017, special Environment Squad has been constituted.

Utilisation of Plastic waste:

5 MT of Plastic waste have been utilized for road construction in M/s Amcor India Pvt. Ltd. and 100 mt. road by utilizing Plastic waste material in Study School, Kalapet.

M/s Hindustan Unilever Ltd., Vadamangalam, has collected the Multilayered plastic (MLP) waste of 272 MT under Extended Producer Responsibility (EPR) through NGOs and sent them for Co-Processing in Dalmia Cements.

Compostable bags:

There is no manufacturer of compostable bags in the U.T. of Puducherry. However, two units were authorised to sell the compostable plastic bags in the U.T. of Puducherry.

Action Plan:

Action Plan has been prepared and submitted to CPCB on PWM in compliance with O.A No. 247 of 2017 of Hon'ble NGT order, dated 03.05.2019.

Bye-laws:

"Bye- laws for Plastic Waste Management, 2019" was notified vide Gazette No. 27, dt. 4th July, 2019 by all local bodies.

Interaction Sessions:

Meeting with major MLP firms was conducted on 29.07.2019 under the Chairmanship of Secretary (LA) and decided that the Brand Owners shall take responsibility under EPR and directed them to submit an action plan. All the MLP unit have submitted Action Plan.

Interaction meeting with producer of Plastic bags, Brand owners and Recyclers of Plastic under PWM Rules, 2016 was conducted on 16.12.2019.



CHAPTER - 11

HAZARDOUS WASTE MANAGEMENT

In Puducherry, 129 industries have been identified as hazardous waste generating units, which generate 34052 TPA of hazardous waste. The details of hazardous waste generation are given below:

Table: 28. Hazardous waste generation -Region wise

S. No.	Region	Quantity of Hazardous waste generated in TPA				Total
		Landfillable	Incinerable	Recyclable	Utilisable	
1.	Pondicherry	4815	535	2126	26569	34044
2.	Karaikal	0	0.506	6.887	0.778	8
3.	Yanam	--	--	--	--	--
4.	Mahe	--	--	--	--	--
	Total	4815	536	2133	26570	34052

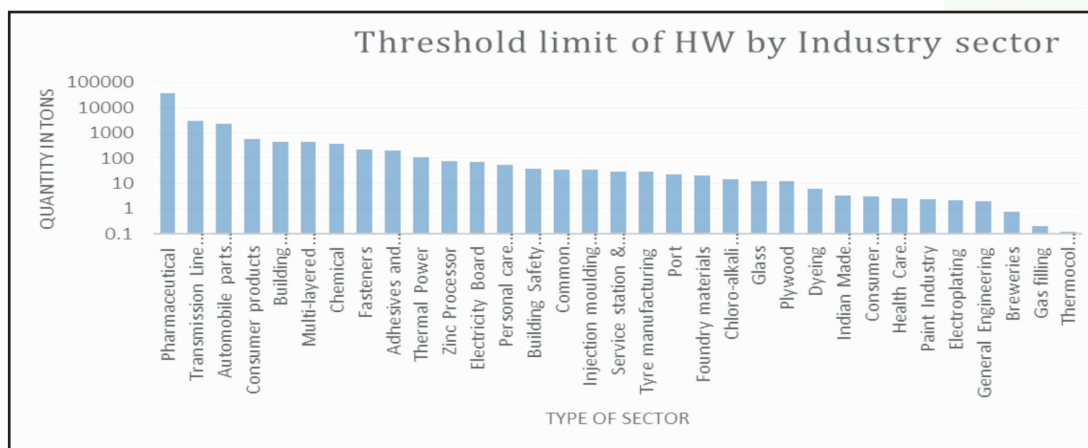


Fig: 40. Threshold limit of Hazardous waste generation by various industrial sectors

The figure shows the threshold limit of hazardous waste generation by various industrial sectors. The threshold limit for pharmaceutical sector is the highest 36080.185 MTA followed by Transmission Line tower unit and automobile parts manufacturing units. And the least threshold limit of Hazardous waste generation is Thermocol manufacturing sector of quantity 0.125 MTA.

Joint Inspection of Veera Prem Dredger

The Dredger named Veera Prem belonging to M/s Mercator limited, had grounded in the shore of Keezhaiyur South (Lat & Long coordinates: 10° 51' 33.8809" N and 79° 51' 12.594" E) within the port limits of Karaikal on 16.12.2018 containing onboard of various unpumpable oils and lubes and other hazardous contents.

The ship poses menace to the nearby jetties and port. It is considered as district emergency. In the 166th PPCC meeting held on 04.12.2019, it was suggested to form a committee with the National Centre for Sustainable Coastal Management (NCSCM), Chennai, Ministry of Environment, Forest & Climate Change (MoEF&CC), regional office, Chennai and Central Pollution Control Board (CPCB), regional office, Chennai as members and representative of collector, Karaikal along with PPCC officials for field inspection to provide the factual report for further decision making.

In compliance with the decision of PPCC, a committee was constituted comprising of the following members:

- (i) Dr. M. Thalamadai Karuppiah, Joint Director – MoEF&CC, region office – South Eastern Zone, Chennai.
- (ii) Shri. R. Raj Kumar, Scientist – D, CPCB, Regional Directorate (South), Bengaluru
- (iii) Shri. M. Dharma Raj, Senior Scientific Consultant, NCSCM, Chengalpattu

In presence of :

- (i) Shri. Anand Hiremath, representative from M/s Bansal Endeavours LLP, Gujarat
- (ii) Shri. Poogajendy C, Junior Engineer, DST&E, Puducherry
- (iii) Shri. P. Ashok Kumar, Junior Lab Assistant, DST&E, Puducherry
- (iv) Shri. Devaanandan.S, Assistant Environmental Engineer, PPCC

Outcomes:

- (i) On examination of the proposal, the committee suggested the owner shall obtain requisite permission/NOC for dismantling of the wreck of the Dredger, from the MoEF&CC.
- (ii) Based on which, the MoEF&CC has clarified that act of removal of ship wreck is an activity covered under the Merchant Shipping Act, 1958 and the rule made under and is not a ship breaking activity within the scope of Environmental Impact Assessment Notification dated 14.09.2006.
- (iii) This proposal was placed in 167th PPCC meeting, the committee after due deliberation decided to clear the proposal subject to conditions.



Fig: 41. Inspection team



Fig: 42 Wrecked ship



Fig: 43. Joint Inspection of Veera Prem Dredger

CHAPTER - 12

E-WASTE MANAGEMENT

Ministry of Environment, Forest and Climate Change has notified e-waste Management Rules, 2016. Various brainstorm sessions were conducted to stakeholder to get familiarized with the provisions of the rules. One day awareness programme was conducted by PPCC on 16.12.2020 for the Government Officials and bulk consumers.

In Puducherry, around 62.44 TPA of e-waste is generated. PPCC has sent circular to all the Bulk generator mainly Govt. Department to maintain record about e-waste generation and to dispose their e-waste only to the authorized recycler. PPCC has authorized 2 E-wastes Collection Centers and 3 Producers in Puducherry and Karaikal. A list of recyclers / dismantlers of e-waste authorised by Tamil Nadu Pollution Control Board, Chennai and a list of Collection Centers authorised by Puducherry Pollution Control Committee have been uploaded in Department Office web site at <http://dste.puducherry.gov.in/e-Waste.pdf>

Orders of Hon'ble Supreme Court and National Green Tribunal

The issue for consideration is management of e-waste consistent with the E-waste (Management) Rules, 2016. The Tribunal considered complaint against burning and selling of e-waste and unscientific disposal of e-waste in violation of the Rules causing contamination of ground water, air pollution and soil acidification. 40% of lead and 70% of heavy metals are said to be found in the landfill on account of unscientific disposal of e-waste in the matter of O.A. No. 512/2018. The Tribunal referred to the study in the news item dated 04.06.2018, published in "Gadget 360" and news item dated 02.11.2017 published in the Hindustan Times under the heading of "What happens to E-waste: Your Junked gadgets come back to you as toxic fumes".

The Tribunal directed the Ministry of Environment, Forests and Climate Change (MoEF&CC), Uttar Pradesh Pollution Control Board and the Central Pollution Control Board to prepare an Action Plan for enforcement of the Rules and also take action against the violators of law. A Compliance report was filed by MoEF&CC on 14.12.2018. India is the fifth largest producer of e-waste. India produces two million tonnes of e-waste in 2016. 95% of e-waste is recycled by the informal sector and 5% is recycled by the formal sector.

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A monitoring Committee has been set up on 19.03.2018 headed by the Additional Secretary, MoEF&CC with ten more members. An action plan was proposed by CPCB to the tribunal for to verify implementation and compliance of provision of E-waste rules. PPCC had submitted compliance report/ action taken with regard to CPCB action Plan with time frame.

E-waste (Management and Handling) Rules, 2016 requires producers to obtain authorization from SPCB/PCC for implementing their EPR for effective channelization of e-waste to registered dismantlers/ recyclers. Extended Producers liability EPR plan for collection and meeting his responsibility in which EPR authorization is given.

The CPCB has suspended EPR authorisation of 10 Producers on 04.04.2019. CPCB had even suspended their import permits for not complying the rules. The Producers have also filed affidavit to CPCB in regard to corrective measures taken by them. In this regard, CPCB has asked the SPCB/PCC to verify corrective action of Producers on implementing E-waste rules. PPCC has verified the collection centers of Producers in compliance to the E-waste management rules, 2016 and communicated the status of the collection centers to CPCB.

PPCC has issued showcause notice on 28.01.2020 to M/S SVK Computer plastic scraps for illegal collection, dismantling and trading of E-Waste. The unit has been directed to immediately stop operation and shift or relocated to industrial area for setting up of dismantling facility or dispose the stored E-waste to authorized recycler or Dismantler.



CHAPTER - 13

PRESENTATION OF AWARD

Green Award

Green award has been instituted to be given on the Independence Day, 15th August once in three years to the industry which has contributed substantially to the cause of improvement of environment and adopted innovative technology on pollution control in the U.T. of Puducherry. It consists of cash prize of Rs.1,00,000/- and a citation.

Green Award for the year 2016-2019 was awarded to **M/s. Eaton Power Quality (P) Ltd.**



Fig: 44. Presentation of Green Award

Environment Award

Department of Science, Technology and Environment, Puducherry has instituted "Environment Award" to be given on the Independence Day, 15th August once in three years to public / institution / voluntary organizations who / which has contributed substantially to the cause of improvement of environment and matters connected within the U.T. of Puducherry. For the years 2016-2019, **Thiru Selvamanikandan**, President, Puducherry Environment and Mangrove Forest Development and Protective Society has been selected by Government of Puducherry for the Environment Award (Rs.50,000/- cash and citation) and he was presented the award by the Hon'ble Chief Minister on the 15th August, 2019.

