

Factsheet of 2019-20 (As on 01 Apr-2020) on Activities of ENVIS Resource Partner

"Indian Institute of Tropical Meteorology (IITM), Pune "on" Atmospheric Pollution and Climate Change"

Government of India
Ministry of Environment, Forest & Climate Change
(EI Division)

Annual Progress Report (APR)

Factsheet of 2019-20 (As on 1-Apr-2020) on Activities of ENVIS Resource Partner

1.	Name of Host Organization:	Indian Institute of Tropical Meteorology (IITM), Pune
2.	Assigned Subject Area:	Atmospheric Pollution and Climate Change
3.	Date/Month/Year of establishment Of ENVIS Centre:	10 th Feb 2003
4.	Name and designation of ENVIS Coordinator (2019-20):	Dr. G. Beig, Scientist-G & Project Director-SAFAR
5.	Has the Host Organization Constituted an Advisory Committee for guiding the activities of the Centre?	Yes
	Composition of the Advisory Committee: (Select YES or NO: if YES kindly fill the right column space; if NO kindly leave it blank) <input type="radio"/> YES <input type="radio"/> NO	<ul style="list-style-type: none"> • Dr. Chhemendra Sharma-Chairman Sr. Principal Scientist, Radio & Atmospheric Sciences Department, National Physical Laboratory(NPL), Delhi E-mail :csharma@nplindia.org, chhemendrasharma@gmail.com • Dr. G. Beig-Committee Members Scientist-G & ENVIS Coordinator Indian Institute of Tropical Meteorology, Pune E-mail :beig@tropmet.res.in • Dr (Mrs.) N. S. Rajurkar –Committee Members Former Professor & Head Department of Environment Sciences, Savitribai Phule Pune University, Pune E-mail :rnilima@rediffmail.com • Dr. B. S. Murthy-Committee Members, Scientist- F Indian Institute of Tropical Meteorology, Pune E-mail : murthy@tropmet.res.in • Dr. Saroj Kumar Sahu- Committee Member Assistant Professor, Utkal University, Bhubaneswar, Odisha E-mail: saroj.bot@utkaluniversity.ac.in saroj.utkaluni@gmail.com • Mr. Samir Y. Dhapare- Convener Program Officer, ENVIS Indian Institute of Tropical Meteorology, Pune E-mail: samir.dhapare@tropmet.res.in

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6. Current ENVIS Staff Structure:								
Name	Position held	Qualification and Experience	Joining Date in ENVIS Centre	Joining Date in Current position	Leaving Date(if applicable)	2019-20		
						Emoluments drawn (Rs.)		
						Monthl	Annual	
Mr.Samir Dhapare	Program Officer	M. Sc. Environmental Sciences	06/08/2018	06/08/2018	NA	42446/-	506863/-	
Mr.Gaurav P. Shinde	Information Officer	MBM (CM)	27/01/2014	01/02/2019	NA	35452/-	422979/-	
Ms.Bhagyshree Katre	I.T. Officer	M. Sc. Environmental Sciences	08/05/2019	08/05/2019	NA	23696/-	255305/-	
Ms.Darshana Jadhav	Data Entry Operator	B.Sc. Environmental Sciences	11/06/2018	11/06/2018	NA	13310	158913/-	
TOTAL							1344060/-	

7.	Mandate of the Host Organization	Mandate of the ENVIS Centre
	Basic research on Ocean-Atmosphere Climate System for improvement of Weather and Climate Forecasts including hardcore multidimensional interactive earth system modeling and observational experimental measurements; Publishes fundamental research papers.	Systematically collect, compile and disseminate data on "Atmospheric Pollution and Climate Change" which includes data on air pollution, climate change, meteorological parameters, acid rain, extreme events and emissions etc. This data will be of immense use to several research organizations and other stakeholders. To conduct two courses under 'Green Skill Development Program'. To undertake 'National Environment Survey' in various districts of Maharashtra.

"Indian Institute of Tropical Meteorology (IITM), Pune "on" Atmospheric Pollution and Climate Change"

8. Databases:

8.1. Catalogue of Non-numeric Databases compiled by the ENVIS RP till date:

Name of Database	Description (in brief)	Data type (descriptive/ graphical/ geospatial/ etc.)	Status of Updation/ Periodicity/ Data Points Compiled (including date/month/ year of last data point)	Source(s) of data	Online Availability (Whether uploaded on ENVIS Website)
Air Pollution Hotspot	Air pollution hotspot for Pollutants PM ₁₀ , PM _{2.5} , CO, NO _x , VOC's, BC, OC, SO ₂ has been shown over Delhi and Ahmadabad region. It also gives contribution of different sectors in the total emission of various pollutants in Delhi, Pune & Ahmadabad.	Geospatial and graph	Last data point: Delhi & Pune-2010, Ahmadabad - 2018	Special scientific report-SAFAR-Delhi-2010A; Special scientific	Available online
Air Pollution Levels in Metro Cities during Diwali	This section gives the temporal information regarding the level of Air Pollutants PM ₁₀ , PM _{2.5} in the major metro cities i.e Delhi, Mumbai, Pune, Ahmadabad during Diwali.	Graphical Information	Yearly	SAFAR Network DATA	Available Online
Case Studies	This section gives the latest and important case studies around the world which are related to adaptation to climate change and global warming.	Information	As Available	Various online sources	Available online
Environmental Calendar	It gives information about Various national and international days celebrated on different environmental themes.	Descriptive	Once in Year	Online sources	Available online
News letters	Till date RP has Published 55 newsletters	Newsletters	Quarterly publication	ENVIS-IITM Centre	Available online

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Name of Database	Description (in brief)	Data type (descriptive/ graphical/ geospatial/ etc.)	Status of Updation/ Periodicity/ Data Points Compiled (including date/month/ year of last data point)	Source(s)of data	Online Availability (Whether uploaded on ENVIS Website)
Extreme Weather & Air Pollution Events	Compendium of Extreme Weather & Air Pollution Events observed at global As well as national scale(both human induced and natural) has been compiled and categorized under two heading "Atmospheric Pollution" and "Climate Change". It includes name of event, year, its cause and effect.	Descriptive information	Update as Per the occurrence of event Last data point:2019	Scientific articles, Books, research paper, online sources, Media etc.	Available online
Abstract Service	Compilation of abstracts of research papers published in the field of Atmospheric pollution & climate change and other related topics.	Abstracts Research Articles	Monthly update (Last data point: March 2020)	Various national and international research journal	Available online
Articles in media	The news & other articles publishes in offline and online media are compiled and published	News articles	Daily update (Last data point: March 2020)	News house website and other online portals	Available online
Other publications	Till date RP has published 25 extra publications	Descriptive information	Yearly publication	Online sources, research publications and articles	Available online
Air quality and Health	Information of impact of Various health hazardous pollutants on human health and different body parts has been collected	Graphics/ Animation	One time update. Provided new information is available	Online Sources	Available online

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Important Links	Air Quality Online	Secondary link	-	SAFAR, DPCC, AQICN, MAPAN	Available online
	Links to other organizations working in the field of air pollution	Secondary link	-	National- CPCB, MPCB, NEERI, Physical research Laboratory, Ahmadabad, National Physical Laboratory, New Delhi, International- USEPA, WHO, IPCC, NCAR, WMO	Available online
Basic Scientific Information- Atmospheric Pollution	<p>This section has Information on Earth's atmosphere (troposphere, stratosphere, mesosphere, thermosphere, and exosphere), atmospheric composition, what is air pollution and air pollutants including Particulate Matter, Ground level Ozone(O₃), Carbon Monoxide(CO), Oxides of Sulphur and Nitrogen, Volatile Organic Compounds (VOCs), Lead(Pb), Stratospheric Ozone Depleters (SOD), Green House Gases(GHG)etc..</p> <p>It also covers information On SMOG a type of air pollution which drastically affects visibility.</p>	Descriptive information with explanatory images	Basic scientific information- One time update, provided new findings are observed	Scientific Books, articles, research paper, online sources etc.	Available online

