



Union Education Society's

MAHILA MAHAVIDYALAYA, SOLAPUR

**Field Projects
Students Name List**

Sr. No	Projects Name List
1	Air Pollution in Solapur City
2	A Case Study of Solid Waste Management in Solapur City
3	Deforestation
4	Types of Fish
5	Solid Waste Management in Solapur City
6	Solar Energy
7	Global Warming
8	Dust Pollution

Under the guidance of

Dr. Z. A. Nayab

Year of Submission

2021-2022

Sr. No	Roll No	Name of the Students	Name of the Project
1	2001	Pathan Saniya Sikandar	Air Pollution in Solapur City
2	2002	Sayyed Alfiya Imtiyaz	A Case Study of Solid Waste Management in Solapur City
3	2003	Saudagar Shabenoor Shafi	A Case Study of Solid Waste Management in Solapur City
4	2004	Hawaladar Sumaiyya Abdul Gani	Deforestation
5	2005	Hotagikar Fatema Bibi Riyaz Ahmed	Deforestation
6	2006	Shaikh Bibi Aayesha Fayyaz Ahmed	Air Pollution in Solapur City
7	2007	Sayyed Nida Rizwan	A Case Study of Solid Waste Management in Solapur City
8	2008	Shaikh Minaz Irshad	Air Pollution in Solapur City
9	2009	Shaikh Alisha Ishaque	Deforestation
10	2010	Shaikh Nida Nazir	Air Pollution in Solapur City
11	2011	Shaikh Summayya Liyaqwat Ali	Types of Fish
12	2012	Aleem Bainash Ahetesham	A Case Study of Solid Waste Management in Solapur City
13	2013	Kasab Sanobar Anwar	Solid Waste Management in Solapur City
14	2014	Shaikh Muskan Husain	Types of Fish
15	2015	Jamadar Raziya Begum Abdul Rasheed	Solid Waste Management in Solapur City
16	2016	Shaikh Saba Mohammed Rafique	Solar Energy

23	2023	Pathan Tahniyat Sultana Mohammed Yusuf	Dust Pollution
24	2024	Jakler Kareena Mohommed Akhtar	Solid Waste Management in Solapur City
25	2025	Lokapalli Fiza Abdul Kadar	Global Warming
26	2026	Nadaf Maher Afroz Akheel Ahmed	Air Pollution in Solapur City
27	2027	Shaikh Saniya Mohommed Farooque	Solar Energy
28	2028	Nadaf Tahura Md. Hanif	Dust Pollution
29	2029	Bepari Mubashirin Saeed Ahmed	A Case Study of Solid Waste Management in Solapur City
30	2030	Shaikh Shijan Begum Irfan	Global Warming
31	2031	Churi Saleha Shakeel	Deforestation
32	2032	Shaikh Alfiya Mainoddin	Air Pollution in Solapur City
33	2033	Shaikh Bibi Aaiman Abdur Razzque	Solar Energy
34	2034	Shaikh Summayya Salim	Global Warming
35	2035	Sayyed Firdous Sameer	A Case Study of Solid Waste Management in Solapur City
36	2036	Patel Arshan Anwar	Air Pollution in Solapur City
37	2037	Shaikh Bibi Zohra Sadik	Air Pollution in Solapur City
38	2038	Nadaf Sameena Mohommed Sharif	Solar Energy
39	2039	Shaikh Javeriya Mubaj	Air Pollution in Solapur City
40	2040	Fulmamdi Madeeha Begum Saifan	Deforestation
41	2041	Jakatdar Sanobar A. Aziz	Solid Waste Management in Solapur City
42	2042	Timmappuer Afsha M. Shafi	Air Pollution in Solapur City
43	2043	Shaikh Umme Kulsum Abdul Majeed	Global Warming
44	2044	Shaikh Manatasha Sikandar	Dust Pollution
45	2045	Kakhandikar Aleena Tahreen Shakeel Ahmed	Solid Waste Management in Solapur City
46	2046	Vyankatpure Muskan Umar Sharif	Dust Pollution

47	2047	Qureshi Gousiya Taliburrehman	Global Warming
48	2048	Shaikh Azba Bi Ejaj	Deforestation
49	2049	Kadichur Sajeda A. Qader	Solid Waste Management in Solapur City
50	2050	Hotgikar Muskan A.Rauf	Solid Waste Management in Solapur City
51	2051	Shaikh Riza Khanam Zaheer	Dust Pollution
52	2052	Shaikh Basirat Abdul Wahab	Deforestation
53	2053	Shaikh Niha Mahvish Sabir	Dust Pollution
54	2054	Shaikh Muskan Saleem	Types of Fish
55	2055	Pathan Umera Mohd. Yusuf	Dust Pollution
56	2056	Shaihk Zakiya Abdur Rasheed	Global Warming
57	2057	Mijawar Asifa Allauddin	Dust Pollution
58	2058	Moholkar Muskan Sabeer	Dust Pollution
59	2059	Shabdi Juheriya Gouse	Types of Fish
60	2060	Dharulkar Iramsaba A. Wahid	Deforestation
61	2061	Shaikh Zakiya Dildar	Dust Pollution
62	2062	Mulla Tanzila Feroz	Dust Pollution
63	2063	Shaikh Uzma Md. Khalid	Types of Fish
64	2064	Muchale Raeesa Ismail	Global Warming
65	2065	Patel Kausar Raj Ahmed	Solar Energy
66	2066	Qureshi Umera Zakeer	Solar Energy
67	2067	Shaikh Zeba Anwar	Types of Fish
68	2068	Shaikh Naushin Jahan Naeem Alam	Global Warming
69	2069	Shaikh Gousiya Begum Sikandar	Solar Energy
70	2070	Moholkar Zamarrud Najmoddin	Global Warming

71	2071	Pathan Almas Ahmed	Types of Fish
72	2072	Shahapure Sana Kausar Mudabbir Husain	Solar Energy
73	2073	Kosgi Summayya A. Qadar	Solid Waste Management in Solapur City
74	2074	Humnabadkar Bagban Fatema Mukhtar Ahmed	Solid Waste Management in Solapur City
75	2075	Bagban Fiza Raees	A Case Study of Solid Waste Management in Solapur City
76	2076	Qureshi Tarannum Mohommed Saleem	Solar Energy
77	2077	Bengloore Misbah Murtuza	A Case Study of Solid Waste Management in Solapur City
78	2078	Bankari Nikhat Abdul Qadar	A Case Study of Solid Waste Management in Solapur City
79	2079	Quazi Mehjabeen A. Razzaque	Solar Energy
80	2080	Shaikh Alifiya Shabbir	Types of Fish


 NAAC Co-Ordinator
 U.E.S. Mahila Mahavidyalaya
 Solapur.