CHAPTER - 14

ISSUE OF DIRECTIONS AND SHOWCAUSE NOTICE

PPCC issues direction under Section 33 (A) of Water (Prevention and Control of Pollution) Act, 1974, Section 31 (A) of Air (Prevention and Control of Pollution) and Section 5 of the Environmental (Protection) Act, 1986 to the industries which violates the provisions of the said Acts. The details of various directions issued during the year 2019-2020 are given in the Table - 29.

Table: 29. Direction and Showcause notice issued

Month	AIR	WATER	BMW	MSW	HWM	PWM	Battery	EP Act	SCN
April 2019	1	1	0	1	0	0	0	0	5
May 2019	0	2	2	0	1	0	0	2	3
June 2019	4	5	0	1	0	2	0	2	7
July 2019	7	7	0	2	2	0	1	0	7
August 2019	1	1	0	0	1	0	0	0	0
September 2019	3	2	0	0	0	4	0	0	4
October 2019	5	2	1	1	0	2	0	0	5
November 2019	5	6	1	0	3	0	0	2	2
December 2019	5	7	0	0	0	0	0	1	4
January 2020	3	4	2	0	1	0	0	0	1
February 2020	3	4	0	1	4	0	0	1	6
March 2020	7	6	0	0	0	0	0	0	3
Total	44	47	6	6	12	8	1	8	47

CHAPTER - 15

COMPLIANCE OF HON'BLE NATIONAL GREEN TRIBUNAL ORDER

Hon'ble National Green Tribunal had passed orders in various applications during the year 2019-2020. Government of Puducherry has complied with all the directions of Hon'ble National Green Tribunal.

Performance Audit of PPCC

Hon'ble National Green Tribunal in its Order dated 11.02.2019 in O.A. No. 95/2018 directed the Central Pollution Control Board to conduct Performance Audit of all the State Pollution Control Boards / Committees. Accordingly, CPCB constituted Performance Audit team which evaluated the performance of PPCC during 3rd-4th June, 2019. Audit team placed PPCC in first position among the U.T.s and 7th position among all the State Pollution Control Boards.



Fig: 45. Performance Audit team of CPCB.

Officer of DSTE nominated as Expert Member

Dr. N. Ramesh, Senior Environmental Engineer of DSTE was nominated as Audit Team Expert Member by CPCB for Performance Audit of Telangana Pollution Control Board.

Formulation of Action Plan

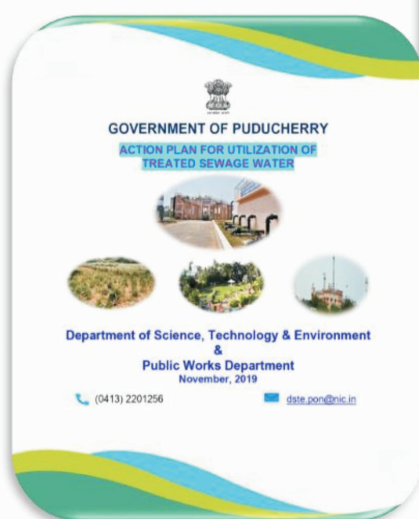
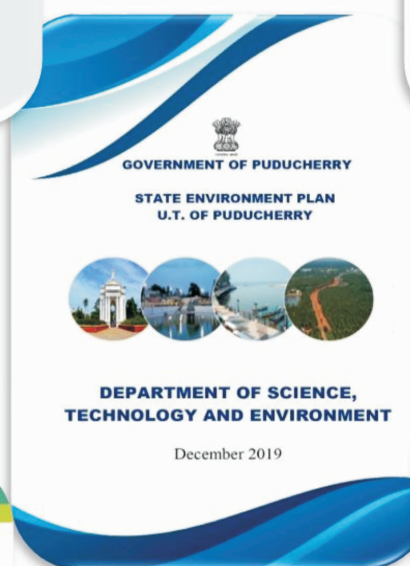
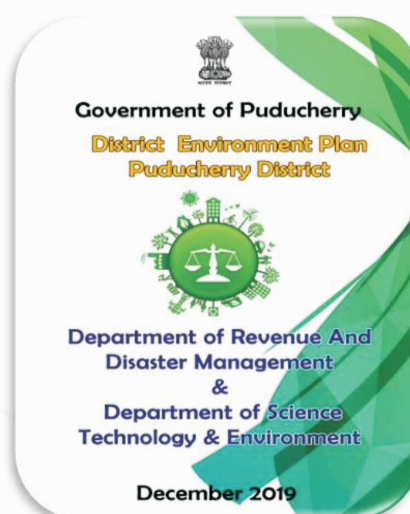
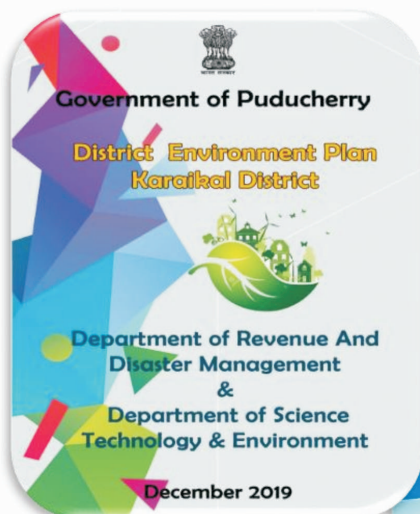
Table: 30. Action Plan prepared based on various direction of Hon'ble NGT

S.No.	Non'ble NGT Direction	Action Plan/Report prepared	Date of submission
1	O.A. No. 673/2018 direction dt. 19.12.2018	Action plan for Restoration of Chunnambar and Arasalar	18.06.2019
2	O.A. No. 148/2016 direction dt. 27.11.2018	Action plan for utilization of Treated Sewage Water	28.11.2019
3	O.A. No. 360/2018 direction dt. 26.09.2019	District Environment Plan State Environment Plan	23.12.2019
4	O.A. No 681/2018 direction dt.15.03.2019	Action Plan for Controlling of Noise Pollution.	04.07.2019
5	Hon'ble Supreme Court direction dt. 01.11.2017	Draft Fuel Policy	02.12.2019
6	O.A. No. 606/2018 direction dt. 16.01.2019	Action plan on SWM, PWM & BMW	02.08.2019



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Action Plans prepared and submitted to Hon'ble National Green Tribunal



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*Revised Action plan for
restoration of polluted river
stretches-*

CHUNNAMBAR RIVER



Puducherry Pollution Control Committee
Department of Science, Technology & Environment
Government of Puducherry



*Revised Action plan for
restoration of polluted river
stretches*

(ARASALAR RIVER)



Puducherry Pollution Control Committee
Department of Science, Technology & Environment
Government of Puducherry



DRAFT

**FUEL POLICY
U.T. OF PUDUCHERRY**



Department of Science, Technology and
Environment
Government of Puducherry


GOVERNMENT OF PUDUCHERRY
DEPARTMENT OF SCIENCE, TECHNOLOGY AND
ENVIRONMENT
PUDUCHERRY POLLUTION CONTROL COMMITTEE

ACTION PLAN FOR
CONTROLLING NOISE POLLUTION



SUBMITTED TO
CENTRAL POLLUTION CONTROL BOARD

IN COMPLIANCE WITH HON'BLE NATIONAL
GREEN TRIBUNAL IN O.A. NO. 681 OF 2018

CHAPTER - 16

ENVIRONMENTAL AWARENESS PROGRAMME

World Environment Day Celebration, 2019

Department of Science, Technology and Environment, Government of Puducherry in collaboration with Puducherry Pollution Control Committee, Government of Puducherry, Ministry of Environment, Forests and Climate Change (MoEF&CC), Government of India, Society of Integrated Coastal Management (SICOM), Government of India, Department of Tourism, Government of Puducherry, District Rural Development Authority, Government of Puducherry and ENVIS Hub, Puducherry, celebrated the World Environment Day at Eden Beach, Chinnaveerampattinam, Puducherry. Hon'ble Chief Minister of Puducherry, Hon'ble Minister for Science, Technology & Environment and Member of Legislative Assembly of Ariyankuppam Constituency and Member of Legislative Assembly of Manavelly Constituency, the Block Development Officer, Ariyankuppam Commune Panchayat participated the above said event.

As a part of the World Environment Day Celebration the following activities were organized.



Fig: 46. Inaugural function of World Environment Day 2019

Coastal Cleanup

The school and college students and the local fishermen community and the beach walkers actively participated in the beach cleanup programme and a stretch of 500 metres of the beach was cleaned up by the participants.

Release of Annual Environment Survey Report

The Chief Minister of Puducherry, Thiru. V. Narayanasamy, released the Annual Environment Survey report in the presence of Thiru M. Kandasamy, Hon'ble Minister for Science, Technology & Environment, T. Djeamourthy, MLA, R.K.R. Anantharaman, MLA and the Block Development Officer, Ariyankuppam Commune Panchayat.



Fig: 47. Release of Annual Environment Survey Report 2018-2019

Distribution of Cloth Bags

The Chief Minister of Puducherry, Thiru. V. Narayanasamy, distributed Cloth Bags to the public.



Fig: 48. Cloth bags to Self Help Group on the eve of WED 2019

Environment Awareness Speech

In the event, Dr. K. Rajendiran, Associate Professor, Department of Botany, Bharathidasan Women's College, Puducherry, and Dr. Krishnan, Retired (OSD), Directorate of School Education spoke on the WED theme "Beat Air Pollution" and on the importance and need to conserve the coastal eco-system.



**Fig: 49 Environment Day address by
Dr. Krishnan**

**Fig: 50. Awareness speech by
Dr. K. Rajadrane**

Puppet Show on Environment

A puppet show was organised on the theme "Beat Air Pollution" where the public and students actively participated and were encouraged to think about ways to conserve an environment free from pollution. This visual mode helps in spreading the environmental issues up to the grassroot level.



Fig: 51. Puppet show on environment

Environment Awareness - Cultural Programme

In the event of World Environment Day, 2019, cultural programmes like Oyilattam, Puliattam etc., were organised on the theme "Beat Air Pollution" to spread environmental awareness among the public and students.