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Name of Database	Description (in brief)	Data type (descriptive/ graphical/ geospatial/ etc.)	Status of Updation/ Periodicity/ Data Points Compiled (including date/month/ year of last data point)	Source(s) of data	Online Availability (Whether uploaded on ENVIS Website)
Basic Scientific Information- Climate Change	It covers, what is Climate Change, its driving factors, current facts on Climate change, Effects of climate change, challenges on changing earth, adaptation & mitigation to Climate Change, information of GLOBAL WARMING (GW) - What is global warming and its causes, What we can do about GW ? What is GHE, Enhanced GHE, concept of Radiative Forcing, Global Warming Potential, Human contribution and their impacts.	Descriptive information with explanatory images	Basic scientific information- One time update, provided new findings are observed	Scientific Books, articles, research paper, online sources etc.	Available online
Basic Scientific Information- Ozone Layer Depletion	What is good ozone & Bad ozone, Natural formation & destruction of ozone, Causes of depletion, Ozone depleting gases, Effects of ozone depletion, Ozone hole & observed ozone holes (Antarctica, Arctic, Tibet), Current status of Ozone layer, Highlights of UNEP/WMO Executive summary (2014), National & International efforts to protect ozone layer, Discovery of recovery of ozone hole	Descriptive information with explanatory images	Basic scientific information- One time update, provided new findings are observed	Scientific Books, articles, Research paper, online sources etc.	Available online

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Name of Database	Description (in brief)	Data type (descriptive/ graphical/ geospatial/ etc.)	Status of Updation/ Periodicity/ Data Points Compiled (including date/month/ year of last data point)	Source(s) of data	Online Availability (Whether uploaded on ENVIS Website)
Basic Scientific Information-Acid Rain	It covers details such as what is Acid Rain, Acid deposition, Discovery of acid rain, Causes of Acid Rain (General/SO ₂ / NO _x), Chemistry of acid rain, effects of Acid Rain, World affected areas, Possible solutions. Acid Rain Status: Indian Scenario	Descriptive information	Basic scientific information-One time update, provided new findings are observed	Scientific Books, articles, research paper, online sources etc.	Available online
Basic Scientific Information-Geographical Scenario of Acid Rain	This section of website gives basic information on Indian scenario of acid rain, acid rain studies in India, acid rain global scenario, spread of acid rain across world, population, emission and acid rain, and critical and target load.	Descriptive information Graphical representation	Basic scientific information-One time update, provided new findings are observed	Scientific Books, articles, research paper, online sources etc.	Available Online
National and Intentional policies	Information on National And international policies developed to tackle air pollution and climate change	Descriptive	Annual or as per availability of new information	Online sources	Available online
Kids Corner	Information of Clouds, Rain, Flood, Wind, Thunderstorms, Lightning, Earthquakes, Volcanoes, Climate, Atmosphere, Optical illusion, Ozone ,Green House Effect, Weather and season	Descriptive information Animations, Videos ,Games for students	Basic scientific information-One time update, provided new findings are observed	Scientific Books, articles, research paper, online sources etc.	Available online
Glossary	It includes alphabetic list of various terms used in the field of air pollution and climate change.	Descriptive	One time update, can be modified as per new available information	Scientific Books, articles, research paper, online sources etc	Available Online

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Name of Database	Description (in brief)	Data type (descriptive/ graphical/ geospatial/e tc.)	Status of Updation/ Periodicity/ Data Points Compiled (including date/month/ year of last data point)	Source(s) of data	Online Availability (Whether uploaded on ENVIS Website)
Multimedia	Scientific Documentary & Videos on major issues of air pollution, its impact on environment and human being	Documentary & Videos	Yearly update	Various paid And unpaid data sources	Available online
ENVIS Library	<p>Comprises collection of more than 100 books/ magazines/ statistical/ scientific reports related to acid rain, air pollution, climate change, global warming, effect of air pollution and climate change on human health and agriculture etc.</p> <p>Also, a collection of news letters published by the Centre as well as other ENVIS centers during past 10 yrs.</p> <p>Also IITM has one of the Asia's biggest collection of the Books, Scientific journals, Weather records on the Climate change, weather and Atmospheric pollution which is open to all.</p>	Books, Magazines, Bulletins, Journals, Annual Reports etc.	-	-	Available On request
Facebook Page	Dissemination information regarding various public awareness and training events of IITM-ENVIS.	Descriptive	Based on events and availability of news information	ENVIS-IITM	Available online

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8.2. Catalogue of Numeric and Time-series Data bases compiled by the Centre till date:

Name of Database	Description (in brief)	Time Period (Starting year-Ending year) and Periodicity (annual/monthly/other)	Source(s) of data	Online Availability (Whether uploaded on ENVIS Website)
Air Pollution Database	State-wise Number of Cases and Deaths due to Acute Respiratory Infection in India	Annual - 2017,2018	Ministry of Health & Family Welfare, Gov. of India	Available Online
	Production of Ozone Depleting Substances in India	Annual – 1998-2017	Ministry of Statistics and Programme Implementation, Govt. of India. (ON1964) & Past Issues.	Available Online
	World record of annual mean PM10 concentration by city	Annual – 2003-2010	Various scientific and peer review sources	Available Online
	Particulate Matter (PM10): annual mean concentrations in Europe-2013	Annual – 2013	Various scientific and peer review sources	Available Online
	Emission Data: Emission Load of Vehicles in Delhi , Emission Load of Vehicles under different scenarios in Delhi, Vehicular emission load in 1994, GHG emissions from different sectors in India, SO2 and NOx emissions - US Plants, Total Absolute Emission of CO2 From Power Sector	As available	Transport fuel quality for year 2005 Central pollution Control Board, MoEF&CC, GoI, CPCB, Lok Sabha/ Rajya Sabha Unstarred Questions	Available Online

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Name of Database	Description (in brief)	Time Period (Starting year- Ending year) and Periodicity (annual/monthly/ other)	Source(s) of data	Online Availability (Whether uploaded on ENVIS Website)
	Reduction in pollution due to change in fuel quality in India	2000-2005	Online Source	Available Online
	Total Consumption of Ozone Depleting Substances in India	2000-2017	Ministry of Statistics and Programme Implementation , GoI	Available Online
	Delhi Air Pollution Database Graphical View	2000-2006	Online Source	Available Online
Major Pollution Sources in India	Polluting Industries <ul style="list-style-type: none">State wise Distribution of 17 Categories of Industries	Annual	CPCB, MoEF&CC	Available Online
	<ul style="list-style-type: none">State-wise Industries Identified as highly polluting under 17 categories	2002-2004	Lok Sabha Unstarred Question	Available Online
	<ul style="list-style-type: none">No. of Industrial Units Found Violating Pollution Control Norms in India	2005-2008	Lok Sabha Unstarred Question	Available Online
	<ul style="list-style-type: none">Status of Pollution Control in 17 Categories of Industries in India	2009	Lok Sabha Unstarred Question	Available Online
	Transport Sector <ul style="list-style-type: none">State wise number of E-Vehicles Registered in India	2018	Lok Sabha Unstarred Question	Available Online