 I/c. Principal
 U. E. S. Mahila Mahavidyalaya,
 Solapur.

Punyashlok Ahilyadevi Holkar Solapur University, Solapur



पुण्यश्लोक अहिल्यादेवी होळकर
सोलापूर विद्यापीठ

॥ विद्यया संपन्नता ॥

NAAC Accredited-2015
'B' Grade (CGPA 2.62)

**Name of the Faculty: For All Faculties
Environmental Studies
(Non-Credit)**

CHOICE BASED CREDIT SYSTEM

Syllabus: ENVIRONMENTAL STUDIES

(Syllabus to be implemented w.e.f. June 2020)


NAAC Co-Ordinator
E.S. Mahila Mahavidyalaya




I/c. Principal
E. S. Mahila Mahavidyalaya.

Punyashlok Ahilyadevi Holkar Solapur University, Solapur

All UG for Fourth Semester Compulsory Paper

Environmental Studies

(CBCS - Syllabus) - 2020

- 1) **Title of the Paper:** Environmental Studies
- 2) **Pattern:** Semester and Credit system
- 3) **Total Contact Hours:** 45 hours

Structure for Environmental Studies

Class & Semester	Code	Name and type of the paper		L/P	Credits	Total Marks	UA	CA
		Type	Name					
For All UG Semester IV (Second year)								
All UG Second Year (4 th Semester)	EVS	Ability Enhancement Course (AECC) and Non Credit	Environmental Studies	50	NC	50	40	10
Compulsory: *Unit Test / Assignment/ Seminar/ Nature Visits / Field Work / Field Tour/ Industrial visits of 1-2 days and submission of report is compulsory under internals marks (CA)								

1. The credit earned by student with this course shall not be considered for calculation of SGPA/CGPA
2. This course is not considered as a passing-head for counting passing heads for ATKT
3. Student must pass this subject for award of the degree

Evaluation Scheme:

Theory paper has 50 marks out of which 40 marks will be for Term End examination and 10 marks for College Internal Assessment. The candidate has to appear for internal evaluation of 10 marks and external evaluation (University Examination) of 40 marks.

A) College Internal Evaluation:

In case of theory paper, internal examination has to conduct by department / college.

Marks for internal assessment shall be given based on Unit Test / Assignment/ Seminar/ Nature Visits / Field Work / Field Tour/ Industrial visits of 1-2 days and submission of report is compulsory under internals marks (CA).

B) External Evaluation (End of Term University Examination):

I) Nature of Theory question paper:

- 1) Theory paper is of 40 marks.
- 2) Theory paper will be of 2 hours duration
- 3) There shall be 05 questions each carrying 08 marks.
- 4) Students have to attempt all the questions.

Syllabus As Per UGC Guidelines

UGC Letter – File No. 13-01/2000 (EA/ENV/COS-01 Dated 14th May, 2019)

Environment Studies (AECC)

Theory Lectures - (45)

Unit 1 : Introduction to environmental studies (2 lectures)

- Multidisciplinary nature of environmental studies;
- Scope and importance; Concept of sustainability and sustainable development

Unit 2 : Ecosystems (6 lectures)

- What is an ecosystem? Structure and function of ecosystem; Energy flow in an ecosystem: food chains, food webs and ecological succession. Case studies of the following ecosystems :
 - a) Forest ecosystem
 - b) Grassland ecosystem
 - c) Desert ecosystem
 - d) Aquatic ecosystems (ponds, streams, lakes, rivers, oceans, estuaries)

Unit 3 : Natural Resources : Renewable and Non-renewable Resources (8 lectures)

- Land resources and land use change; Land degradation, soil erosion and desertification.
- **Deforestation:** Causes and impacts due to mining, dam building on environment, forests, biodiversity and tribal populations.
- **Water:** Use and over-exploitation of surface and ground water, floods, droughts, conflicts over water (international & inter-state).
- **Energy resources :** Renewable and non-renewable energy sources, use of alternate energy sources, growing energy needs, case studies.

Unit 4 : Biodiversity and Conservation (8 lectures)

- Levels of biological diversity : genetic, species and ecosystem diversity, Biogeographic zones of India; Biodiversity patterns and global biodiversity hot spots
- India as a mega-biodiversity nation; Endangered and endemic species of India
- Threats to biodiversity : Habitat loss, poaching of wildlife, man-wildlife conflicts, biological invasions; Conservation of biodiversity : In-situ and Ex-situ conservation of biodiversity.
- Ecosystem and biodiversity services: Ecological, economic, social, ethical, aesthetic and Informational value.

Unit 5: Environmental Pollution (8 lectures)

- Environmental pollution : types, causes, effects and controls; Air, water, soil and noise pollution
- Nuclear hazards and human health risks
- Solid waste management : Control measures of urban and industrial waste.
- Pollution case studies.

Unit 6: Environmental Policies & Practices (7 lectures)

- Climate change, global warming, ozone layer depletion, acid rain and impacts on human communities and agriculture
- Environment Laws: Environment Protection Act, Air (Prevention, & Control of Pollution) Act, Water (Prevention and control of Pollution) Act, Wildlife Protection Act, Forest Conservation Act. International agreements: Montreal and Kyoto protocols and Convention on Biological Diversity (CBD).
- Nature reserves, tribal populations and rights, and human wildlife conflicts in Indian context.