Fig: 52. Folk dance on environment protection

CHAPTER - 17

PUDUCHERRY COASTAL ZONE MANAGEMENT AUTHORITY

Genesis of Puducherry Coastal Zone Management Authority

The Ministry of Environment & Forest & Climate Change, Government of India passed a Notification on 19th February 1991 under the Environment Protection Act, 1986 known as 'Coastal Regulation Zone Notification, 1991' where in it is declared that the coastal stretches of seas, bays, estuaries, creeks and backwaters which is influenced by tidal action up to 500 meters from HTL and the land between LTL and HTL as Coastal Regulation Zone and imposed certain restrictions in the said Coastal Regulation Zone.

Based on the Guidelines in the CRZ Notification the Coastlines of the Puducherry, Karaikal and Mahe, Yanam regions in the U.T. of Puducherry were studied and a Coastal Zone Management Plan (CZMP) was prepared by the Town and Country Planning Department, Puducherry during 1992. The same was approved by MOEF and published in State Gazette vide G.O. Ms. No. 18/93/Hg dated 31st December 1993. Till 1998, the provisions of CRZ Notifications were monitored and enforced by a High Power Committee of the Development Department, Govt. of Puducherry and the regulation of construction activities in CRZ was dealt by the Pondicherry / Karaikal / Mahe / Planning Authorities in their respective regions.

In 1998, Puducherry Coastal Zone Management Authority (PCZMA) was constituted and published in Gazette of India on 26th November 1998 based on the Supreme Court Direction to the Central Government to consider setting up of State & National Coastal Zone Management Authorities for ensuring effective implementation of CRZ Notifications. PCZMA was subsequently reconstituted in 2002, 2005, 2008, 2012, 2015 & 2018.

Puducherry Coastal Zone Management Authority is the regulatory body for protecting and improving the quality of the coastal environment and preventing and abating coastal environmental pollution in the coastal areas of Puducherry U.T.

The Union Territory of Puducherry has a coastline of 45 kms, stretching along the Bay of Bengal and to some extent along the Arabian Sea out of which Puducherry region alone has 24 km of coastline, Karaikal has 20 km stretch and Mahe has 1km stretch of coastline and 192 kms of Tidal influenced of water bodies in the U.T of Puducherry with a very wide range of coastal ecosystems such as estuaries, lagoons, mangroves, backwaters, sandy stretches, etc.

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The Ministry of Environment, Forest & Climate Change, Government of India published CRZ Notification, 2019 replacing earlier CRZ Notification, 2011.

Functions of PCZMA are as follows:

PCZMA carries out the following activities for protecting and improving the quality of the coastal environment and preventing and abating coastal environmental pollution in the coastal areas of Puducherry U.T.

1. Examination of proposals for changes or modifications in classification of CRZ areas and in the Coastal Zone Management Plans (CZMP) received from the Puducherry State Government and making specific recommendations to the National Coastal Zone Management Authority (NCZMA) thereof.
2. Enquire into cases of alleged violations of the provisions of the CRZ Notification and to take action.
3. Deal with environmental issues relating to CRZ which may be referred by Puducherry Government or NCZMA
4. Identify ecologically sensitive areas in CRZ and formulate area-specific management plans for the identified area
5. Identify coastal areas highly vulnerable to erosion or degradation and formulate area-specific management plans
6. Identify economically important stretches in the CRZ and prepare Integrated Coastal Zone Management Plan for the same
7. Obtaining NCZMA approval for plans prepared as per clause iv, v & vi above.
8. Examine all project proposals in CRZ areas and give their recommendations.
9. Ensure compliance of all specific conditions that are stipulated in CZMP of Puducherry.
10. Furnish report of its activities to NCZMA once in six months.

Table: 31. Details of Project proposals and Action taken by PCZMA in the year 2019 to 2020

Details of Meeting	Date	No. of Projects Cleared	No. of Projects Deferred	No. of Projects Rejected
40th PCZMA Meeting	01.07.2019	6	-	3
41st PCZMA Meeting	08.08.2019	12	Nil	Nil
42nd PCZMA Meeting	06.12.2019	4	Nil	2

Other Activities:

1. International Coastal Clean- Up Day - 2019 - was celebrated on 21.09.2019 in Puducherry in line with the International Coastal Cleanup Day. A massive coastal clean-up operation was carried out in the coastal stretches of Puducherry at Gandhi Statue, Vaithikuppam, Solai Nagar, Vambakeerappalayam, Kalapet, Pillaichavady, Narambai, Veerampatinam and Moorthikuppam. Hon'ble Minister (Environment) M. Kandasamy and Shri. K. Lakshminarayanan M.L.A. and Shri. Arjun Sharma. Secretary (Science, Technology and Environment)-cum-Chairman PCZMA and Smitha. R., Director (Science, Technology and Environment)-cum- Member Secretary inaugurated the cleaning campaign. Nearly 1000 school children, 200 NCC cadets and NSS volunteers participated in the campaign.



Fig: 53 Hon'ble Environment Minister in International Coastal clean-up day

2. Preparation of PCZM Plan as per CRZ Notification, 2019:

Coastal Regulation Zone Notification, 2011 was replaced with the CRZ Notification, 2019. The Ministry of Environment, Forest Climate Change (MoEF&CC). Government of India has published the CRZ Notification, 2019 dated on 18.01.2019.

The Coastal Regulation Zone (CRZ) Notification, 2019 mandates all coastal States and Union territory administrations shall revise or update their respective Coastal Zone Management Plan (CZMP) as per Guidelines issued by the Ministry of Environment, Forest and Climate Change for approval at the earliest and all the project activities attracting the provisions of this notification shall be required to be appraised as per the updated CZMP under this notification and until and unless the CZMPs is so revised or updated, provisions of this notification shall not apply and the CZMP as per provisions of CRZ Notification, 2011 shall continue to be followed for appraisal and CRZ clearance to such projects.

The Preparation of CZMP by the Department of Science, Technology and Environment, Government of Puducherry as per the Coastal Regulation Zone (CRZ) Notification, 2019. The work is under progress.

Integrated Coastal Zone Management (ICZM) Project

The Ministry of Environment, Forests and Climate Change implemented the Integrated Coastal Zone Management (ICZM) Project in the coastal states of West Bengal, Gujarat and Orissa on Pilot basis with World Bank support. Building upon the experience drawn from the ICZM Project . Phase II of the project has been extended now by the Ministry to 7 coastal States and 2 Union Territories (UTs) including Puducherry U.T. to strengthen integrated coastal zone management in India. The project is named as Enhancing Coastal and Ocean Resources Efficiency (ENCORE) Program and supported by the World Bank. The Project aims to enhance coastal resource efficiency and resilience, by building collective capacity (including communities and decentralized governance) for adopting and implementing integrated coastal management approaches. Recognizing Integrated Coastal Zone Management (ICZM) as a continuous process rather than a one-off investment action, ENCORE will include the linkages between coastal conservation, climate resilience, and poverty reduction.

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The major components of the ENCORE Project to be implemented in Puducherry U.T. are Preparations of ICZM Plan, ICZM Capacity Building and establishing the State Project management Unit and Pilot Scale projects for building ICZM capacity. The ministry has agreed to allocate Rs. 112 Crores for the U.T. of Puducherry ENCORE project proposal and has sanctioned Rs. 33.53 Crores for implementing following projects during I Phase of the ENCORE Project:

Table: 32. Implementing projects during I Phase of the ENCORE

Theme	Name of the activity	Estimated Cost (Rs. Cr.)	Implementing Agency	Output/Deliverables
Livelihood enhancement /security of coastal communities	Construction & reconstruction of Fish Auction Hall at four places & Construction of Work Shelter at Veerampattinam in Puducherry Region.	3.99	Department of Fisheries	<ul style="list-style-type: none"> × Better and Hygienic space for fish auctioning × Health and Hygiene of the coastal fishermen well protected × Better pricing of the catch leading to better livelihood for the coastal fishermen\ × Enhancing blue economy opportunities
	Women Collective action for sustainable livelihoods and coastal conservation at fisher folk villages in Puducherry Region	2.60	District Rural Development Agency	<ul style="list-style-type: none"> × Improving the economic conditions and living standards of the fisher folk women in coastal villages in Puducherry, × 200 producer groups with 2000 women members in two CBOs will be promoted to access market, infrastructure and other productive resources, Empowerment of the women

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	Pondy Necklace - Promotion of ecofriendly tourism and livelihood opportunities to local communities in Thengaithittu Lagoon area	18.94	Tourism Department & PWD	<ul style="list-style-type: none"> ✗ Identification of new location for ecotourism. Promoting this new location of ecotourism. ✗ Development of required infrastructure for promotion of ecotourism. ✗ Betterment of Life and Livelihood of the local community ✗ Improved local economy based on ecotourism
Environment education, research and capacity building for implementation of the ICZM approach.	ICZM Plan	8.00	State Project Management Unit	<ul style="list-style-type: none"> ✗ ICZM Plan preparation with public consultation in Puducherry. ✗ Appropriate state level structure for guiding and coordinating implementation of ICZM approaches. ✗ Better coastal zone management, Planned intervention for conflict resolution among the competing stakeholders. ✗ Adaptation strategy against Climate Change and consequent sea level rise in place. ✗ Better safety, security and protection for the coastal life and livelihood as also coastal infrastructure
Total Cost of I Phase Encore Project		33.53		

The Department of Science, Technology and Environment will be the nodal agency for implementing the Encore Project in Puducherry and a separate State Project management Unit called Puducherry Integrated Coastal Zone Management Society (PICZMS) has been constituted by the Government for executing the project.

CHAPTER - 18

STATE LEVEL ENVIRONMENT IMPACT ASSESSMENT AUTHORITY (SEIAA)

State Level Environment Impact Assessment Authority, Puducherry (SEIAA) and State Level Expert Appraisal Committee, Puducherry (SEAC) were constituted in the year 2007 by the Ministry of Environment, Forests and Climate Change, Government of India, in consultation with Government of Puducherry, in exercise of the powers conferred by sub-section (3) of Section 3 of the Environment (Protection) Act, 1986 (29 of 1986) and in pursuance of the Environment Impact Assessment Notification, 2006 number S.O. 1533 (E), dated the 14th September 2006.

SEIAA and SEAC, Puducherry are independent body functioning under the Department of Science, Technology and Environment, Government of Puducherry. It consists of Chairman, Member Secretary and Members who are subject experts / professionals in the field of Environment and other relevant areas. The tenure of the Chairman, Member Secretary and Members is for a period of three years.

SEIAA is vested with the powers to grant Prior Environmental Clearance (EC) for projects comes under category "B" of schedule in EIA Notification, 2006. SEAC assists the SEIAA in technical evaluation of project proposals and making suitable recommendations to SEIAA for issue of EC.