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Name of Database	Description (in brief)	Time Period (Starting year-Ending year) and Periodicity (annual/monthly/other)	Source(s) of data	Online Availability (Whether uploaded on ENVIS Website)
	<ul style="list-style-type: none"> Category wise number of E-vehicles Registered in India 	2018	Lok Sabha Unstarred Question	Available Online
	<ul style="list-style-type: none"> State-wise Number of Electric/Battery Operated Vehicles in India 	2019	Lok Sabha Unstarred Question	Available Online
	<ul style="list-style-type: none"> Total number of Registered Vehicles in Pune Region 	2000-2019	RTO Pune	Available Online
	<ul style="list-style-type: none"> Total number of Registered Vehicles in PCMC Region 	2001-2019	RTO PCMC	Available Online
	<ul style="list-style-type: none"> State wise Registered Vehicles in India 	1995-2015	RTO	Available Online
	<ul style="list-style-type: none"> Metropolitan city wise Registered Vehicles in India 	2012-2015	RTO	Available Online
	<ul style="list-style-type: none"> Total Number of Registered Motor Vehicles in India 	1951-2017	Ministry of Shipping, Road Transport & Highways, GoI, Ministry of Road Transport & Highway, GoI	Available Online
	Fuel Consumption <ul style="list-style-type: none"> Consumption of Selected Petroleum Products (Per Capita) in India 	1985-2018	Census of India 2011	Available Online

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Name of Database	Descripti on (in brief)	Time Period (Starting year- Ending year) & Periodicity (annual/monthly/ other)	Source(s) of data	Online Availability (Whether uploaded on ENVIS Website)
	<ul style="list-style-type: none"> Consumption of Raw Coal by Industry in India 	1970-2018	Ministry of Statistics and Programme Implementation , GoI	Available Online
	<ul style="list-style-type: none"> Electricity Consumption (Per Capita) in India 	1950-2019	Public Electricity Supply, Central Electricity Authority, Ministry of Power	Available Online
	<ul style="list-style-type: none"> Production of Raw Coal (Coking and Non-Coking) in India 	2014-2020	Ministry of Coal, GoI	Available Online
	<ul style="list-style-type: none"> Consumption of Fuel by Coal Based Thermal Power Units in India 	2007-2014	Power & Energy Division, Planning Commission, GoI	Available Online
	<ul style="list-style-type: none"> Month wise Coal Production in India 	1999-2017	Ministry of Commerce and Industry, GoI	Available Online
	<ul style="list-style-type: none"> State-wise Projected Coal Production in India 	2011-2017	Lok Sabha Unstarred Question	Available Online
	<ul style="list-style-type: none"> Production, Consumption, Import & Export of Coal in India 	1995-96 to 2012-13	The Fertilizer Association of India	Available Online
	<ul style="list-style-type: none"> Demand and supply of Coal in India 	2002-2016	Statics for Iron & Steel Industry in India-2002, Authority of India Ltd., Rajya Sabha Unstarred Question, Lok Sabha Unstarred Question	Available Online
	<ul style="list-style-type: none"> Consumption of Coal by Different Sectors in India 	1991-2012	Centre for Industrial & Economic Research (CIER)	Available Online

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	<ul style="list-style-type: none"> Annual energy demand of oil equivalent in India 	1990-2011	CPCB, Ministry of Urban Affairs & Employment, GoI	Available Online
	Coal Based Thermal Power Plants <ul style="list-style-type: none"> Existing Coal Based TPPs in India 	1996-2010	Online Source	Available Online
	<ul style="list-style-type: none"> Upcoming Coal based TPPs in India up to 2017 	-	Online Source	Available Online
Meteorological Data	<ul style="list-style-type: none"> Meteorological stations in India 	-	IMD	Available Online
	<ul style="list-style-type: none"> Temperature (Min & Max 	1998-2018	IMD	Available Online
	<ul style="list-style-type: none"> Monthly Rainfall in India 	2000-2019	IMD	Available Online
	<ul style="list-style-type: none"> Station-wise highest 24hr rainfall(mm) in India 	2008-2018	IMD	Available Online
	<ul style="list-style-type: none"> Distribution of area according to annual rainfall in India 	-	Agriculture Research, Data Book 2002	Available Online
	<ul style="list-style-type: none"> Season-wise distribution of rainfall in India 	1992-2017	Ministry of Agriculture & farmers Welfare, GoI	Available Online
	<ul style="list-style-type: none"> Monthly wind Speed 	2000	IMD	Available Online
Agriculture Database	Area under crops in India <ul style="list-style-type: none"> State-wise Area under Crops in India 	1995 to 2012	Ministry of Agriculture , GoI	Available Online
	<ul style="list-style-type: none"> Area under crops in India- 	1950 to 2009	Ministry of Statics and Programme Implementation	Available Online

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Name of Database	Description (in brief)	Time Period (Starting year-Ending year) and Periodicity (annual/monthly/other)	Source(s) of data	Online Availability (Whether uploaded on ENVIS Website)
	Degraded area in India <ul style="list-style-type: none"> State-wise Area of Degraded Land and Land Affected by Natural Calamities in India 	2010-2011	Lok Sabha Unstarred Question	Available Online
	Total Wastelands in India <ul style="list-style-type: none"> State-wise Total Wastelands in India 	2011	Lok Sabha Unstarred Question	Available Online
	<ul style="list-style-type: none"> State-wise Area of Total Wastelands in India 	2010	Lok Sabha Unstarred Question	Available Online
	Cropping Pattern <ul style="list-style-type: none"> Land Use Patterns and Selected Inputs for Agricultural Production in India 	1950-1951 to 2008-2009	Reserve bank of India	Available Online
	Irrigation <ul style="list-style-type: none"> Selected State-wise Gross Irrigated Area in India Water Requirement of Crop in India 	1997-1998 to 2014-2015; 2001	Ministry of Agriculture, GoI	Available Online
	Fertilizer and Pesticides <ul style="list-style-type: none"> Month-wise Production of Fertilizers in India 2020 	2011-2020	Ministry of Commerce & Industry, GoI	Available Online

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Name of Database	Descripti on (in brief)	Time Period (Starting year- Ending year) and Periodicity (annual/monthl y/ other)	Source(s) of data	Online Availability (Whether uploaded on ENVIS Website)
	<ul style="list-style-type: none"> Consumption of Fertilizer Products in India 	2012-2013	The Fertilizer Association of India	Available Online
	<ul style="list-style-type: none"> Consumption of Fertilizer Products in India 	1990-1991 to 2014-2015	The Fertilizer Association of India	Available Online
	<ul style="list-style-type: none"> Consumption of Fertilizers in Terms of Nutrients (N, P and K) in India 	1951-1952 to 2012-2013	Ministry of Agriculture, GoI	Available Online
	<ul style="list-style-type: none"> Consumption of Major Fertilizers in India 	1999-2000 to 2016-2017	Ministry of Agriculture and Farmer Welfare, GoI	Available Online
	<ul style="list-style-type: none"> State-wise Consumption of Pesticides (Technical Grade) in India 	2000-2001 to 2015-2016	Ministry of Statistics and Programme Implementation, Govt. of India	Available Online
	<ul style="list-style-type: none"> State-wise Estimated Demand of Pesticides in India 	2009-2010 to 2012-2013	Lok Sabha Unstarred Question	Available Online
	<ul style="list-style-type: none"> State-wise Demand of Pesticides in India 	1998-1999 to 2007-2008	Ministry of Statics Programme, GoI	Available Online
	Fodder for livestock <ul style="list-style-type: none"> Supply and Demand of Green and Dry Fodder in India 	1995-2025	State Planning Board, Govt. of Kerla	Available Online
	<ul style="list-style-type: none"> State-wise Dry and Green Fodder Production in India 	2000-2003	Basic Animal Husbandry 2004, Department of Animal Husbandry and Dairying , Ministry of Agriculture , Govt. of India	Available Online