Unit 7: Human Communities and the Environment (6 lectures)

- Human population growth: Impacts on environment, human health and welfare.
- Resettlement and rehabilitation of project affected persons; case studies.
- Disaster management : floods, earthquake, cyclones and landslides.
- Environmental movements : Chipko, Silent valley, Bishnois of Rajasthan.
- Environmental ethics: Role of Indian and other religions and cultures in environmental conservation.
- Environmental communication and public awareness, case studies (e.g. CNG vehicles in Delhi).

Unit 8: Field work (Equal to 3 lectures)

- Visit to an area to document environmental assets: river/ forest/ flora/fauna, etc.
- Visit to a local polluted site-Urban/Rural/Industrial/Agricultural.
- Study of common plants, insects, birds and basic principles of identification.
- Study of simple ecosystems-pond, river, dam, pond, ocean / marine etc.

Suggested Readings:

1. Environmental Studies E - Text Book (Marathi and English Medium) Solapur University Solapur (2017).
2. Carson, R. 2002. *Silent Spring*. Houghton Mifflin Harcourt.
3. Gadgil, M., & Guha, R. 1993. *This Fissured Land: An Ecological History of India*. Univ. of California Press.
4. Gleeson, B. and Low, N. (eds.) 1999. *Global Ethics and Environment*, London, Routledge.
5. Gleick, P. H. 1993. *Water in Crisis*. Pacific Institute for Studies in Dev., Environment & Security. Stockholm Env. Institute, Oxford Univ. Press.
6. Groom, Martha J., Gary K. Meffe, and Carl Ronald Carroll. *Principles of Conservation Biology*. Sunderland: Sinauer Associates, 2006.
7. Grumbine, R. Edward, and Pandit, M.K. 2013. Threats from India's Himalaya dams. *Science*, 339: 36-37.
8. McCully, P. 1996. *Rivers no more: the environmental effects of dams* (pp. 29-64). Zed Books.
9. McNeill, John R. 2000. *Something New Under the Sun: An Environmental History of the Twentieth Century*.

10. Odum, E.P., Odum, H.T. & Andrews, J. 1971. *Fundamentals of Ecology*. Philadelphia: Saunders.
11. Pepper, I.L., Gerba, C.P. & Brusseau, M.L. 2011. *Environmental and Pollution Science*. Academic Press.
12. Rao, M.N. & Datta, A.K. 1987. *Waste Water Treatment*. Oxford and IBH Publishing Co. Pvt. Ltd.
13. Raven, P.H., Hassenzahl, D.M. & Berg, L.R. 2012. *Environment*. 8th edition. John Wiley & Sons.
14. Rosencranz, A., Divan, S., & Noble, M. L. 2001. *Environmental law and policy in India*. Tripathi 1992.
15. Sengupta, R. 2003. *Ecology and economics: An approach to sustainable development*. OUP.
16. Singh, J.S., Singh, S.P. and Gupta, S.R. 2014. *Ecology, Environmental Science and Conservation*. S. Chand Publishing, New Delhi.
17. Sodhi, N.S., Gibson, L. & Raven, P.H. (eds). 2013. *Conservation Biology: Voices from the Tropics*. John Wiley & Sons.
18. Thapar, V. 1998. *Land of the Tiger. A Natural History of the Indian Subcontinent*.
19. Warren, C. E. 1971. *Biology and Water Pollution Control*. WB Saunders.
20. Wilson, E. O. 2006. *The Creation: An appeal to save life on earth*. New York: Norton.
21. World Commission on Environment and Development. 1987. *Our Common Future*. Oxford University Press.



Permission Letter for the Project Completion

UNION EDUCATION SOCIETY'S
MAHILA MAHAVIDYALAYA,
141-A SIDDHESHWAR PETH,
SOLAPUR-413001



Tel No : 0217-2624433

Fax No:0217-2624433

I/C Prin. : Mrs.Dr.F.M.Shaikh

E-mail uesmm@yahoo.com

www.uesmahilamahavidyalaya.org

Ref No.UES/2021-22/25 / 515

Date :- 23/03/2022

प्रति,

मा. मुख्य सफाई अधीक्षक
घन-कचरा व्यवस्थापन विभाग,
सोलापूर महानगरपालिका,
सोलापूर.

मा. महोदय,

आमच्या महिला महाविद्यालयातील बी.ए. भाग-२ मधील विद्यार्थिनी पर्यावरण प्रकल्पांतर्गत क्षेत्र प्रकल्पासाठी घन-कचरा व्यवस्थापन (Solid Waste Management) विभागाला भेट देण्यासाठी दिनांक २५-०३-२०२२ रोजी येणार आहेत. तरी आपण विद्यार्थिनींना माहिती देऊन सहकार्य करावे ही विनंती.

धन्यवाद.

आपली विश्वासू



I/c. Principal
U. E. S. Mahila Mahavidyalaya,
Solapur.

CSF-7
मा. मुख्य सफाई अधीक्षक
घन-कचरा व्यवस्थापन विभाग
सोलापूर महानगरपालिका

मुख्य सफाई अधीक्षक
घन-कचरा व्यवस्थापन विभाग
सोलापूर महानगरपालिका

दि. 24/03/2022

मा. सादर

सडक पत्ता नुसार आज

दि. 24/03/2022 महिला महाविद्यालय
च्या विद्यार्थी मंगला कचरा ची
माहिती दिली.



मुख्य आरोग्य निरीक्षक
विभागीय कार्यालय क्र. 6



महाराष्ट्र शासन
स्वास्थ्य विभाग
मुंबई

Permission Letter for the Project Completion

UNION EDUCATION SOCIETY'S
MAHILA MAHAVIDYALAYA,
141-A SIDDHESHWAR PETH,
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I/C Prin. : Mrs.Dr.F.M:Shaikh

Ref No.UES/2023/25/1286
Date :- 31-5-2023

प्रति,
व्यवस्थापक,
ध्वनी प्रदूषण कंट्रोल बोर्ड,
सोलापूर.