The project proponents seeking prior environmental clearance are required to submit an online application to SEIAA, Puducherry in the web portal http://environmentclearance.nic.in/Staterecord.aspx?State_Name=Pondicherry before commencement of any construction work or preparation of land. Once application is received, subject to the merit of application the proposal will be forwarded to SEAC. SEAC will appraise the proposal in its meeting and will also conduct the site inspection. The recommendations of SEAC are then submitted to SEIAA. Based on the recommendations of SEAC the project will be considered in the SEIAA meeting and after deliberations SEIAA may grant or reject the Environmental Clearance.

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Monitoring and Enforcement of EC conditions are carried out by the Puducherry Pollution Control Committee and the Regional Office of the Ministry of Environment, Forests and Climate Change.



Fig: 54. Site Inspection by SEAC Members at Pennaiyar River, Manamedu Village.



CHAPTER - 19

PUDUCHERRY CLIMATE CHANGE CELL (PCCC)

The Puducherry State Climate Change Cell (PCCC) has been established in the Department of Science, Technology and Environment (DST&E), Puducherry to integrate the scattered knowledge base on climate change and make it available in one platform and to facilitate and monitor the implementation of the Climate Change Action Plan. The cell was established with the manpower available under DST&E for preparation of State Action Plan on Climate Change (SAPCC), 2013. In April 2018, separate manpower and infrastructure was created for the Cell with the support of Department of Science and Technology, Government of India under the National Mission for Strategic Knowledge on Climate Change (NMSKCC).

In Puducherry Union Territory, various climate change mitigations and adaptation actions and initiatives have already been undertaken by various agencies. Different level of knowledge exists with various institutions on climate change mitigation and adaptation on different sectors. PCCC is established with the aim of functioning as a central repository to pool together this scattered knowledge and information on climate change and make it available in one platform so that the users along with the government bodies can effectively make use of such climate related information and products. PCCC is coordinating with all the line departments in planning and execution of various activities on climate change within the Union Territory. PCCC is engaged in Capacity Building and knowledge dissemination on Climate Change at the Individual level, Institutional level and Systemic Level.

Individual Level	Institutional Level	Systemic Level
<ul style="list-style-type: none">• Climate Change education for School Students• Climate Change awareness program for General Public• Training programs on Waste Management, Water Conservation, Climate resilient Agriculture practices, Solar power to concerned stakeholders.• Awareness through mass media, pamphlets, etc.	<ul style="list-style-type: none">• Training / Workshops on main streaming Climate change, project formulation, funding mechanisms, etc for government departments and agencies.• Strengthening capacity of PCCC for collecting baseline data on air and water quality and weather conditions.• Network of Knowledge Institutions• Web based Knowledge Portal• Developing Knowledge Products.	<ul style="list-style-type: none">• Preparing SAPCC• Monitoring and Evaluation framework for SAPCC Implementation• Energy Benchmarking for Government Buildings• Other policy interventions and revisions• Formulation and Implementation of Climate Change Mitigation and Adaptation projects

Activities of Puducherry Climate Change Cell:

i) **State Action Plan on Climate Change :**

Puducherry Climate Change Cell is the Nodal Agency for monitoring and implementing the Puducherry State Action Plan on Climate Change. PCCC prepared the first Puducherry State Climate Change Action Plan in October 2013. PCCC interacts with the line departments regularly and collects the data on progress of implementation of the key activities identified under SAPCC. Periodic review meetings are organised.

Now, PCCC with technical support of UN Environment India (UNEP), New Delhi is in the process of revising the SAPCC in line with Nationally Determined Contributions (NDCs) committed by the Government of India and Sustainable Development Goals (SDGs) taking into account recent scientific assessments and projections on global warming, vulnerability and impacts. The Energy and Resources Institute (TERI), New Delhi has been engaged as consultant for conducting the required studies and preparing the report.

Inception Workshop for the Revision of U.T. of Puducherry SAPCC was organized on 06.01.2020 in Hotel Sunway Manor, Puducherry for the purpose of sharing and getting feedback from the various Nodal Departments identified, on the proposed structure for the revision of SAPCC, the different chapter components and methodology to be followed therein, along with a proposed plan for stakeholder consultation.



Fig: 55. Address by Director, DST&E



Fig: 56. Presentation by TERI, NewDelhi

ii) Facilitating Climate Change Adaptation Projects

Puducherry Climate Change Cell is the also Nodal Agency for the project “Integrated surface water management through rejuvenation of 25 tanks and 32 village ponds for Climate Change Adaptation in Puducherry”, funded by MoEF&CC under National Adaptation Fund for Climate Change (NAFCC). Total Project cost is 16.76 crores which involves rejuvenation of 25 irrigation tanks and 32 village ponds in Puducherry.



Fig: 57. Rejuvenation of Irrigation Tank



Fig: 58. Rejuvenation of village pond

The project is executed by the PWD – Irrigation Division for the 25 Tank components and by the Commune Panchayats for the 32 Village Ponds components. The rejuvenation activities are under various stages of progress in these tanks and ponds. DHAN Foundation has been engaged to perform Capacity Building and revival of Tank Users Associations. The activities of Capacity Building includes Inception Workshops, Micro-Vulnerability Assessment at tank level, Training programme on hydrology, business planning, book keeping, etc. , Benefit sharing and Conflict resolution. Totally 51 programs were organized till 31st March 2020 in which 1084 male participants and 325 female participants have taken part.

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Fig: 59. Interaction meeting with members of Tank Users Association



Fig. 60. Inception Workshops and Micro Vulnerability Assessment with peoples at villages

An Seminar on " Climate Change and its impact on Environment - Role of Tank Users Association and Empowering of women was organised by DHAN Foundation on 19.09.2019 for the members of Tank Users Association and the village peoples. Four Exposure visit has been organized in Madurai and visited the villages Kottampatti, Singamanapuri, T.Kallupatti and Sedaapatti. Training programmes on People institutions for Tank based Water conservation, Water resource management, Governance and leadership, Traditional tank maintenance has been organized.



Fig : 61. Lecture on "Climate Change and its impact on Environment - Role of Tank Users Association and Empowering of women by Mr. K. Kalamegam, Environmental Engineer, DST&E at Thamukkam Ground, Madurai.

iii) Climate Change Awareness Program for School Students:

Several training and public awareness programmes on climate change have been organized by PCCC for government agencies, institutions, industries and other stakeholders. Climate Change Awareness Programme (CCAP) is being conducted in all the government school students from 9th to 12th standard in UT of Puducherry to increase the climate literacy among students, equip them with a better understanding of climate change issues and encourage changes in their attitudes and behavior to enable them to act in ways to sustain the environment. PCCC has organized CCAP in 128 schools till 31st March 2020. Totally 10455 students and teachers have participated in these programmes.



Fig: 62. CCAP at Jawahar Navodaya Vidyalaya School, Mahe



Fig: 63. Students taking pledge on Climate Change action

iv) Research Papers Published by PCCC:

Following Research papers have been published by Puducherry Climate Change Cell in Scientific Journals:

- a) Case study of GHG reduction and sustainable solutions in a Chemical Industry with reference to the climate change action plan of the Puducherry region, India, Dwarakanath Madahva Rao, et al., Journal of Applied Science and Engineering Methodology, 2016. (<http://www.jasem.in/2016/23406411.pdf>)
- b) Sector-wise GHG Inventorization for Union Territory of Puducherry with Special Reference to Agriculture – Phase I, Rao D.M, et al., International Journal of Tropical Agriculture, 2016. (https://www.serialsjournals.com/abstract/82959_37.pdf)

c) A Review on Studies performed to Assess the Impact of Climate Change and Anthropogenic Activities on the Coastal Ecosystem at Puducherry, India, Smitha. R et al., International Knowledge Press, 2019.

(<http://www.ikprpress.org/index.php/JOGEE/article/view/4953>)

Further, research works on short term and long-term trends, temporal and spatial variability in the air quality of Puducherry region, statistical analysis of long term meteorological data for Puducherry U.T. from climate change perspective, Heat Wave analysis studies and climate change adaptation strategies in agriculture sector is under progress.

v) Setting up of Energy Bench Mark for all government buildings/ institutions

PCCC is undertaking a project on "Setting up of Energy Bench Mark for all government buildings/ institutions" for providing policy guidelines on Energy Bench Marking in Puducherry.

vi) Weather Monitoring Station Ambient Air Quality Monitoring:

PCCC is collecting and compiling primary data on weather and air pollution, to establish base line data for future reference and long range planning. A Continuous Weather Monitoring Station has been setup at the PPCC lab building in Mettupalayam, Puducherry with the support of DST, GoI funds under NMSKCC project from the month of April 2018. The weather data is uploaded in the Puducherry Climate Change Cell website every month. Also, 2 Nos. of PM 2.5 Samplers has been procured under this project for Puducherry Pollution Control Committee for monitoring the respirable particulate matter in ambient air.