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Name of Database	Descripti on (in brief)	Time Period (Starting year- Ending year) and Periodicity (annual/monthl y/ other)	Source(s) of data	Online Availability (Whether uploaded on ENVIS Website)
	<ul style="list-style-type: none"> Estimates of Annual Requirement of Green Fodder and Dry Fodder for Livestock in India 	1996, 2001 and 2006	Forestry Statics India 2000, Indian Council of Forestry Research & Education	Available Online
AcidRain Database	<i>pH</i> and <i>alkalinity</i> of 187global sites (lakes and ponds)	Annual; 2001-2017	Acid Rain Monitoring Project	Availability Online
	Three Year wet Inorganic Nitrogen Deposition	Annual; Geospatial Data 2012-14,2013-15	Various paid and Unpaid data sources	Available online
	Three Year Wet Sulfate Deposition	Annual; Geospatial Data 2012-14,2013-15	Various paid and Unpaid data sources	Available online
	Trend analysis results for ions and color	Annual; April1983 – April 2014	Various paidand Unpaid data sources	Available online
	Comparisonof percent of sites showing changes in pH and alkalinity	Annual; 2011-2014	Various paidand Unpaid data sources	Available online
	Trend analysis results For pH and alkalinity	Annual; April1983 – April 2014	Various paid and Unpaid data sources	Available online
Other vital Statistics	<i>Emission factors</i> for different categories of vehicles	Tabular statement 1986-90to 2006-10	ARAI, Pune reports	Available online
	Population data– district-wise, state-wise <i>total population</i>	Annual; 2011	Online source	Available online

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Name of Database	Descripti on (in brief)	Time Period (Starting year- Ending year) and Periodicity (annual/monthl y/ other)	Source(s) of data	Online Availability (Whether uploaded on ENVIS Website)
Other vital Statistics:	Driving cycles and cold start for two and three wheelers except diesel vehicles– Specifications for various test cell conditions like soak temperature ,period, preparatory running before sampling, number of test cycles and break down of cycles	Tabular statement	Environmental standards for ambient air, automobile fuels, industries and noise, CPCB, MoEF&CC	Available online
	Indian states and geographical areas	Tabular statement	Online source	Available online
	Indian state and geographical area	Annual	Various paid and Unpaid data sources	Available online

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8.3. New Databases developed during the Financial Year (2019-20)

8.3.1. Non-numeric Databases:

Name of Database	Description (in brief)	Data type (descriptive/ graphical/ geospatial/ etc.)	Status of Updation/ Periodicity/Data Points Compiled (including date/month/year of last data point)	Source(s) of data	Online Availability (Whether uploaded on ENVIS Website)
Extreme weather & air pollution events	Extreme weather & air pollution events observed at global as well as national scale (both human induced and natural) has been compiled and categorized under two heading "Climate Change" and "Air Pollution". It includes name of event, year, its cause and effect.	Descriptive information	2019-2020	Scientific Books, articles, research paper, Various paid and unpaid data sources etc.	Available online
Article in media	News articles published During last financial year on acid rain, atmospheric pollution, climate change, green solutions etc. has been compiled	News articles /Descriptive	Daily update. 2019-2020	Different environmental and news website	Available online
Abstract Service	Collection and compilation of abstract of research papers published during last year in the field of "acid rain and atmospheric pollution"	Research Abstracts	Monthly update 2019-2020	Various national and international research journal	Available online
Case Studies	This section gives the latest and important case studies around the world which are related to adaptation to climate change and global warming.	Information	As Available	Various online sources	Available online

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8.3.2. Numeric and Time-series Databases:

Name of Database	Description (in brief)	Time Period (Starting year-Ending year)and Periodicity (annual/monthly/ other)	Source(s)of data	Online Availability (Whether uploaded on ENVIS Website)
Air Pollution Levels in Metro Cities during Diwali	This section gives the temporal information regarding the level of Air Pollutants PM10, PM2.5 in the major metro cities i.e Delhi, Mumbai, Pune, Ahmadabad during Diwali.	Annual 2015-2019	SAFAR Network DATA	Available Online
Air Pollution Database	State-wise Number of Cases and Deaths due to Acute Respiratory Infection in India	Annual – 2017,2018	Ministry of Health & Family Welfare, Gov. of India	Available Online
	Production of Ozone Depleting Substances in India	Annual – 1998-2017	Ministry of Statistics and Programme Implementation,	Available Online
	Total Consumption of Ozone Depleting Substances in India	Annual 2016-2017	Ministry of Statistics and Programme	Available Online
Major Pollution Sources in India	Transport Sector <ul style="list-style-type: none">State wise number of E-Vehicles Registered in	Annual 2018	Lok Sabha Unstarred Question	Available Online
	<ul style="list-style-type: none">Category wise number of E-vehicles Registered in India	Annual 2018	Lok Sabha Unstarred Question	Available Online
	<ul style="list-style-type: none">State-wise Number of Electric/Battery Operated Vehicles in India	Annual 2019	Lok Sabha Unstarred Question	Available Online
	<ul style="list-style-type: none">Total number of Registered Vehicles in Pune Region	Annual 2000-2019	RTO Pune	Available Online
	<ul style="list-style-type: none">Total number of Registered Vehicles in PCMC Region	2001-2019	RTO PCMC	Available Online





"Indian Institute of Tropical Meteorology (IITM), Pune "on" Atmospheric Pollution and Climate Change"

Name of Database	Description (in brief)	Time Period (Starting year-Ending year) and Periodicity (annual/monthly/ other)	Source(s)of data	Online Availability (Whether uploaded on ENVIS Website)
	Fuel Consumption <ul style="list-style-type: none"> Consumption of Selected Petroleum Products (Per 	Annual 1985-2018	Census of India 2011	Available Online
	<ul style="list-style-type: none"> Consumption of Raw Coal by Industry in India 	Annual 1970-2018	Ministry of Statistics and Programme Implementation ,	Available Online
	<ul style="list-style-type: none"> Electricity Consumption (Per Capita) in India 	Annual 1950-2019	Public Electricity Supply, Central Electricity Authority,	Available Online
	<ul style="list-style-type: none"> Production of Raw Coal (Coking and Non-Coking) in India 	Annual 2014-2020	Ministry of Coal, GoI	Available Online

"Indian Institute of Tropical Meteorology (IITM), Pune "on" Atmospheric Pollution and Climate Change"

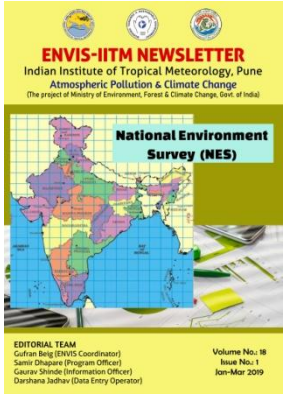
9. Information/ Knowledge Products:

9.1. ENVIS Newsletters published during the Financial Year (2019-20):2019

Cover snapshot	Quarter/ Volume/ Issue/Theme Main Articles	Number of copies Printed and circulated	URL of the PDF file in ENVIS website
	Volume-19, Issue-1, January-March- 2020	100	
	Volume-18, Issue-4, October-December -2019	100	
	Volume-18, Issue-3, July-September- 2019	100	
	Volume-18, Issue-2, April-June -2019	100	

Factsheet of 2019-20 (As on 01 Apr-2020) on Activities of ENVIS Resource Partner

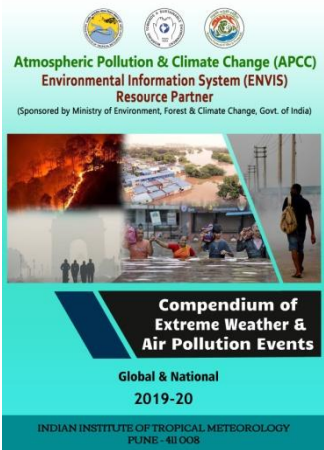


"Indian Institute of Tropical Meteorology (IITM), Pune "on" Atmospheric Pollution and Climate Change"