मा. महोदय,

आमच्या महिला महाविद्यालयातील बी.ए. भाग-२ मधील पर्यावरण विषयाच्या विद्यार्थिनी ध्वनी प्रदूषण कंट्रोल बोर्ड ला भेट देण्यासाठी दिनांक ३०-०५-२०२३ रोजी येत आहेत. तरी आपण विद्यार्थिनींना माहिती देऊन सहकार्य करावे हि विनंती.

धन्यवाद.

समन्वयक
पदवी कक्षा
सोलापूर.

आपली विश्वासू
प्रभारी प्राचार्य
यु. ई. एस. महिला महाविद्यालय,
सोलापूर.

Sub. Regional Officer
M. P. C. Board
Solapur

P.A.H.Solapur University, Solapur



Union Education Society's

MAHILA MAHAVIDYALAYA

Siddheshwar Peth Solapur -413001

A Project Report on

Munciple Solid Waste Management of
Solapur City

Submitted by

Miss: Jamadar Raziya Begum A. Rasheed

Under the guidance of

Dr. Z. A. Nayab

Year of Submission

Year 2021-2022

P.A.H. Solapur University, Solapur



Union Education Society's

MAHILA MAHAVIDYALAYA

Siddheshwar Peth, Solapur-413001

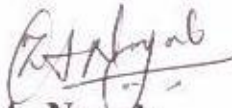
ENVIRONMENTAL STUDIES

CERTIFICATE

Exam No: _____

Date: 30/4/22

This is to certify that Miss. Jamadar Roziya Begum A. Rasheed has satisfactorily carried out the required field/ project work by the P.A.H. Solapur University, Solapur. For the B. A. II course in Environmental Studies and this field/ project work report represents his/her confide work in the year 2021-2022.


Dr. Z. A. Nayab

Examiner



Dr. F.M. Shaikh


I/C/Principal

I/c. Principal
U. E. S. Mahila Mahavidyalaya,
Solapur.

P.A.H. Solapur University, Solapur



Union Education Society's

Mahila Mahavidyalaya, Solapur

A Project on Municipal Solid Waste Management of Solapur City

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Declaration of the Student

I Jamadar Raziya A. Rasheed Student of B.A. II
bearing Roll No _____ is hereby declared that the project of
environmental studies entitle Municipal Solid Waste Management of
Solapur City is the Original Work and not submitted anywhere for the
publication.

Date : 30/04/22

Place: Solapur


**Signature of the
Students**

Declaration of the Supervisor

I, the undersigned supervisor for the environmental studies project hereby declared that the project of Jamadar Raziya A. Rasheed Student of B.A. II has carried out the field project entitled "A Municipal Solid Waste Management, Solapur City" is for the partial fulfilment of the certificate course in environmental studies proposed by P.A. H. Solapur University, Solapur is the original work and not submitted elsewhere for the publication.

Date : 30/4/22

Place: Solapur



Dr. Z. A. Nayab

A Report On

'SOLID WASTE MANAGEMENT IN SOLAPUR CITY'

ACKNOWLEDGEMENT

We create Environmental Awareness and controls its pollution. The subject Environmental Studies is made compulsory at B.A. II level. The task of completing this project became successful with the great efforts from several individuals.

We are grateful to the Supreme Court of India & P. A. H. Solapur University Solapur for introducing this subject and making it compulsory.

We are also thankful to:

- 1) Dr. F.M. Shaikh - Principal
- 2) Dr. Z. A. Nayab - Head Environmental Studies

For extending their co-operation and support in making this task easy.

Besides, we also thankful to Mr. Nagnath Birajdar (**Chief Conservancy Superintendent, Solapur Municipal Corporation**) and Mr. Anwar Shaikh (**Chief Sanitary Inspector, Solapur Municipal Corporation**) his workers for cooperation to completing this project successfully was indeed a pleasurable job for



Union Education Society's
Mahila Mahavidyalaya, Solapur

A Project on Municipal Solid Waste Management of
Solapur City

Students List

Sr. No.	Name of the Students
1	Hotgikar Muskan Abdul Rauf
2	Humanabadkar Bagban Fatima Mukhtar Ahmed
3	Jakatdar Sanobar Abdul Aziz
4	Jakler Karima Mohammed Akhtar
5	Jamadar Raziya Begum Abdul Rasheed
6	Kadichur Sajeda A. Kadar
7	Kakhandikar Aleena Tahereen Shakeel Ahmed
8	Kankurti Insha Nazeer Ahmed
9	Kasab Sanobar Anwar
10	Kosgi Summaiyya Kadar



Union Education Society's
Mahila Mahavidyalaya, Solapur

A Project on Municipal Solid Waste Management
of Solapur City

Project Information

Place of Visit : Municipal Solid Waste Department, Solapur Municipal Corporation, Zone No -7 Solapur
Address : Shandar Chowk, Solapur
Date of Visit : 25th March 2022
Time : 10:00 am

Officers Name:

1. Mr. Nagnath Birajdar : Chief Conservancy Superintendent, Solapur Municipal Corporation, Solapur Zone No -7
2. Mr. Anwar Shaikh : Chief Sanitary Inspector, Solapur Municipal Corporation, Solapur Zone No -7

Introduction.

All solid and semi solid wastes arising from anthropogenic activities are termed as 'Solid Wastes'. Any unwanted or discarded material from residential, industrial and agricultural activities which causes the problem of environment pollution is termed as 'Solid Waste.' It includes garbage, demolition and construction materials, dead and decaying plants and animals, rubbish etc.

The quantity of solid waste produced mainly depends on the standard of living of people and their daily needs. It depends on festivals and seasons too. The garbage part of solid wastes consists of putrescible organic wastes like animal, fruit and vegetables peelings etc. resulting from the handling, preparation, eating of food. 'Rubbish includes combustible and noncombustible solid wastes. The non-combustible rubbish consists glass, tin cans, metals, construction materials etc.