Fig: 64. Continuous Weather Monitoring Station

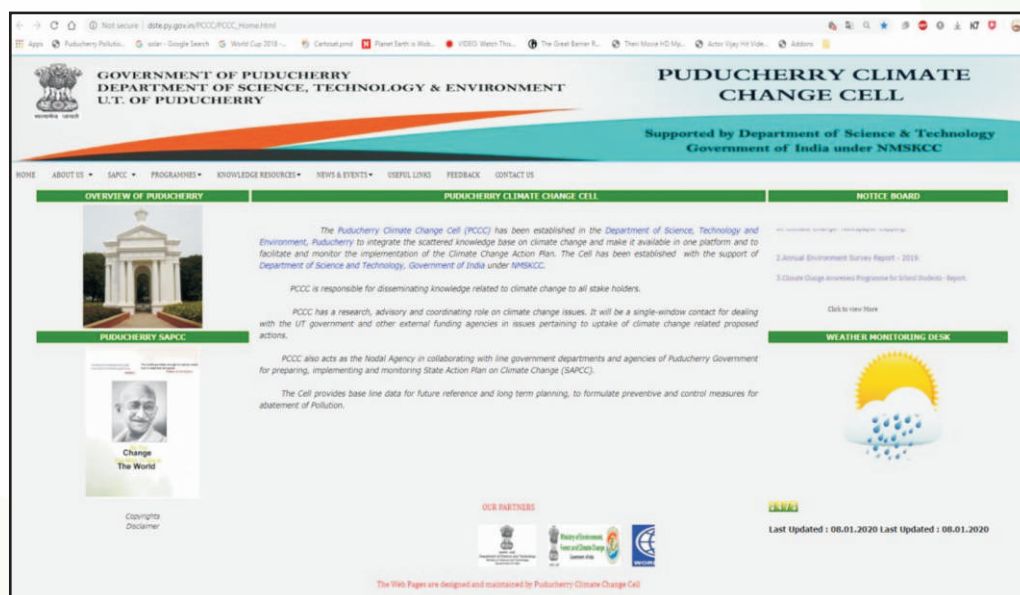
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vi) Publications / Reports:

- a) State Action Plan on Climate Change for the Union Territory of Puducherry
- b) Summary Report on "State Action Plan on Climate Change for the Union Territory of Puducherry"
- c) Comprehensive Green Protocol for the Educational Institutions, Industries, Residences and other organizations of the Union Territory of Puducherry.
- d) Success Story Booklet on Puducherry Beach Restoration Project (E-brochure).
- e) Climate Change awareness pamphlet for distribution to school students in English and Tamil.
- f) Proceedings Report for One day Training Workshop on "Climate Change Strategies and Finance Mechanisms".
- g) Interplay of Climate Change and Air Pollution – An Analysis of Air Quality in Puducherry Union Territory.

vii) Puducherry Climate Change knowledge portal:

One of the important activity of collecting, collating and disseminating knowledge on climate change through web portal. PCCC has developed a knowledge portal on climate change with specific reference to the Puducherry UT. Various types of data sets like Statistical details, Weather data, Vulnerability profile, GHG Inventory, SAPCC, Projects and Programs undertaken, current news, policies and research papers related to climate change is available in this website: https://dste.py.gov.in/PCCC/PCCC_Home.html.



Visit https://dste.py.gov.in/PCCC/PCCC_Home.html for more information about Puducherry Climate Change Cell and Climate Change issues

CHAPTER - 20

PUDUCHERRY COUNCIL FOR SCIENCE & TECHNOLOGY

The PCS&T an apex autonomous body to promote the Science & Technology awareness / applications / innovations in the U.T. of Puducherry is functioning in the Department of Science, Technology & Environment since 23rd June 1998. PCS&T was started with the recommendations of the Planning Commission, GOI vide G.O. Ms.No.9/Env/98 dated 23.6.1998. The PCS&T was registered on 6th November 1998 under the Societies Registration Act, 1860.

Since from its constitution, the council is functioning in the Administrative Department of Science, Technology & Environment. Hon'ble Minister for S&T is the Chairman and Chief Secretary is the Vice Chairman of the Council. Besides, the other members include Secretaries to Govt. and Heads of the academic / research institutes, each one nominee of Planning Commission and Department of Science & Technology (DST), GOI and Pondicherry University.

Further the Executive Committee of the Council is headed by the Secretary (Sci., Tech. & Env.) and Director (DSTE) is Member Secretary for both the Council and Executive Committee. The Council functions with the financial support of DSTE, Puducherry & DST, GOI by way of Grants-in-aid performs on the following mandated objectives:

To identify areas for the application of S&T to the developmental needs of this Territory.

To advise the Government on the formulation of the policies and measures this will promote applications of Science & Technology to the identified needs, objectives and goals.

Financial assistance for pursuing research in the area of Science, Technology and Environment.

Popularization of science among students and the public.

Sky Watching Activities:

Zero Shadow Day (ZSD) was observed on 21.04.2019 at Dr. Abdul Kalam Science Centre and Planetarium from 10.00 A.M. to 12.30 P.M. Nearly 100 Nos. of public and visitors observed the experimental set up and the formation of zero shadow.



Fig: 65. Students waiting for the exact time that does cast a shadow on the object during ZSD observance

Observance of Lunar Eclipse – Full night sky watching programme was observed on 17.07.2019. Nearly 300 general public and students witnessed the event through astronomical telescope and open lectures on the celestial objects were given to the public present during the event.



Fig: 66. Press news about the Lunar Eclipse event held on 17.07.2019

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Live telecast program on landing of Vikram lander by Chandrayaan-2 was broadcasted to the public in the Auditorium of Dr. AKSC&P, Puducherry on 06.09.2019 from 10:30 P.M. Around 100 nos. of visitors attended the event.

Massive Awareness programme on the occurrence of Annular solar eclipse was conducted in 40 different places in the U.T. of Puducherry. The Public and Student community were greatly benefitted by viewing the solar eclipse with telescope and solar filters. They were also briefed about the occurrence of the eclipse. Nearly 1,00,000/- people witnessed the event in Puducherry and Karaikal.



Fig: 67. Hon'ble Chief Minister, Hon'ble Minister for Science and Technology observing the Annular Solar Eclipse through goggles arranged by PCS&T

Release of financial Assistance for the conduct of Awareness Program

An amount of Rs. 30,000/- was sanctioned on 21.08.2019 as financial assistance to Pondicherry Science Forum, Puducherry for the conduct of massive awareness programme on Zero shadow at Dr. Abdul Kalam Science Centre and Planetarium and also in 50 centres in the U.T. of Puducherry. Nearly 6000 students and public were briefed about the importance of Zero shadow day.

One day Master Resource Person's training programme on Annular Solar Eclipse was organised on 14.12.2019. 50 nos. of Master trainers were trained for the solar eclipse awareness programme on 25.12.2019. In this regard an amount of Rs.95,000/- was sanctioned to Pondicherry Science Forum for the conduct of awareness programme in 40 places in Puducherry and Karaikal.

Half-a-day workshop on Foldscope for school students and public was organised at Dr. AKSCP. Teaching of Science through Foldscope for students is an activity based learning Programme. Two resource persons Thiru. S. Rajkumar, TGT and Dr. N. Arun, PSF delivered lectures with demonstrations on "Foldscope". 100 students and public participated in the workshop. An amount of Rs.20,000/- was sanctioned for the conduct of the workshop.



Fig: 68. A glimpse of the work done by the students during the Half-a-Day workshop on Foldscope

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An amount of Rs. 20,000/- was sponsored by PCS & T for the conduct of One day seminar on Biodiversity and its sustainability was organised by the Department of Botany, KMGIPGSR, Lawspet, Puducherry on 16.03.2020.

An amount of Rs. 60,170/- was released to Pondicherry Science Forum for Annual subscription of Science Magazines viz. Thulir Science Monthly (Tamil), Ariviyal Murasu (Tamil) and Jantar mantar Bimontly (English) to Government and Aided Schools of U.T of Puducherry for the year 2019-2020.

An amount of Rs. 60,000/- was sanctioned to Pondicherry Science Forum on 25.12.2019 as financial assistance for the conduct of Make Science Competitions for the Government school students in Puducherry in Co-ordination with University of Paris, South, France. This competition is appraised by University of Paris (South) which gives a cash award of 300 and 200 Euros for first and second prize winners respectively.



Fig: 69. Director of School Education with the team of participants at the Make Science Competition event

National Science Day celebrated on 28.02.2020 with the theme as follows:

Rs. 50,000/- to Indian Science Congress Association – Pondicherry Chapter towards the conduct of various competitions for General and Specially Abled Children, in association with Pondicherry University on 28.02.2019.

Rs. 68,000/- as financial assistance to Pondicherry Science Forum for the conduct of Invited Lectures and also for various competitions at Puducherry (Rs. 35,000/-), Karaikal (Rs. 18,000/-) and Mahe (Rs. 15,000/-) regions.

Rs. 6,000/- to Chavalier Sellane Government Higher Secondary School, Kalapet, Puducherry for conducting various competitions.

Rs. 20,000/- for the conduct of Half-a-Day lecture program to 100 college girl students at Dr. AKSC & P.

Centrally sponsored scheme executed in coordination with PCS&T (SNA)

Swachh - Nirmal Tat Abhiyaan Mass Cleanliness Drive on Coastal Beaches

Conduct of Mass Cleanliness Drive on Coastal Beaches from 11th to 17th November, 2019 at two beaches in Puducherry (Puducherry and Paradise) and Karaikal (Karaikal and Akkampettai) Districts each.

An amount of Rs. 20,55,100/- was released to PCS&T (State Nodal Agency for NGC scheme of MoEF&CC, Government of India) for carrying out the above said activity by MoEF&CC, out of which, an amount of Rs. 10,27,550/- has been allocated to the District Collector, Karaikal to organise the drive in Karaikal Town and Akkampettai Village beaches in Karaikal District.

Every day 200 students from the Government schools / general public / volunteers were involved. Necessary arrangements for pick-up and drop and refreshments for the school students were arranged. Beach area (1 km stretch) were cleaned up and the collected wastes were disposed through authorised recyclers. This drive created an awareness among the general citizens about the importance of keeping the beach always clean for the years to come.



Fig: 70. Thiru M.Kandasamy, Hon'ble Minister for Science, Technology and Environment inaugurated the Mass Cleanliness Drive on Coastal Beaches under the Swachh - Nirmal Tat Abhiyaan at Puducherry Beach.