	Volume-18, Issue-1, January-March- 2019	100	
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9.2. Other publications/information products prepared during the F.Y. 2019-20 :

Cover snapshot	Publication/ Product Theme(s)/ Subject Area(s)	Number of copies printed and circulated	URL of the PDF file in ENVIS website
	Compilation of abstracts of latest research published during Year 2019-20		http://iitmenvis.nic.in/
	Compilation of news articles Published worldwide during Year 2019-20 on Atmospheric Pollution and Climate Change		http://iitmenvis.nic.in/

"Indian Institute of Tropical Meteorology (IITM), Pune "on" Atmospheric Pollution and Climate Change"

	<p>Compilation of extreme air pollution and weather events recorded worldwide during Year 2019-20</p>		<p>http://iitmenvis.nic.in/</p>
	<p>IITM-GSDP 2019 Pamphlet</p>		<p>http://iitmenvis.nic.in/</p>
	<p>National Pollution Control day flier 2019</p>		<p>http://iitmenvis.nic.in/</p>
	<p>National Pollution Control day flier 2019</p>		<p>http://iitmenvis.nic.in/</p>

"Indian Institute of Tropical Meteorology (IITM), Pune "on" Atmospheric Pollution and Climate Change"

	<p>IITM- Green Skill Development Program 2019 progress Report</p>		<p>http://iitmenvis.nic.in/</p>
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9.3. Information Products published/ released during last 5 years

Cover snapshot	Quarter/ Volume/ Issue/Theme Main Articles	Number of copies Printed and circulate d	URL of the PDF file in ENVIS website
	<p>Volume-17, Issue-4, October-December - 2018</p>	<p>100</p>	<p>http://iitmenvis.nic.in/</p>
	<p>Volume-17, Issue-3 , July-September-2018</p>	<p>100</p>	<p>http://iitmenvis.nic.in/</p>

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"Indian Institute of Tropical Meteorology (IITM), Pune "on" Atmospheric Pollution and Climate Change"

	<p>Volume-17, Issue-2, April-June -2018</p>	<p>100</p>	<p>http://iitmenvis.nic.in/</p>
	<p>Volume-17, Issue-1, January-March -2018</p>	<p>100</p>	<p>http://iitmenvis.nic.in/</p>
	<p>Compilation of extreme air pollution and weather events recorded worldwide during Year 2018</p>	<p>5 + 100 Copies of CDs</p>	<p>http://iitmenvis.nic.in/</p>
	<p>Compilation of abstracts of latest research published during Year 2018</p>	<p>2</p>	<p>http://iitmenvis.nic.in/</p>

Factsheet of 2019-20 (As on 01 Apr-2020) on Activities of ENVIS Resource Partner

"Indian Institute of Tropical Meteorology (IITM), Pune "on" Atmospheric Pollution and Climate Change"

	<p>Compilation of news articles published worldwide during Year 2018 on Atmospheric Pollution and Climate Change</p>	<p>2</p>	<p>http://iitmenvis.nic.in/</p>
	<p>IITM-GSDP Documentery video</p>	<p>100</p>	<p>-</p>
	<p>World Environment Day 2018 Pamphlet on Beat Plastic Pollution</p>	<p>1000</p>	<p>http://iitmenvis.nic.in/</p>
	<p>IITM-GSDP 2018 Pamphlet</p>	<p>1000</p>	<p>http://iitmenvis.nic.in/</p>

Factsheet of 2019-20 (As on 01 Apr-2020) on Activities of ENVIS Resource Partner

"Indian Institute of Tropical Meteorology (IITM), Pune "on" Atmospheric Pollution and Climate Change"

	<p>IITM-GSDP 2018 Pamphlet in Regional Language (Marathi)</p>	<p>1000</p>	<p>http://iitmenvis.nic.in/</p>
	<p>GSDP Course "Emission Inventory" manual 2018</p>	<p>50</p>	<p>http://iitmenvis.nic.in/</p>
	<p>IITM-GSDP certification courses Success Stories -2018</p>	<p>50</p>	<p>http://iitmenvis.nic.in/</p>
	<p>Volume-16, Issue-4, October-December - 2017</p>	<p>100</p>	<p>http://iitmenvis.nic.in</p>

Factsheet of 2019-20 (As on 01 Apr-2020) on Activities of ENVIS Resource Partner

"Indian Institute of Tropical Meteorology (IITM), Pune "on" Atmospheric Pollution and Climate Change"

	<p>Volume-16, Issue-3, July-September -2017</p>	<p>100</p>	<p>http://iitmenvis.nic.in/</p>
	<p>Volume-16, Issue-2, April-June -2017</p>	<p>100</p>	<p>http://iitmenvis.nic.in/</p>
	<p>Volume-11, Issue-1, January-March -2017</p>	<p>100</p>	<p>http://iitmenvis.nic.in/</p>
	<p>Compilation of extreme air pollution and weather events recorded worldwide during Year 2017</p>	<p>2017</p>	<p>http://iitmenvis.nic.in/</p>

Factsheet of 2019-20 (As on 01 Apr-2020) on Activities of ENVIS Resource Partner

"Indian Institute of Tropical Meteorology (IITM), Pune "on" Atmospheric Pollution and Climate Change"


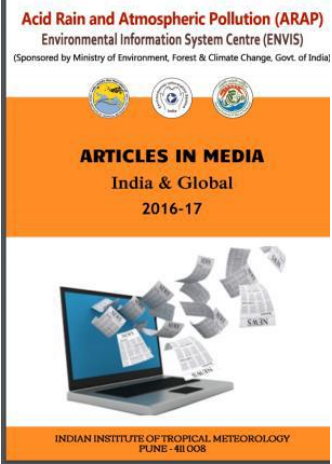
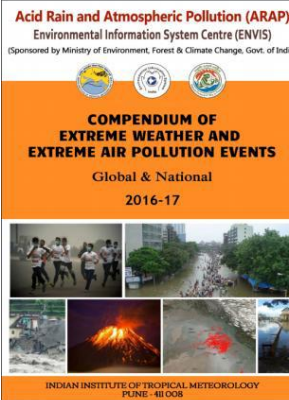

	<p>Compilation of news articles published worldwide during year 2017 on acid rain, atmospheric pollution and climate change</p>	<p>2017</p>	<p>http://iitmenvis.nic.in/</p>
	<p>Compilation of abstracts of latest research published during year 2017</p>	<p>2017</p>	<p>http://iitmenvis.nic.in/</p>
	<p>ENVIS-IITM Pamphlet</p>	<p>2017-18</p>	<p>http://envis.tropmet.res.in/publications/ENVIS%20Pamphlet2017.pdf</p>
	<p>Pamphlet to create awareness about Swachh Bharat Abhiyan: Our Place... Our Planet... Our responsibility</p>	<p>2016</p>	<p>http://envis.tropmet.res.in/publications/Swachh_bharat_Pamphlet2016.pdf</p>

Factsheet of 2019-20 (As on 01 Apr-2020) on Activities of ENVIS Resource Partner

"Indian Institute of Tropical Meteorology (IITM), Pune "on" Atmospheric Pollution and Climate Change"

	<p>Volume-15, Issue-4, October-December- 2016</p>	<p>2016</p>	<p>http://iitmenvis.nic.in/</p>
	<p>Volume-15, Issue-3, July-September-2016</p>	<p>2016</p>	<p>http://iitmenvis.nic.in/</p>
	<p>Volume-15, Issue-2, April-June-2016</p>	<p>2016</p>	<p>http://iitmenvis.nic.in/</p>
	<p>Volume-15, Issue-1, January-March 2016</p>	<p>2016</p>	<p>http://iitmenvis.nic.in/</p>

"Indian Institute of Tropical Meteorology (IITM), Pune "on" Atmospheric Pollution and Climate Change"