There are three types of solid wastes-

- 1) Municipal Wastes
- 2) Industrial Wastes
- 3) Hazardous Wastes

Municipal Solid Wastes in Solapur city

These wastes originate from daily household activities, public places, markets, institutions, street sweepings, etc. and it consists of everyday items such as – product packaging, furniture parts, clothing, bottles, food scraps, newspapers, paintboxes, used batteries, food items, dead plants and discarded electronic goods in broken form. The general sources of municipal solid wastes are residential complexes, commercial and open areas like markets etc.

The vehicle that collects the garbage is known “Ghanta Gadi”. There are 145 routs in Solapur city. There are 1500 Ghanta Gadies in Solapur city. One vehicle does 4 to 5 rounds daily for collecting solid waste. Per rounds it collects garbage from 150 to 200 houses. It contains 300 to 400kg garbage at one time. Timing for collecting solid waste is 6:00 am in to 2:00 pm daily. There are eight zones in Solapur city. Every zone has a dumping station where the solid waste has collected. From each zone Ghanta Gadi collects 25 to 30 tonnes of solid waste. It collects daily 350 tonnes of solid wastes from places the places like market, hospitals, industries, colleges, Schools, from roads etc. Corporation has given 2 dustbins for every houses – one for dry waste (Blue color) and another for wet waste (Green color). The total solid waste in Solapur city 223775.

Those 8 zones are below:

1. Datta Chowk
2. Rajendra Chowk
3. Mangal Bazar
4. Kumtha Naka
5. Gurunanak Chowk
6. Dufferin Chowk
7. Dufferin Chowk
8. Civil Chowk

Municipal Solid Waste in Solapur City is given in table

Zone No	Zone Address	Total Solid Waste
1	Datta Chowk	27586
2	Rajendra Chowk	25699
3	Mangal Bazar	30842
4	Kumtha Naka	24104
5	Gurunanak Chowk	28321
6	Dufferin Chowk	26450
7	Dufferin Chowk	29786
8	Civil Chowk	30987
	Total	223775

Solid Waste management:

Waste management involves the collections, transportation, processing, recycling or disposal and monitoring of waste materials produced by human activity and is generally undertaken to reduce their effect on health environment of aesthetics. Waste management is also carried out to recover resources from it. (1) Waste management involves the use of solid, liquid, gaseous or radioactive substances with different methods and fields of expertise for each of these. (2) The Primary sources of municipal solid waste includes waste generated in domestic, institutional, commercial activities, garden and municipal services. The domestic wastes are high in quantities and vary with time and season. It is generally comprised of organic and inorganic constituents. Now adays quantity of organic waste is decreasing and the quality of metals, paper, and plastics is increasing, indicating that there is growing preference for consumption of packaged food in recent year in modern society.

Control measures of urban and Industrial solid waste:

Methods of Solid Waste disposal are:

1. Land filling
2. Incineration
3. Pulverization
4. Composting
5. Pyrolysis
6. Disposal into open sea.

1. Disposal of solid waste by land filling:

In this, the solid wastes are dumped into low lying areas. The refuse is dumped up to about 1.5 mts and covered by about 20 cm of earth, so that the refuse remains covered by earth. Each layer is left out for 7 days and compaction is carried out for its settlement prior to putting next layer. With passage of time, waste is decomposed and stabilized within 2-12 months and settles by about 20-40% of its original height. This land can then be used for recreational purposes if needed. By this method low lying areas can be better reclaimed and this is the most simple and economical method used today.

2. Incineration:

Incineration means burning which is carried out in furnaces. This method is used when dumping sites are not available. From the collected solid wastes non-combustible materials are first separated out and the combustible materials are only incinerated. The temperature of incinerating chamber should be more than 670 dc to incinerate all organic matter. When there is moisture in waste, wood, coal or oil are also added for smooth burning. The final product is ash and clinker.

3. Pulverization:

Here solid waste is pulverized in grinding machines to reduce its volume and change of physical character. It is pulverized than disposed of by land fillings.

4. Composting:

In this method the organic waste is digested anaerobically and converted into humus and stable mineral compounds. The volume of solid waste is considerably reduced during composting and it is made free of pathogens. This is a hygienic method which converts the solid waste into manure. This method is suitable for small and medium sized towns of India and solves three problems i.e., disposal of solid waste, disposal of night soil and production of manure.

There are three methods prevalent in India:

- A. Composting by trenching
- B. Open window composting
- C. Mechanical composting.

A. Composting by trenching-

In this method 4x10m long, 2-3m wide and 1m deep trenches are dug. Solid waste is dumped in them up to 15cm and addition of 5 cm night soil or dung is done. This is done alternatively in layers and then trench is filled above ground level to about 30 cm earth is placed and spread on its top to prevent flies. After about 4 months the mass gets stabilized and changes into brown odorless humus. This humus is removed from trenches and sold as manure in markets.

B. Open Window Composting:

Here solid waste is directly dumped on ground to form 5- 10mt.long and 1-2 mt. wide piles having a height of 1mt. It is covered with cow dung and left it there for one week. The pile is turned up at about 8 days and let again stranded. The process is repeated for 4-6 weeks for manure to be ready.

C. Mechanical Method:

This method stabilizes the solid waste in about 3-6 days. The stabilization is done under controlled conditions of temperature and moisture in mechanical digesters. The mechanical digester are pits of closed types. Closed digesters are most hygienic and occupy less space. In this, the solid waste is converted into humus and stable mineral compounds.

5. Pyrolysis:

Here, destructive distillation of solid waste is done. The combustible substances are heated at 650- 1000 dc. In pyrolysis retort in low oxygen environment. It is an endothermic process.