NATIONAL GREEN CORPS

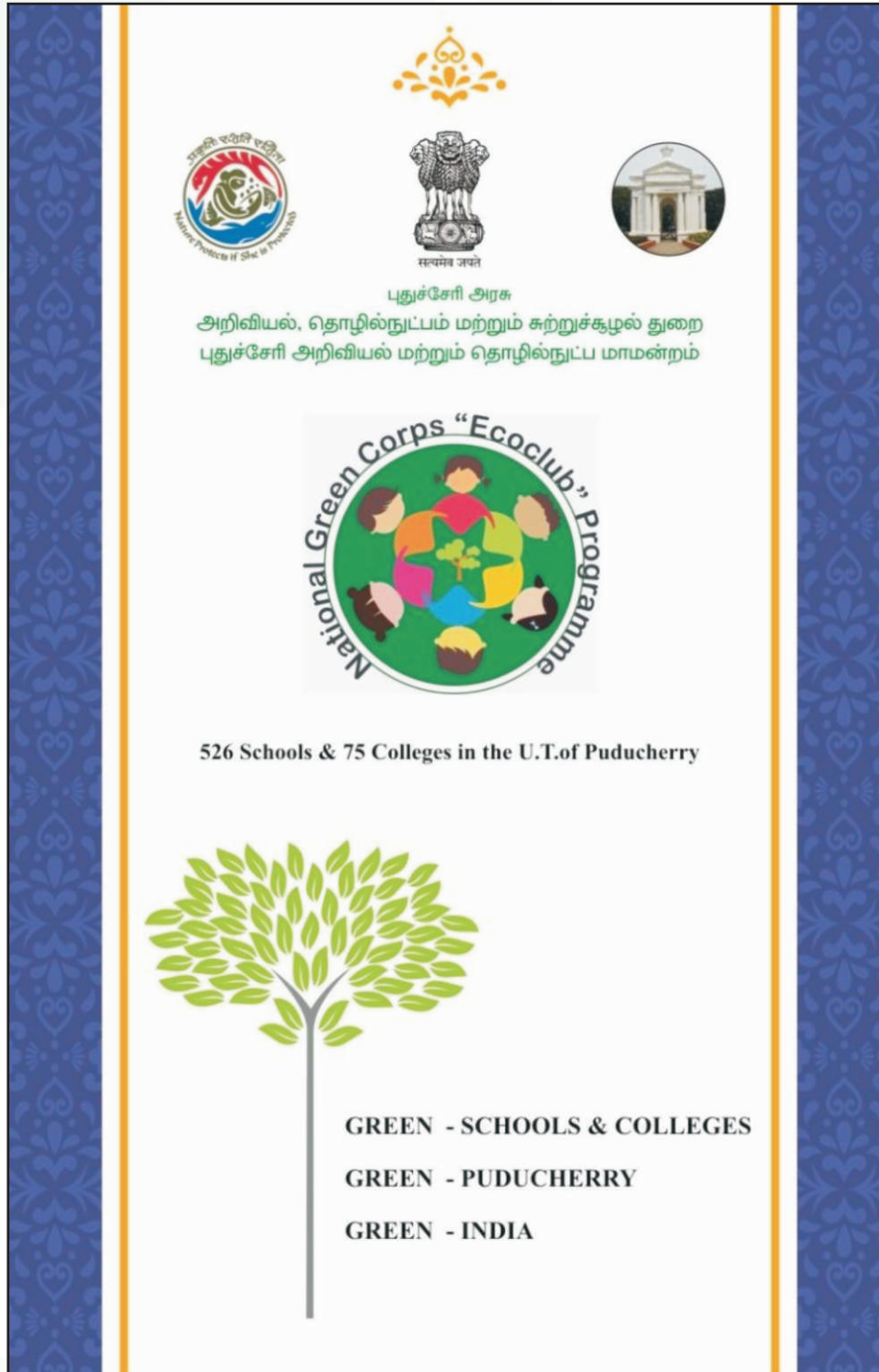
NGC-Eco-clubs including Nature National Camping Programme and Capacity Building : National Green Corps : Ecoclubs Programme aims to create awareness among school and college students for environmental conservation and sustainable development across the country. It also aims to sensitise and nurture students on nature conservation leading towards positive environmental actions at different levels. The Ministry of Environment, Forest and Climate Change (MoEF&CC), Government of India is extending financial assistance for this programme. Rs. 3.75 Lakhs and Rs. 38.3 Lakhs was released to Directorate of Higher and Technical Education and Directorate of School Education respectively for the conduct of NGC-Eco-clubs activities by the Colleges and Schools. Rs. 1.00 released to SNA, PCS&T for Monitoring and Implementation of NGC-Eco-clubs programmes.



Fig: 71. Hon'ble Minister for Science and Technology, Hon'ble Minister for Education, Member of Legislative Assembly, Thattanchavady Constituency, Secretary and Director, Science, Technology and Environment appreciating the work done by the students using organic materials.

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POSTER RELEASED



**Awareness Rally on Ban of Single Use Plastic by
NGC School Students**

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Awareness rally ban of single use plastic was organised on 02.08.2019. The programme was flagged off by Hon'ble Chief Minister of Puducherry and Hon'ble Minister for Science, Technology & Environment. 200 school students participated in the said rally. The rally begins from the premises of Legislative proceeds through Mission street, Rangapillai street, Chief Secretariat and ends at Gandhi Thidal.



Fig: 72. Hon'ble Chief Minister along with Hon'ble Minister for Science and Technology flagging off the rally on ban of Single Use Plastic at 02.08.2019



Fig: 73. Rally by the students on ban on Single Use Plastic

Swachhta Action Plan (Sap) Programme

The Ministry of Environment, Forests and Climate Change (MoEF&CC), Government of India, is implementing Swachhta Action Plan (SAP) which is a milestone initiative in mainstreaming Swachhta elements across all sectors in an elaborate, accountable and sustained manner to realize the Swachh Bharat Vision.

Massive Tree Plantation for the month of January, 2020 wherein fruit bearing saplings along with set of garden tools and kits were distributed for 9 schools for an amount of Rs. 1,37,150/- and awareness programme on air pollution in 9 schools for an amount of Rs. 36,000/- were distributed.



Fig: 74. Hon'ble Minister for Science and Technology along with Senior Scientific Officer (DSTE) during the inaugural function of Sapling Distribution at Maraimalai Adigal Govt. School, Embalam

Also an amount Rs. 4000 / school X 6 schools totalling Rs. 24,000/- were distributed through cheque by Hon'ble Minister for Science, Technology and Environment to Head of Institutions in 6 schools on 14.03.2020 in the chamber of Hon'ble Minister for Science, Technology and Environment, Puducherry Assembly, Puducherry for organising awareness program on air pollution under Swachhta Action Plan (SAP) scheme of the Ministry of Environment, Forests and Climate Change (MoEF&CC), GOI.

Training and Awareness program participation:

Thiru E.Sivakumar, Technical Assistant, attended a review meeting at MoEF&CC, New Delhi on implementation of Environment, Education, Awareness and Training scheme(NGC) on 19.07.2019 for receiving annual grants.

Thiru. E.Sivakumar, Technical Assistant, attended two days review meeting of 3rd Expert committee review meeting of Intellectual Property Rights at Kodaikanal. The programme was organised by Tamil Nadu Council for Science and Technology during 12.08.2019 and 13.08.2019.

Hon'ble Minister for Science and Technology cum Chairman along with Scientific Officer (DSTE) participated in the State S&T Minister Conclave meet on 6th November'2019 at Kolkata under India International Science Festival 2019.



Fig: 75. Hon'ble Minister for Science and Technology cum Chairman (PCS&T) along with Scientific Officer (DSTE) at the State S&T Minister Conclave meet at Kolkata

Thiru. N. Srinivasa Rao, Scientific Officer, DSTE participated in 1st Expert Group on State S&T councils organised by Department of Science and Technology, Government of India on 22nd and 23rd August, 2019 at Telangana State Council of Science and Technology, Hyderabad.

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Thiru. P. Sathish Kumar, Technical Assistant of PCS&T, attended 3 days full-dome film festival and Planetarium Conference at the Pilikula Regional Science Centre, Mangaluru, Karnataka from 6th to 8th November 2019.

PCS&T staffs attended two days state level science exhibition on 21st & 22nd November 2019 at Jeevanandham Higher Secondary school, Puducherry.

Thiru. E. Sivakumar, Technical Assistant PCS&T Participated in two days Annual Meet of Nodal Agencies implementing EEAT Scheme scheduled on 20th & 21st December 2019 in Kevadia, Gujarat.



Fig: 76. Thiru E. Sivakumar, Technical Assistant, PCS&T receiving Appreciation Certificate during the Annual Meet of Nodal Agencies implementing EEAT Scheme in Kevadia, Gujarat.

Thiru. P. Sathishkumar, Technical Assistant, PCS&T Participated in two days Southern region Patent Information Centre cum training programme scheduled during 22nd and 23rd, December 2019 at Telangana State Council for Science and Technology, Hyderabad.

Programs conducted at Dr. Abdul Kalam Science Centre and Planetarium

Seminar was conducted on the month of June 2019 on Science & Technology to school students in the auditorium of Dr. Abdul Kalam Science Centre and Planetarium, Puducherry. Dr.C.Shanmugham, Science Communicator, Chennai delivered lecture with demonstrations on "Fun with Science" on Chemistry on 30.06.2019.

Observance of Dr. Abdul Kalam Memorial Day on 27.07.2018 at Dr. AKSCP. Hon'ble Minister for Science, Technology & Environment, Thiru. M. Kandasamy, Honoured the statue of Dr. Abdul Kalam erected in the premises of AKSCP by garlanding and paying floral tribute on 27.07.2019. Teachers from Artchouna Soupraya Naikar Government Middle School, Puducherry and Don Bosco Higher Secondary School students (100 Nos.) participated in the program.



Fig: 77. Students paying tribute to our former President during his Memorial Day on 27.07.2019

Organised Seminar for the month of August 2019 on Science & Technology to school students in the auditorium of Dr. Abdul Kalam Science Centre and Planetarium (Dr. AKSCP), Lawspet, Puducherry on 31.08.2019. Dr. R. Ilamthirayan, Micro-Biologists, Dept. of Food & Drugs Testing, Puducherry delivered lecture with demonstrations on "Food and drugs safety". 100 school and college students participated in the said programme.

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Conducted Seminar on "Latest Innovation and Astronomy" for students and Public Community at Dr. Abdul Kalam Science Centre and Planetarium on 29.09.19. The lecture was delivered by Prof. and HOD of Physics Department, Bharathidasan Govt. College for Women, Dr. R. Mathivanan. The participants (100 Nos) also viewed the sun spots using telescope during the program.

Bhoomi Pooja for laying of foundation stone for the proposed construction of Innovation Hub was held on 05.09.2019 at Dr. AKSC&P, Puducherry. Hon'ble Minister for Science and Technology, Member of Legislative Assembly - Thattanchavady constituency, Secretary – Science, Technology and Environment, Director- Science, Technology and Environment participated in the event. Innovation Hub is being constructed at estimated cost of Rs.2.25 crores by National Council for Science Museums, Govt. of India, Kolkatta.



Fig: 78. Bhoomi Pooja for construction of Innovation Hub at Dr. AKSC&P



Fig: 79. Laying of foundation stone for construction of Innovation Hub at Dr. AKSC&P

Corporate Social Responsibility (CSR) Scheme

The Mobile Science Exhibition Bus of PCS&T is renovated and a formal inaugural program for taking its service to all Government School in rural areas in Puducherry was held on 28.01.2020 at Dr. AKSC & P. The repairing and maintenance of exhibits in the Mobile Science Exhibition Bus (MSEB) was carried out under (CSR) Scheme.



Fig: 80. Hon'ble Minister along with Director (Science, Technology and Environment) inaugurated the newly renovated MSEB on 28.01.2020

The development and maintenance of garden at Dr. AKSC & P for an amount of Rs. 3 Lakhs is part of Corporate Social Responsibility service for the period 2019-2020.