	<p>Mobile app-SAFAR-Air</p>	<p>-</p>	<p>http://iitmenvis.nic.in/</p>
	<p>Compilation of news articles published worldwide during year 2016 on acid rain, atmospheric pollution and climate change</p>	<p>2016</p>	<p>http://iitmenvis.nic.in/</p>
	<p>Compilation of extreme air pollution and weather events recorded worldwide during year 2016</p>	<p>2016</p>	<p>http://iitmenvis.nic.in/</p>
	<p>Compilation of abstracts of latest research published during year 2016</p>	<p>2016</p>	<p>http://iitmenvis.nic.in/</p>

Factsheet of 2019-20 (As on 01 Apr-2020) on Activities of ENVIS Resource Partner

"Indian Institute of Tropical Meteorology (IITM), Pune "on" Atmospheric Pollution and Climate Change"

	<p>Volume-14, Issue-4, October-December 2015</p>	<p>December 2015</p>	<p>http://iitmenvis.nic.in/</p>
	<p>Volume-14, Issue-3, July-September 2015</p>	<p>September 2015</p>	<p>http://iitmenvis.nic.in/</p>
	<p>Volume-14, Issue-2, April-June 2015</p>	<p>June 2015</p>	<p>http://iitmenvis.nic.in/</p>
	<p>Volume-14, Issue-1, January-March 2015</p>	<p>March 2015</p>	<p>http://iitmenvis.nic.in/</p>

"Indian Institute of Tropical Meteorology (IITM), Pune "on" Atmospheric Pollution and Climate Change"

 <p>Environmental Information System Centre Acid Rain and Atmospheric Pollution (ARAP) (Sponsored by Ministry of Environment, Forest & Climate Change, Govt. of India) INDIAN INSTITUTE OF TROPICAL METEOROLOGY, PUNE</p> <p>ARTICLES IN MEDIA India & Global</p>	<p>Compilation of news articles published worldwide during 1992 to February 2015 on acid rain, atmospheric pollution and climate change</p>	<p>2015</p>	<p>http://iitmenvvis.nic.in/</p>
 <p>Environmental Information System Centre Acid Rain and Atmospheric Pollution (ARAP) (Sponsored by Ministry of Environment, Forest & Climate Change, Govt. of India) INDIAN INSTITUTE OF TROPICAL METEOROLOGY, PUNE</p> <p>EXTREME WEATHER & POLLUTION EVENTS Global & National</p>	<p>Compilation of extreme air pollution and weather events recorded worldwide during 1930 till 2014</p>	<p>2015</p>	<p>http://iitmenvvis.nic.in/</p>
 <p>Environmental Information System Centre Acid Rain and Atmospheric Pollution (ARAP) (Sponsored by Ministry of Environment, Forest & Climate Change, Govt. of India) INDIAN INSTITUTE OF TROPICAL METEOROLOGY, PUNE</p> <p>ABSTRACTS</p>	<p>Compilation of 410 abstracts published during 2006 to 2014</p>	<p>December 2015</p>	<p>http://iitmenvvis.nic.in/</p>
 <p>ENVIS Resource Partner INDIAN INSTITUTE OF TROPICAL METEOROLOGY, PUNE</p> <p>RECYCLE, REUSE, RECYCLE</p> <p>OZONE LAYER</p> <p>Path to Ozone Recovery</p> <p>For all queries and feedback, contact: Dr. Gaurav Bhat, ENVIS Coordinator Indian Institute of Tropical Meteorology Dr. Hare Bhadra Road, Pune Pune-411 008, India Telephone: +91 20 2498 4200 Email: info@iitmenvvis.nic.in</p>	<p>Ozone layer, Path to Ozone recovery</p>	<p>2014</p>	<p>http://iitmenvvis.nic.in/</p>

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"Indian Institute of Tropical Meteorology (IITM), Pune "on" Atmospheric Pollution and Climate Change"

	<p>Volume-13, Issue-4, October-December 2014</p>	<p>December 2014</p>	<p>http://iitmenvis.nic.in/</p>
	<p>Volume-13, Issue-3, July-September 2014</p>	<p>September 2014</p>	<p>http://iitmenvis.nic.in/</p>
	<p>Volume-13, Issue-2, April-June 2014</p>	<p>June 2014</p>	<p>http://iitmenvis.nic.in/</p>
	<p>Volume-13, Issue-1, January-March 2014</p>	<p>March 2014</p>	<p>http://iitmenvis.nic.in/</p>

**Factsheet of 2019-20 (As on 01 Apr-2020) on Activities of ENVIS Resource Partner
"Indian Institute of Tropical Meteorology (IITM),Pune" on "Atmospheric Pollution and Climate Change"**

10. ENVIS Website(ENVIS Centres whose Website has been restructured may provide the Performance Report/Graphs generated therein wherever possible):

10.1. URL: <http://iitmenvvis.nic.in/> and <http://envis.tropmet.res.in/>

10.2. Status of restructuring of Website: Not restructured

10.3. Frequency of updating Website 2019-20 (as on Apr-2020): Daily, Monthly, Yearly based on Database type

10.4. Subject-specific database updating (numeric/ others): Daily, Monthly, Yearly based on database type

10.5. Publication uploaded/ updated on Website: 64

11. User Engagement and Interaction

<i>User engagement and interaction</i>	<i>FY 2016-17</i>	<i>FY 2017-18</i>	<i>FY 2018-19</i>	<i>FY 2019-20</i> (As on 01- Apr-2020)
i. Total number of visits	180602	193857	199195	204850
ii. Number of unique visits	259	287	296	278
iii. Reports Downloaded/Read	80	-	-	-
iv. Total Number of Queries received	527	612	520	635
v. Number of Queries responded	527	612	520	635
vi. Grade received	A			

11.1 Total number of visits on Website (2019-20): 5655

11.2 Number of unique visits on Website (2019-20): 278

11.3 Number of reports downloaded/ read by stakeholders:-

11.4 Query-Answer Statistics 2019-2020: As on Apr-2020

Mode of Query Receipt	Number of Queries Received	Number of Queries Responded	Reasons for shortfalls, if any, and action taken to rectify
Online (CMS based website)	-	-	-
Email (official NIC server)	8	8	-
Postal/Telephonic (incl. hand post)	280	280	-
Physical	347	347	-

12. Implementation of Annual Plan of Activities of the Financial Year (2019-20):

Activity/Target	Achievements	Shortfalls ,if any, and reasons therefore
Centre's proposed activities 2019-20		
1. Implementation of GSDP Master trainer courses (Basic & Advance) for two subject areas- 1. 'Air Pollution (Monitoring & Forecasting)' 2. 'Emission inventory'	Successfully completed two courses	-
2. Placement of GSDP Candidates or involvement in various activities of IITM, Pune.	Till date 28 candidates from IITM GSDP program got placed in various governmental, non-governmental organizations. Also 2019-20 batch candidates were involved in the Pune City emission Inventory campaign.	-
3. Development of Mobile App which will provide air quality status of some of the cities across India	The Mobile app which will give information about air quality AQI for major metro cities in India is in final stage of testing.	-
4. To collect secondary data for NES of Pune districts.	The IITM-ENVIS has attended and presented need of secondary data in State level Stakeholder meeting with Chief Secretary held on 26 th Nov.2019. Till proper policy is forming we are approaching various governmental organizations, finding online sources for secondary data collection.	-
5. Environmental Awareness Event will be organized in coming year to improve public outreach & participation in green good deeds.	Successfully implemented	-
6. As per the guidelines received by MoEF&CC, centre will select one village to conduct various awareness programs regarding thematic area. Awareness programs will be conducted in nearby villages regarding impact of air pollution on human health, ways to combat air pollution & live sustainable life style, importance of clean fuel, use of cleaner chulas and its health benefits etc.	In Process	-
7. Existing abstracting service related to Atmospheric pollution & climate change will be updated and value addition will be made by changing its representation	Successfully implemented	-
8. Existing articles in media will be updated on quarterly basis	Successfully implemented	-