6. Disposal In the sea-

It is useful in coastal areas having deep sea water (730m). It is quite cheap and simple method of disposal but has the disadvantage that the lighter components tend to spread over water and may return to shores and beaches spoiling the aesthetics. The initial cost, availability of land and plant, equipment's and trained persons needed for operation are some basic considerations for disposal method selection. The uncontrolled dumping is the cheapest option but is not hygienic. The manual methods are cheap and manure can be sold to generate some revenue, but requires land. The land filling is adopted when large areas are available. Incineration is very costly process.

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- <http://www.accessengreeninglibrary.com>

Students Visited to Zone - 7 Solapur Municipal Corporation to Collect Solid Waste Management Information





25-Mar-2022 10:38:09 ar
17.6547N 75.9222
299° NV
Altitude:402.2r
Speed:0.0km/
Index number: 179



25-Mar-2022 10:39:22 ar
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266° V
Altitude:402.7r
Speed:0.0km/
Index number: 179

Vote of Thanks



Thanks to giving us for valuable information
on Municipal Solid Waste Management
Project **Mr. Nagnath Birajdar Sir** and **Mr.
Anwar Shaikh Sir**



Union Education Society's
MAHILA MAHAVIDYALAYA
Siddheshwar Peth Solapur -413001

A Project Report on
Solar Energy

Submitted by

Miss:

Sayyed Uzma Traqui Ahmed

Under the guidance of

Dr. Z. A. Nayab

Mr. I. B. Shaikh

Year of Submission

Year 2021-2022

P.A.H. Solapur University, Solapur



Union Education Society's Mahila Mahavidyalaya, Solapur

Project on Solar Energy

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11	Advantages of Solar Energy
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This is to certify that Miss. Sayed Uzma Tarique Ahmed
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P.A.H. Solapur University, Solapur. For the B. A. II course in
Environmental Studies and this field/ project work report represents
his/her confide work in the year 2021-2022.

Dr. Z. A. Nayab

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Dr. F.M. Shaikh

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anywhere for the publication.

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I, the undersigned supervisor for the environmental studies project hereby declared that the project of Sayyed Uzma Tarique Student of B.A. II has carried out the field project entitled "**Solar Energy**" is for the partial fulfilment of the certificate course in environmental studies proposed by P.A. H. Solapur University, Solapur is the original work and not submitted elsewhere for the publication.

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Project on Solar Energy

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6	Patel Kausar Raj Ahmed
7	Qureshi Umera Zakir
8	Shaikh Gausiya Begum Sikandar
9	Shahpure Sana Kausar Mudabbir Husain
10	Qureshi Tarannum Mohommed Salim
11	Qazi Mehjabeen Abdul Razaque

ACKNOWLEDGEMENT

I would like to express my special thanks of gratitude to University of P. A. H. Solapur University, Solapur. my college Union Education Society's Mahila Mahavidyalaya, Solapur. For giving me the opportunity to work on this wonderful project on Global Warming.

We are feel proud to present our field visit project in environmental studies on the topic of Solar Energy. the subject environmental studies are made compulsory at B.A II. The task of competing this project successful with the grate efforts from several Individuals. this projects would not have been feasible without proper rigorous guidance of environmental teachers Dr. Z. A. Nayab and Mr. Imam Shaikh. Who guided me through-out this project in every possible way and we are also thankful to our college I/C. Principal Dr. F.M. Shaikh for Extending their cooperation and support in making this task easy. Then we are like to thanks our parents and friend who have helped we their valuable suggestion and guidance has been very helpful in various Phase of the completion of the project. At last we are end up by thinking all who helped me ion finalizing the project within the limited timeframe.

INTRODUCTION

Solar energy is the most abundant of all energy resources and can even be harnessed in cloudy weather. The rate at which solar energy is intercepted by the Earth is about 10,000 times greater than the rate at which humankind consumes energy.

Solar technologies can deliver heat, cooling, natural lighting, electricity, and fuels for a host of applications. Solar technologies convert sunlight into electrical energy either through photovoltaic panels or through mirrors that concentrate solar radiation.

Although not all countries are equally endowed with solar energy, a significant contribution to the energy mix from direct solar energy is possible for every country.

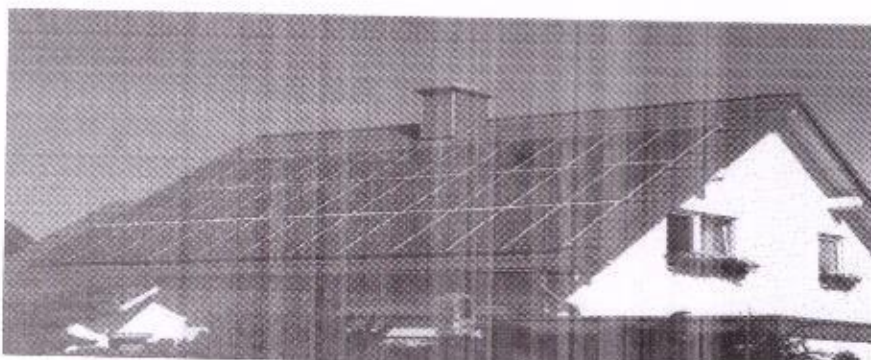
The cost of manufacturing solar panels has plummeted dramatically in the last decade, making them not only affordable but often the cheapest form of electricity.

Solar panels have a lifespan of roughly 30 years, and come in variety of shades depending on the type of material used in manufacturing.

What's is solar energy?

solar energy, radiation from the Sun capable of producing heat, causing chemical reactions, or generating electricity. The total amount of solar energy incident on Earth is vastly in excess of the world's current and anticipated energy requirements. If suitably harnessed, this

highly diffused source has the potential to satisfy all future energy needs. In the 21st century solar energy is expected to become increasingly attractive as a renewable energy source because of its inexhaustible supply and its nonpolluting character, in stark contrast to the finite fossil fuels coal, petroleum, and natural gas.