Setting up of Science Exposition Centre, Innovation Hub and Digital Planetarium:

It is proposed at the Temple Town of Thirunallar, Karaikal at an estimated cost of Rs. 3.75 Crores by Government of Puducherry. An amount of Rs. 60.00 Lakhs has been released to PWD under 'Deposit Works' vide Order dated 16.03.2020 towards 'Construction of Compound Wall with Storm Water Drain and Earth Filling.

Table: 33. Budget allocation to PCS&T for the last five financial years including central government, state government & any other sources.

Sl. No	Year	State Government GIA (Rupees in Lakhs)	Central Government - Core Secretariat (Rupees in Lakhs)
1	2014-15	65.00	C/F
2	2015-16	100.00	19.98
3	2016-17	50.00	C/F
4	2017-18	50.00	11.50
5	2018-19	Nil	12.65
6	2019-20	50.00	33.92

CHAPTER - 21

Dr. ABDUL KALAM SCIENCE CENTRE AND PLANETARIUM



Dr. Abdul Kalam Science Centre and Planetarium, Puducherry was set up by the National Council of Science Museums (NCSM) with active support of Puducherry Council for Science and Technology & Environment. The Centre is established in a built – up area of 1.5 acres of land and houses 2 permanent exhibition galleries namely “Marine Gallery” and a “Fun Science Gallery”. It also has a Science Park, Planetarium, Science Demonstration Lecture Corner, Children’s Activity Corner, Air Conditioned Auditorium, a Mini Conference Hall and other public facilities. Dr. Abdul Kalam Science Centre and Planetarium Science Centre is situated in the Airport road in Lawspet, Puducherry. This is an ideal place to engage the young and the old alike with the process of discovering science through a fun filled experience. The facilities available are as follows:

Fun Science Gallery

Fun Science gallery is a fully interactive hall and houses extraordinary interesting interactive exhibits that makes science learning fun filled experience.



Fig: 81. Teachers felt ecstasy on watching the Floating Ball exhibit established in Fun Science Gallery

Table: 34. Collection Statement of Dr. AKSC&P from April 2019 to March 2020

Dr. ABDUL KALAM SCIENCE CENTRE & PLANETARIUM – ABSTRACT of Collection Statement from April 2019 to March 2020															
Month	Planetarium Visitors						Science Centre Visitors						Govt School Free Entry	Total Visitors	Total fees Collection in Rs.
	Adult		Children's		Foreigners		Adult		Children's		Foreigners				
	Nos	Fees	Nos	Fees	Nos	Fees	Nos	Fees	Nos	Fees	Nos	Fees			
Apr-19	910	18200	1100	11000	5	200	1147	11470	1239	6195	4	80	-	2390	47145
May-19	1446	28920	847	8470	9	360	1746	17460	994	4970	5	100	-	2745	60280
Jun-19	511	10220	184	1840	-	-	729	7290	296	1480	-	-	60	1085	20830
Jul-19	405	8100	728	7280	-	-	747	7470	835	4175	4	80	367	1953	27105
Aug-19	-	-	-	-	-	-	729	7290	1151	5755	7	140	-	1887	13185
Sep-19	802	16040	493	4930	-	-	1058	10580	425	2125	-	-	-	1483	33675
Oct-19	851	17020	836	8360	-	-	1158	11580	942	4710	3	60	-	2103	41730
Nov-19	1717	34340	763	7630	-	-	1940	19400	849	4245	-	-	-	2789	65615
Dec-19	1307	26140	788	7880	-	-	908	9080	1597	7985	-	-	-	2505	51085
Jan-20	463	9260	651	6510	-	-	777	7770	818	4090	3	60	-	1598	27690
Feb-20	928	18560	2785	27850	-	-	1202	12020	3159	15795	-	-	403	4361	74225
Mar-20	701	14020	1669	16690	-	-	857	8570	1755	8775	-	-	206	2818	48055
Total	10041	200820	10844	108440	14	560	12998	129980	14060	70300	26	520	1036	27717	510620

CHAPTER - 22

ENVIS HUB CENTRE

The Environmental Information System (ENVIS) is a Centrally Sponsored Scheme (CSS) project funded by the Ministry of Environment, Forests and Climate Change (MoEF&CC), Government of India. The purpose has been to ensure integration of national efforts in web-enabled environmental information collection, collation, storage, retrieval and dissemination to all concerned, including policy planners, decision-makers, researchers, scientists and the public. There are in total 62 Envis centres in India.

About Puducherry Envis Hub Centre

Puducherry Envis Hub Centre was started on 22nd September, 2005. Our ENVIS centre located at the Puducherry Pollution Control Committee (PPCC), Puducherry focuses on special reference to "Status of Environment Related Issues". Activities of the centre includes collection, analysis, storage, retrieval and dissemination of information in the subject area allotted. The information is being disseminated through the quarterly newsletter and website. The ENVIS centre also conducts various environmental awareness program in schools and colleges for imparting Environmental comprehension among students.

Focus of Envis Hub

The focus of ENVIS since inception has been on providing environmental information to decision makers, policy planners, scientists and engineers, research workers, etc., all over the country. Since environment is a wide-ranging, multi-disciplinary subject, a comprehensive information system on environment would necessarily involve effective participation of concerned institutions/organizations in the country that are actively engaged in work relating to different subject areas of environment. ENVIS has therefore, developed itself with a network of such participating institutions/organizations for the programme to be meaningful. ENVIS hub is regularly updating information about the UT of Puducherry in the Indian State Basic Level Information Database (ISBEID) Portal.

Mandate

- To build a repository and dissemination centre for Environmental Information (EI).
- To enable application of modern technologies of acquisition, processing, storage, retrieval and dissemination of EI.
- To support and promote R&D in EI technology.
- To provide national EI services to users, originators, processors and disseminators.
- To promote national and international cooperation and liaise with agencies concerned for exchange of environment related information.
- To promote and support education and training programmes designed to enhance EI processing and utilising capabilities.

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 <p>Water Bodies in the U.T. of Puducherry (Oct-Dec, 2018)</p>	 <p>Status of Ambient Air Quality in the U.T of Puducherry for the Year 2018 (Jan – Mar, 2019)</p>	 <p>Status of Water Quality in the U.T of Puducherry for the Year 2018 (Apr – Jun, 2019)</p>
 <p>Status of Water Quality in the U.T of Puducherry for the Year 2019 (Jul – Sep, 2019)</p>	 <p>Status of Ambient Air Quality & Air Quality Index in the U.T of Puducherry for the Year 2019 (Oct – Dec, 2019)</p>	 <p>Coastal Sand Dunes in Puducherry (Jan – Mar, 2020)</p>

Fig: 84. Publications of Puducherry Envis Hub - Newsletters

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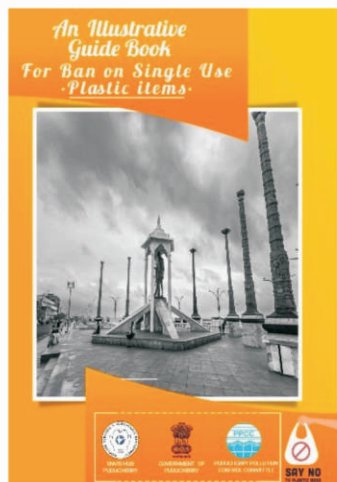
Fig: 85. Publications of Puducherry Envis Hub - Posters

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Pamphlets



Brochure



Mobile App. in Patchi



Stickers



Training, Extension, Awareness and Outreach Activities during 2019-2020

Green Skill Development Programme



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Puducherry ENVIS Hub in Puducherry Pollution Control Committee imparted GSDP course in "Pollution Monitoring: Air and Water Pollution" at level- 6 of NSQF at Dr. Abdul Kalam Science Centre and Planetarium, Lawspet, Puducherry. The training programme was conducted for a period of 30 working days (17th February to 21st March 2020, 260 hours) and the training module included theoretical, practical, field visits and assignments. The number of participants were 27 from various background covering Puducherry region and adjoining T.N. Districts. In addition, hands-on training and field trips were also arranged to visit Waste Water Treatment and Air Pollution Control Measures adopted in various industries in order to provide a real time exposure.



Fig: 86. Photo clips of Green Skill Development Programme

National Review Meeting of Envis

Envis Coordinator along with the Envis team attended National Review Meeting of Envis held on 02 April 2019 at MoEF&CC, GoI, New Delhi.



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Shri C.K. Mishra, IAS., Secretary, MoEF&CC, Government in India, visited Puducherry Envis Hub stall along with Principal Advisor, Economic Advisor and Senior Officials



Principal Economic Advisor giving certificate to the ENVIS Hub Centre Puducherry

World Environment Day Celebration, 2019

Puducherry ENVIS Hub Centre participated coastal cleaning activities in the eve of World Environment Day, 2019.



Fig: 87. Coastal Clean-up Activities

District Level Stake Holders Meeting

District Level Stake Holders Meeting to publicise the new initiatives namely GSDP and GRIDSS programme under the ENVIS scheme was held on 26.06.2019 at Dr. Abdul Kalam Science Centre & Planetarium, Lawspet, Puducherry.

District Level Stake Holders Meeting at Karaikal District

Conducted District Level Stake Holders Meeting at Karaikal District by Puducherry Envis Hub on 30.07.2019 at Collectorate, Karaikal under the Chairmanship of Shri. A. Vikranth Raja, I.A.S., District Collector, Karaikal.



Fig: 88. Presentation on ENVIS Scheme and its new initiatives by Thiru P. Vipin Babu, Scientist/Envis Coordinator

One day Workshop on "Use of Foldscope as an Educational Tool"

Shri. S. Dhinesh, Information Technology Officer, Puducherry Envis Hub attended One day Workshop on **"Use of Foldscope as an Educational Tool"** at Indira Gandhi, Govt. High School, Katterikuppam, Puducherry on 20.07.2019 Sponsored by Department of Biotechnology (DBT), Ministry of Science and Technology, Government of India and Directorate of School Education, Puducherry. Shri. Pandiarajan, Tamil Nadu Foldscope Instructor briefed about foldscope.



Fig: 89. One day Workshop on "Use of Foldscope as an Educational Tool"

World Ozone Day Celebration, 2019

Special talk and Quiz Competitions were conducted on the theme "32 years and healing" at 5 Government Schools on 14.09.2019 organized by Puducherry ENVIS Hub.