**Factsheet of 2019-20 (As on 01 Apr-2020) on Activities of ENVIS Resource Partner
"Indian Institute of Tropical Meteorology (IITM),Pune" on "Atmospheric Pollution and Climate Change"**

9. Other publication will be targeted preferably on 'Extreme pollution and weather events (National & Global)'.	Successfully implemented	-
10.The Newsletters on the thematic area are planned to publish in regional language Marathi to reach the greater audience and spread the environmental information to local people (especially villages).	In Process	-
11. Website will be upgraded and will be made more interactive and user friendly.	Successfully implemented	-
12. Regular Web based data related Atmospheric Pollution & Climate change will be updated.	Successfully implemented	-

A. Regular Activities :Web-based Environmental Information		
Collection and Compilation of Information and Data		
1.Developmentand regular updation of <i>databases</i> (descriptive, numeric, pictorial, geospatial,etc.)on the assigned subject area and regular uploading of the same in the <i>Subject Area</i> section of the ENVIS Website, after due verification/ authentication, with suitable referencing of data sources.	Done	NIL
2.Compilation of <i>Abstracts, Bibliography, News articles, Events, etc.</i> on the subject area and uploading the same in the relevant section of ENVIS Website.	Done	NIL
3.Identification of data gaps and Formulation with implementation of action plan to fill them.	Data collected on the Air quality status. The compilation has been initiated. Spatial distributed map has been prepared for Pune Metropolitan region	-
Maintenance of ENVIS Website and User Engagement through it		
4.Maintainingthe ENVIS Website up-to-date and user-engaging, and as an inventory of authentic and reliable information in the subject area	Done	NIL
5.Query-Response/Referral service to stakeholders.	Service is already in place at ENVIS-IITM RP.	NIL

**Factsheet of 2019-20 (As on 01 Apr-2020) on Activities of ENVIS Resource Partner
"Indian Institute of Tropical Meteorology (IITM),Pune" on "Atmospheric Pollution and Climate Change"**

6.Developingand upgrading a Kids' Corner.	It is already developed by ENVIS-IITM.	NIL
7.Maintaining a disaggregated record of visitors ,including unique visitors ,to the Website.	Done	NIL
Publications and Value-Addition		
8.Publishing 4 <i>Newsletters</i> and uploading the same in the relevant section of ENVIS Website	Done	NIL
9.Processing/analyzing data collected and bring in gout value-added information Products	Centre is involved in data analysis and has come up with various thematic maps	Limited man power
10.Collectingbooks, reports and journals on the subject area; Uploading e-versions of books, reports, etc on the ENVIS Website. Uploading <i>Abstracts</i> of books, ports, journals and articles of those whose e-versions are not available.	Done	NIL
11. Scientific Publications, Awards & recognition	<p>1) Temporal Mount in Air Pollutants Allied with Religious Fiesta: Diwali, Festival of Lights. In: Emerging Issues in Ecology and Environmental Science, Garg A., Sharma P., Beig G., Ghosh C. (2019) Springer Briefs in Environmental Science. Springer, Cham DOI: https://doi.org/10.1007/978-3-319-99398-0_2</p> <p>2) The impact of air pollution on deaths, disease burden, and life expectancy across the states of India: the Global Burden of Disease Study 2017, K. Shrikant Reddy and G. Beig et. al., The Lancet Planetary Health ,Volume 3, Issue 1, January 2019, Pages e26-e39, DOI: https://doi.org/10.1016/S2542-5196(18)30261-4</p> <p>3) Mitigation of PM and Ozone Pollution in Delhi:A Sensitivity Study during the Pre-monsoon period, Ying Chen and Gufran Beig et. al. Atmospheric Chemistry and Physics Discussions, Volume 2019, Pages 1-28</p>	

Activity/Target	Achievements	Short falls, if any, and reasons therefore
	<p>4) Anatomy of the winter 2017 air quality emergency in Delhi, Author links open overlay panel Gufran Beig, Reka Srinivasa, Neha S.Parkhi, G.R.Carmichaelb ,Siddhartha Singhc, Saroj, K.Sahud, Aditi Rathoda, Sujit Maj Science of The Total Environment, Volume 681, 1 September 2019, Pages 305-311 DOI: https://doi.org/10.1016/j.scitotenv.2019.04.347</p> <p>5) Investigation of emission characteristics of NMVOCs over urban site of western India, Ravi Yadav, L.K. Sahu, Nidhi Tripathi, D. Pal, G. Beig, S.N.A. Jaaffrey, Environmental Pollution,Volume 252, Part A,2019,Pages 245-255, ISSN 0269-7491, DOI: https://doi.org/10.1016/j.envpol.2019.05.089.</p> <p>6) Chemical composition and isotopic signatures of ice and snow over a Himalayan Glacier (Satopanth) in India. Panicker, A.S., Sandeep, K., Gautam, A.S. <i>et al.</i>, <i>SN Appl. Sci.</i> 1, 1166 (2019). , DOI: https://doi.org/10.1007/s42452-019-0966-6</p> <p>7) Observations of middle atmospheric seasonal variations and study of atmospheric oscillations at equatorial regions,) Nisha Patel, Som Sharma, Vaidehi Joshi, Prashant Kumar, Narendra Ojha, Kondapalli Niranjana Kumar, Harish Chandra, Gufran Beig, Journal of Atmospheric and Solar-Terrestrial Physics, Volume 193,2019,105066,ISSN 1364-6826, DOI: https://doi.org/10.1016/j.jastp.2019.105066.</p> <p>8) Estimates of Carbonaceous Aerosol Radiative Forcing over a Semiurban Environment in Garhwal Himalayas. Panicker, A.S., Sandeep, K., Negi, R.S. <i>et al.</i> <i>Pure Appl. Geophys.</i> 176, 5069–5078 (2019). https://doi.org/10.1007/s00024-019-02248-7</p>	

	<p>9) On processes controlling fine particulate matters in four Indian megacities, Vrinda Anand, Nikhil Korhale, Aditi Rathod, Gufran Beig, Environmental Pollution, Volume 254, Part A,2019,113026,ISSN 0269-7491, DOI: https://doi.org/10.1016/j.envpol.2019.113026.</p> <p>10) Real-time monitoring of air pollutants in seven cities of North India during crop residue burning and their relationship with meteorology and transboundary movement of air, Khaiwal Ravindra, Tanbir Singh, Sahil Mor, Vikas Singh, Tuhin Kumar Mandal, Manpreet Singh Bhatti, Suresh Kumar Gahlawat, Rajesh Dhankhar, Suman Mor, Gufran Beig, Science of The Total Environment, Volume 690,2019,Pages 717-729,ISSN 0048-9697, DOI: https://doi.org/10.1016/j.scitotenv.2019.06.216</p> <p>11) Characteristics and Variability of Carbonaceous Aerosols over a Semi Urban Location in Garhwal Himalayas. Sandeep, K., Negi, R.S., Panicker, A.S. et al. Asia-Pacific J Atmos Sci (2019). DOI: https://doi.org/10.1007/s13143-019-00158-1</p> <p>12) Impact of mixing layer height on air quality in winter, B.S. Murthy, R. Latha, Arpit Tiwari, Aditi Rathod, Siddhartha Singh, G. Beig, Journal of Atmospheric and Solar-Terrestrial Physics, Volume 197,2020, 105157,ISSN 1364-6826, DOI: https://doi.org/10.1016/j.jastp.2019.105157.</p> <p>13) Winter VOCs and OVOCs measured with PTR-MS at an urban site of India: Role of emissions, meteorology and photochemical sources, Sujit Maji, Gufran Beig, Ravi Yadav, Environmental Pollution, Volume 258,2020, 113651, ISSN 0269-7491, DOI: https://doi.org/10.1016/j.envpol.2019.113651.</p> <p>13) Seasonal progression of surface ozone and NOx concentrations over three tropical stations in North-East India, Bhishma Tyagi, Jyotsna Singh, G. Beig, Environmental Pollution, Volume 258,2020, ,ISSN 0269-7491, DOI: https://doi.org/10.1016/j.envpol.2019.113662.</p>	
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"Indian Institute of Tropical Meteorology (IITM),Pune" on "Atmospheric Pollution and Climate Change"**