Special Lecture on **"Ozone Layer Depletion and Its Health Impacts"** delivered by Dr. Malathi Munisamy, Associate Professor, Department of Dermatology and STD, JIPMER held on 16.09.2019 at Centre for Pollution Control and Environmental Engineering, Pondicherry University, Puducherry organized by Puducherry Envis Hub. An awareness poster and pamphlet were released during the occasion.



Special Lecture delivered by Dr. Malathi Munisamy, Associate Professor, Department of Dermatology and STD, JIPMER



Awareness Poster and Pamphlet Release during the event

Fig: 90. Conducted Quiz Competitions at Indira Gandhi College of Arts and Science, Kathirkamam, Puducherry on 17.09.2019 organized by Puducherry Envis Hub.



Awareness Poster and Pamphlet Released during the event



Prize Distributed to the winners

International Coastal Cleanup Day Celebration 2019

Puducherry Pollution Control Committee and Department of Science, Technology and Environment in collaboration with the National Centre for Coastal Research, Chennai organized coastal clean-up activities carried out at the Eden Beach located at Chinnaveerampattinam, Puducherry on 21.09.2019. The event was supported by Indian Coast Guard, Local Administration Department, Puducherry and ENVIS Hub, Puducherry.



Fig: 91. Celebration of World Environment Day

Swachh- Nirmal Tat Abhiyaan Mass Cleanliness Drive on Coastal Beaches

Envis Team participated Swachh-Nirmal Tat Abhiyaan Mass Cleanliness Drive on Coastal Beaches from 11-17th November 2019 organized by Department of Science, Technology and Environment, Puducherry Council for Science and Technology (PCS&T) along with Ministry of Environment, Forest & Climate Change and Society of Integrated Coastal Management (SICOM), Government of India, involved Ecoclub students in Puducherry and Paradise beaches in Puducherry District.



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Regional Level Science Exhibition

Envis Team participated Regional Level Science Exhibition organized by the Directorate of School Education at Jeevanandam Government Higher Secondary School at Karamanikuppam from 21.11.2019 to 22.11.2019.



Fig: 92. Regional Level Science Exhibition

Visit to Envis Centres at Chennai

Smt. Nithiya. J, Programme Officer and Shri. S. Jagan Kumar, Information Officer from Puducherry ENVIS visited Envis Resource Partners, Department of Zoology (DZUM), University of Madras, Chennai and Envis Hub, Department of Environment, Government of Tamil Nadu, Envis Resource Partner (RP) on 02.12.2019 to discuss and familiarize the activities carried out by the said Centres.

Release of Value Added Knowledge Products

Thiru. M. Kandasamy, Hon'ble Minister for Science, Technology and Environment released the Value Added Knowledge Products Monthly and Yearly Science Calendar, 2020 and "An Illustrative Guide Book on Plastic Ban prepared by the Envis Hub Puducherry on 31.12.2019 in the presence of Thiru. Arjun Sharma, I.A.S., Secretary (Environment) and Tmt. Smitha. R, Member Secretary, PPCC. The calendar is first of the kind having both the information on the various days related to Environment and the QR code printed on the monthly sheet can be used to download various central acts and rules published by MoEF&CC pertaining to Environment. The calendar were circulated to all the Government offices, Institutions, Schools.

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Thiru. M. Kandasamy, Hon'ble Minister for Science, Technology and Environment released the Value Added Knowledge Products



Newspaper clipping

World Wetlands Day Celebration, 2020

In the event of World Wetlands Day, photo release of Dr. Dhruvajothi Ghosh (Engineer Ecologist) followed by a special lecture on Wetland and Biodiversity delivered by Envis Coordinator was held on 31.01.2020 at Centre for Pollution Control and Environmental Engineering, Pondicherry University, Puducherry organized by Puducherry ENVIS Hub. Awareness posters and pamphlet were released during the celebration.



Pre-Sensitization Meeting With The CII and Industries:

Conducted pre-sensitization meeting with the CII and industries having ETP/STP/Boiler/APCS/Laboratory on 31.01.2020 to impart the importance of the technically qualified person for the operation of the APCS, STP and ETP. The Industries were instructed to approach the ENVIS hub in case of any technical support for training in Air and Water Pollution Monitoring.

Environmental Awareness Programme:

ENVIS Team conducted Environmental Awareness Programme in 80 schools in the U.T. of Puducherry from the month of June, 2019 to February, 2020. Around 10,000 students along with teachers were benefitted by the programme.



CHAPTER - 23

AMBIENT AIR QUALITY DURING LOCKDOWN PERIOD

Puducherry Pollution Control Committee has carried out manual ambient air quality monitoring at the following six locations to assess air pollution status during the lock down owing to Covid19 pandemic in the U.T. of Puducherry. Air Quality assessment was done for 24 hours (4-hourly sampling for gaseous pollutants and 8-hourly sampling for particulate matter) with a frequency of twice a week.

The parameters monitored:

PM₁₀ (Particulate Matter less than 10 µm)

Sulphur dioxide (SO₂)

Nitrogen dioxide (NO₂)

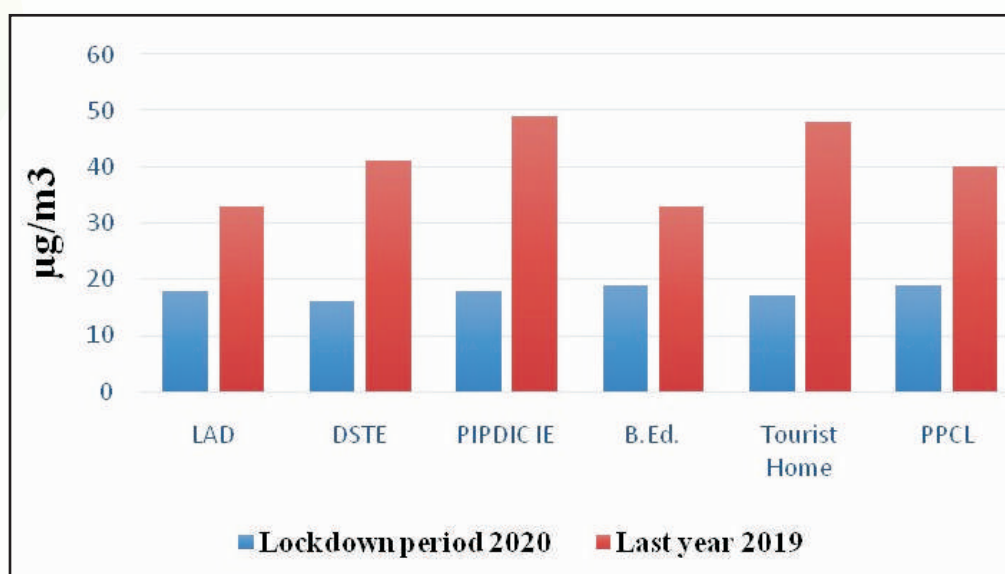


Fig. 93 Comparison of PM₁₀ concentration during Normal and Lock down days

Figure depicts the 24 hourly average concentration of PM₁₀ measured at six locations in the U.T of Puducherry during lockdown period from April'1st to April 30th and during the year 2019 in the same period.

The Percentage reduction of PM₁₀ in terms of concentration in the six location ranged from 42.4% to 64.6% during the lock down period when compared to the same period last year. The minimum and maximum concentration of PM₁₀ during the lock down period was 16 µg/m³ and 19 µg/m³ respectively. Whereas, the minimum and maximum concentration of PM₁₀ during the same period last year was 33 µg/m³ and 49 µg/m³ respectively.

From the above data, it is inferred that there was significant improvement in air quality during lock down period.

Observation and Results:

The monitoring results reveal that the 24 Hourly average concentration of Particulate Matter (Size less than 10 μm) - PM_{10} measured in the six locations were within the prescribed 24 hourly average standard limit of $100 \mu\text{g}/\text{m}^3$

Monthly average of the 24 hourly average concentration of PM_{10} measured in the six locations were in the range of 16 – 19 ($\mu\text{g}/\text{m}^3$) during the lock down period. The Air Quality Index during the lock down period came under Good category (100%) at all the location in the UT of Puducherry.

The Percentage reduction of PM_{10} in terms of concentration in the six location ranged from 42.4% to 64.6% during the lock down period when compared to the same period last year.

The concentration of SO_2 and NO_2 values were Below Detectable Level in most of the 4 hours sample and only a few of the 4 hours sample had a slightly higher concentration which was still close to the Below Detectable value of SO_2 and NO_2 i.e. $2.0 \mu\text{g}/\text{m}^3$ and $4.5 \mu\text{g}/\text{m}^3$ respectively.

The 24 hourly maximum concentration of SO_2 and NO_2 during the lock down period was $2.1 \mu\text{g}/\text{m}^3$ and $5.2 \mu\text{g}/\text{m}^3$ respectively. Whereas, the maximum concentration of SO_2 and NO_2 during the same period last year was $5.4 \mu\text{g}/\text{m}^3$ and $49 \mu\text{g}/\text{m}^3$ respectively.

The improvement in the air quality during the lock down period was due to retarded anthropogenic, industrial and construction activities and also because of very few vehicles plying on the roads due to lock down.

CHAPTER - 24

IMPLEMENTATION OF RTI ACT

As per the provision of Section 5 of RTI Act, 2005 the following officers are designed as Public Information Officers (PIO)

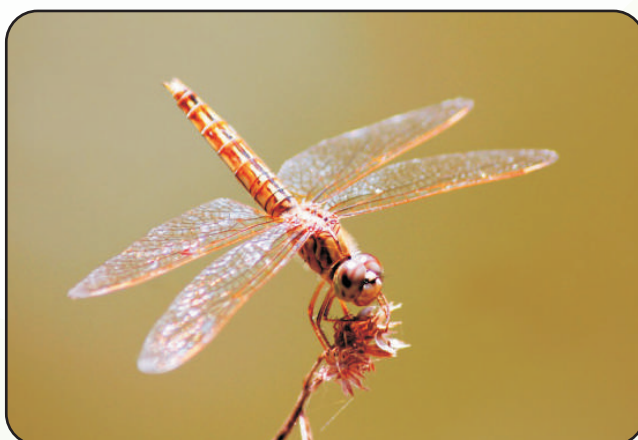
Dr. R. Sagaya Alfred, SSO - DSTE & PCZMA

Dr. N. Ramesh, SEE - PPCC

Shri. Nagalla Srinivasa Rao, SO - PCS&T

Table: 35. Status of RTI Applications for the year 2019-2020

Department	Received	Disposed	Balance
PPCC	117	107	10
DSTE	6	6	0
PCZMA	4	4	0
Total	127	117	10





Photography by
P. Vipin Babu
scientist