	<p>14) Mitigation of PM & It; sub & gt; 2.5&lt;/sub> and Ozone Pollution in Delhi: A Sensitivity Study during the Pre-monsoon period. Chen, Y., Wild, O., Ryan, E., Sahu, S. K., Lowe, D., Archer-Nicholls, S., Wang, Y., et al. (2020). <i>Atmospheric Chemistry and Physics</i>. DOI, https://doi.org/10.5194/acp-20-499-2020</p> <p>15) Objective evaluation of stubble emission of North India and quantifying its impact on air quality of Delhi, Gufran Beig, Saroj K. Sahu, Vikas Singh, Suvarna Tikle, Sandeepan B. Sobhana, Prashant Gargeva, K. Ramakrishna, Aditi Rathod, B.S. Murthy, Science of The Total Environment, Volume 709, 2020,136126,ISSN 0048-9697, https://doi.org/10.1016/j.scitotenv.2019.136126.</p>	
Reaching-out/Networking Activities		
11. Liaison and coordination with other Relevant ENVIS Centres, both State Centres and Thematic Centres, for providing data/information links in the relevant part of the ENVIS Website (to avoid duplication and conflicts in uploaded information).	Centre is in process to Identify potential research areas which can be done in collaborative mode and will come up with project proposals for the same.	
12. Build linkages with Other information Sources in the country and abroad. Providing hyperlinks to the information Sources in the relevant part of the ENVIS Website.	Done	NIL
13. Maintaining a list of Experts in the Subject area and uploading the same, along with updated C.V. in the relevant section of ENVIS Website.	Done	-
14. Coordination with the Ministry for Timely dissemination of relevant and adequate information to stakeholders.	Centre is coordinating With ministry and submits information about atmospheric pollution & climate Change episodes as and when required.	-
15. Formulate strategic plans to generate sources of funds from corporate sector and/or through subscriptions of Newsletters/other publications	NA(Being Government Organization)	-

**Factsheet of 2019-20 (As on 01 Apr-2020) on Activities of ENVIS Resource Partner
"Indian Institute of Tropical Meteorology (IITM),Pune" on "Atmospheric Pollution and Climate Change"**

B. SPECIAL ACTIVITIES		
16.Focus on database development (numeric and descriptive), with due authentication in consultation with Line Departments/research institutes, etc.	Centre is involved in database development and has robust upto date data set For air pollution and climate change Related information.	Information for acid rain episodes in India is scare however centre is Compiling and developing data base for the same.
17.Networkand undertake outreach Activities with Universities/ Research bodies/researchers in the State, similar to Those of Odisha ENVIS, so that the ENVIS collections/ repositories can be enriched, including with the in contact details/CVs, etc.	Centre is conducting outreach activities with local schools and colleges. Also have organized environmental awareness event in association with Vijnan Bharati, India Meteorological Department Pune University& Internal departments of IITM etc. to enhance awareness about the centers activities.	NIL

**Factsheet of 2019-20 (As on 01 Apr-2020) on Activities of ENVIS Resource Partner
"Indian Institute of Tropical Meteorology (IITM),Pune" on "Atmospheric Pollution and Climate Change"**

Activity/Target	Achievements	Short falls, if any, and reasons
18.Circulate Newsletters and knowledge Products to as many stakeholders as possible in the State, especially policy makers/planners.	Centre is distributing newsletters to relevant stakeholders including universities, schools, and colleges. Centre will also distribute newsletter to local Municipal Corporation PMC and PCMC.	-
19.Linkits Websiteto other Government Web sites; develop the vernacular Web site; and undertake other awareness enhancing activities within the State.	Centre's web site is linked With the official website of IITM, Ministry of Earth Sciences. And time to time conduct various awareness activities in the city.	-
20.Maintain a Register for keeping track of Queries received and transferred/ answered.	Most of the queries received Are from physical interaction with the visitors and on telephone and has been answered time to time.	-
21.Buildinstitutionalrepositoriesofvarious Types of media related to environmental issues.	Yes	
22.Bringouta Brochure on environmental Issues to spread awareness about World Environment Day, focusing on forestry/ mining/Climate Change/disasters/etc.	Centre is publishing Brochure to create awareness about world environmental day, swatch bharat abhiyan, forest conservation, ozone depletion etc.	
23.Outreach Activities like rally, skit, song etc.	During GSDP RP has stage skit on conservation of water; also with SAFAR team & GSDP candidates a one day cleanliness drive with rally was organized to support 'Swachata Hi Seva' Campegin.	
24. Other Activities	ENVIS Staff has actively participated in the Emission Inventory of Delhi-2018	

13. New initiatives taken during the Financial Year (2019-20):

- Organized an Environmental Awareness event– “World Environment Day 2019” in which more than 50 students and 500 people participated enthusiastically.
- Celebration of Science Day at IITM, Pune 2020 in which more than 1000 school and college students were made aware about issues regarding Air Pollution and control measures
- Conducted cleanliness drive & awareness rally at Ram River, Pashan under ‘Swatta Pakhwada2019’
- Started School Flag Awareness Program in association with IITM-SAFAR, Pune Municipal Corporation and Pimpri-Chinchwad Municipal Corporation. Under the Program many schools from Pune and Pimpri chinchwad region got daily air quality updates which they use to display AQI color flag in school assembly area

14. Date of most recent physical verification by the Ministry: 02/04/2015

Recently on 24/09/2019, Dr. Yashveer Singh, Senior Economic Advisor & Mr. Rahul Bhatiya, -ENVIS had visited IITM,Pune. They were satisfied with the facilities present at IITM,Pune for execution of ENVIS activities.

15. Status of existing hardware:

	Hardware item	Specification	Sanction Order with Date	Date of procurement
Procured from ENVIS Grant (2014-15)	Printer	Office Laser Multifunction printer-Print, copy, scan, fax	No.11/27/2004-EI Dated30 th June, 2014	10/02/2015
	Laptop	IntelCorei5-HDTouch screen-4GBRAM-1TBHDD-15.6InchesScreen-Windows 8.1-2GBGraphics	No.11/27/2004-EI Dated30 th June, 2014	10/02/2015

16. Status of utilization of grant during the financial year 2019-20 as on 31-March-2019 and reasons for short falls, if any:

	Head of Expenditure	Sanctioned amount (Rs.)	Received Amount	Actual Expenditure(Rs.)	Reasonsfor Shortfall/ Excess (ifany)
Recurring Annual	Manpower	13,55,144.56	13,55,144.45	13,44,060.00	Nil
	Others, etc.	4,65,300.00	4,65,300.00	3,50,469.34	Nil
	Travel& Training	1,00,000.00	1,00,000.00	66,465.00	The sanction amount is insufficient for lowest Air fare, hence may be increase for upcoming budget
Non-Recurring	-	-	-	-	Nil

17. Issues/ hurdles faced in undertaking ENVIS activities:

Lack of Manpower: Manpower upgradation as suggested by our centre will help to achieve the targets set for upcoming years, As programs under ENVIS are getting expanded, there is need of scientific staff to promote research & to transform research into knowledge, so that general public can be benefited

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