Solar energy is any type of energy generated by the sun. Solar energy is created by nuclear fusion that takes place in the sun. Fusion occurs when protons of hydrogen atoms violently collide in the sun's core and fuse to create a helium atom

Types of Solar Energy

1. Solar Photovoltaic Plants

Solar photovoltaic systems are the most common type of solar energy system that produces electricity directly from sunlight. Also known as solar cell systems, it uses semiconductor materials for absorbing sunlight. It works in a way that the heat from the sun's radiation makes the electrons loose from their atoms. These electrons then flow through the semiconductor materials and produce energy.

2. Solar Water Heating Systems

As the name suggests, solar water heating systems use the sun's energy to heat up water or bring it to a boil. In nature, shallow parts of the lakes, ponds, and rivers have warmer water than deeper areas. The sunlight can easily reach the bottom of the shallow areas, causing it to heat it up, making the water warm. The same concept has been used to develop solar water heating systems

A. Concentrated Solar

Another most popular type of solar energy is concentrated solar power. It is essentially installed on a large scale to provide electricity to the grid. It uses lenses and mirrors for concentrating a extensive area of sunlight onto a solar receiver. They generate enough energy to power a small township or select industries.

B. Technical Passive Solar Heating

Passive solar heating, also known as 'daylighting,' works on a simple concept. If you step outside on a hot, sunny day, you will feel the sun. Similarly, buildings can too feel the sun if they are designed and structured properly. For example, there are particular areas in a house that experience more sunlight than other areas. Therefore, incorporating solar technology like sunlit walls, roofs, floors that absorb the sun's heat can take care of a home's energy needs.

What are the different types of solar energy?

There are two main types of solar energy, depending on how they capture and distribute solar energy or convert it into solar power:

- Passive solar energy
- Active solar energy

What is passive solar energy?

Passive solar energy is the type of harnessing the sun without the use of mechanical devices. Passive solar heating systems are a simple and cost-effective way to take advantage of the sun's free, renewable energy and displace the need for electricity, natural gas, or other active energy systems. Strategic planning of building location, orientation, and materials provide great control over the inside temperature.

What is active solar energy?

Active solar energy classifies technologies related to the use of solar energy that uses mechanical or electrical equipment to improve performance or to process the energy obtained by converting it into electrical or mechanical energy. These pieces of equipment can be fans, water pumps, etc.

The applications of these types of solar energy can be classified into two types:

- Solar Photovoltaic Energy
- Solar Thermal Energy

Solar Photovoltaic Energy

One of the most common ways to use solar power is to use photovoltaic systems or as they are also known, PV systems or solar cells, which produce electricity directly from sunlight.

A photovoltaic system consists of an arrangement of several components, including solar panels to absorb and convert sunlight into electricity, a solar inverter to convert the output from direct to alternating current, as well as mounting, cabling, and other electrical accessories to set up a working system.

Two common types of photovoltaic systems include:

- **Thin-film Solar Cells (TFSC):** Thin-film solar panels are manufactured by placing one or more films of photovoltaic material (such as silicon, cadmium, or copper) onto a substrate. These types of solar panels are the easiest to produce and economies of scale make them cheaper than the alternatives due to less material being needed for its production.
- **Concentrator photovoltaic (CPV):** also known as concentration photovoltaics) is a photovoltaic technology that generates electricity from sunlight. Unlike conventional photovoltaic systems, it uses lenses or curved mirrors to focus sunlight onto small, highly efficient, multi-junction (MJ) solar cells. Besides, CPV systems often use solar trackers and sometimes a cooling system to further increase their efficiency

Solar Thermal Energy

A second way to use solar energy is to capture the heat from solar radiation directly and use that heat in a variety of ways. Solar thermal energy has a broader range of uses than a photovoltaic system, but using solar thermal energy for electricity generation at small scales is not as practical as using photovoltaics.

The most common types of solar thermal energy are as follows.

- **Concentrated solar power**

(CSP): Concentrated solar power plants employ concentrating, or focusing, collectors to concentrate sunlight received from a wide area onto a small blackened receiver, thereby considerably increasing the light's intensity to produce high temperatures. The arrays of carefully aligned mirrors or lenses can focus enough sunlight to heat a target to temperatures of 2,000 °C (3,600 °F) or more. This heat can then be used to operate a boiler, which in turn generates steam for a steam turbine electric generator power plant. For producing steam directly, the movable mirrors can be arranged to concentrate large amounts of solar radiation upon blackened pipes through which water is circulated and thereby heated.

- **Solar water heating (SWH):** Solar water heating is the conversion of sunlight into heat for water heating using a solar thermal collector. A variety of configurations is available at varying costs to provide solutions in different climates and latitudes. SWHs are widely used for residential and industrial applications. Solar water heating systems for buildings are made up of two parts, the solar collector and a storage tank. The most common collector is called a flat-plate collector which is mounted on the roof and faces the sun. Small tubes run through the box and carry the fluid – either water or other fluid, such as an antifreeze solution – to be heated. As heat builds up in the collector, it heats the fluid passing through the tubes. The storage tank then holds the hot liquid.

Significant Uses of Solar Energy

Not only is solar energy a naturally sustainable source that can be replenished, but it is also an extremely reasonable source of energy. Solar energy can be absorbed by the help of two devices that are - passive and active. This is an extremely convenient method to decrease pollution substantially that exists in our environment. Solar energy is considered to be one of the unadulterated and healthy forms of natural energy. Some of the ways solar energy can be utilized are - for the purpose of heating, indoor and outdoor lighting, fuel for transportation. Some Other Ways This Energy Source Proves to Be Beneficial Are -

1. Cooking using Solar Energy
2. Industries Can Use Solar Energy
3. Solar Energy for Charging of the battery
4. Solar Heating Water System

❖ **Advantages of Solar Energy**

1. Clean Energy Source:
2. Reduction in Electricity Bills:
3. Multiple Applications:
4. Low Maintenance Cost: 5. Independent Source of Energy:
5. Lower Impact On Environment:
6. Sustainable:
7. Used On Underutilized Land:
8. Increase in Property Value:
9. Lower Water Pollution:
10. Electricity:

❖ **Disadvantages of Solar Energy**

1. Installation Cost Is Too High:
2. Reliability:
3. Dependent On Weather:
4. Costly Storage:
5. Lots of Space Required for Installation:
6. Not Efficient:
7. Pollution and Impact On Environment:
8. Location Dependent:



Union Education Society's
MAHILA MAHAVIDYALAYA
Siddheshwar Peth Solapur -413001

A Project Report on

Types of Fish

Submitted by

Miss:

Shailesh Muskan Salim

Under the guidance of

Dr. Z. A. Nayab

Mr. I. B. Shaikh

Year of Submission

Year 2021-2022

P.A.H. Solapur University, Solapur



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Date: 30/05/2022

This is to certify that Miss. Shaikh Muskan Salim
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Dr. Z. A. Nayab

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Union Education Society's
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Project on Types of Fish

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3	Declaration of Supervisor
4	Acknowledgment
5	Introduction
6	Types of Fish
7	Salt Water Fish
8	Fresh Water Fish
9	Conclusion
10	Bibliography

Declaration of the Student

I Shaikh Muskan Salim
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“**Types of Fish**” is the Original Work and not submitted
anywhere for the publication.

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Student**

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I, the undersigned supervisor for the environmental studies project hereby declared that the project of Shaikh Muskan Salim Student of B.A. II has carried out the field project entitled “**Types of Fish**” is for the partial fulfilment of the certificate course in environmental studies proposed by P.A. H. Solapur University, Solapur is the original work and not submitted elsewhere for the publication.

Date : 30/05/2022

Place : Solapur

Dr. Z. A. Nayab



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4	Shaikh Sanobar Gaus
5	Shaikh Muskan Salim
6	Shaikh Javeriya Gaus
7	Shaikh Uzma Md. Khalid
8	Shaikh Zeba Anwar
9	Pathan Almas Anwar
10	Shaikh Alfiya Shabbir

ACKNOWLEDGEMENT

I would like to express my special thanks of gratitude to University of P. A. H. Solapur University, Solapur. my college Union Education Society's Mahila Mahavidyalaya, Solapur. For giving me the opportunity to work on this wonderful project on Types of Fish.

We are feel proud to present our field visit project in environmental studies on the topic of Types of Fish. the subject environmental studies are made compulsory at B.A II. The task of competing this project successful with the grate efforts from several Individuals. this projects would not have been feasible without proper rigorous guidance of environmental teachers Dr. Z. A. Nayab and Mr. Imam Shaikh. Who guided me through-out this project in every possible way and we are also thankful to our college I/C. Principal Dr. F.M. Shaikh for Extending their cooperation and support in making this task easy. Then we are like to thanks our parents and friend who have helped we their valuable suggestion and guidance has been very helpful in various Phase of the completion of the project. At last we are end up by thinking all who helped me ion finalizing the project within the limited timeframe.

VISUAL DICTIONARY

TYPES OF FISH



LAMPREYS



CATFISH



TUNA



HERRING



MUDSKIPPER



FLYING FISH



SALMON



SHARKS



RAYS



CARP



COELACANTHS



TROUT

WHAT ARE FISH ?

- Fish are a group of vertebrate animals that live in water. They are characterized by having skulls made of hard bones (what are known as ***craniate*** animals), having fins, breathing through gills, and digit-less limbs.
- ◆ Fish can live in a variety of environments, from saltwater deep seas to freshwater tropical rivers. They are mostly cold-blooded animals that overwhelmingly lay eggs (though some species, like sharks, give birth to live young). A number of fish (but not all) have scales.
- ◆ Fish are distinct from reptiles and amphibians in that they are (for the most part) completely aquatic and have fins; they differ from mammals in that they do not have hair or mammary glands, and they are not like other terrestrial creatures in that they use gills to breathe.

TYPES OF FISH

1. SALT WATER.
2. FRESH WATER.

Saltwater fish

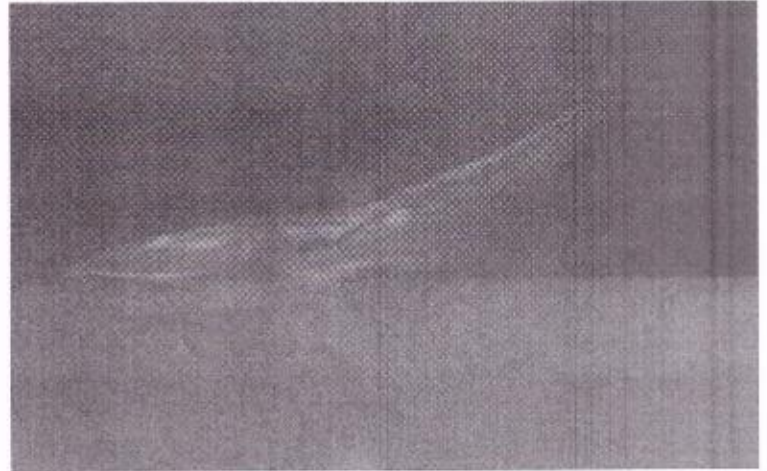
Saltwater fish, also called **marine fish** or **sea fish**, are fish that live in seawater. Saltwater fish can swim and live alone or in a large group called a school.

Saltwater fish are very commonly kept in aquariums for entertainment. Many saltwater fish are also caught to be eaten, or grown in aquaculture. However, many fish species have been overfished and are otherwise threatened by marine pollution or ecological changes caused by climate change.

EXAMPLES :

1. BLUE WHALE :

The blue whale is the largest animal on the planet, weighing as much as 200 tons (approximately 33 elephants). The blue whale has a heart the size of a Volkswagen Beetle. Its stomach can hold one ton of krill and it needs to eat about four tons of krill each day. They are the loudest animals on Earth and are even louder than a jet engine. Their calls reach 188 decibels, while a jet reaches 140 decibels. Their low frequency whistle can be heard for hundreds of miles and is probably used to attract other blue whales.



2. SHARK :

With fossil records dating back 400 million years, sharks have outlived the dinosaurs and many other forms of life currently on earth.



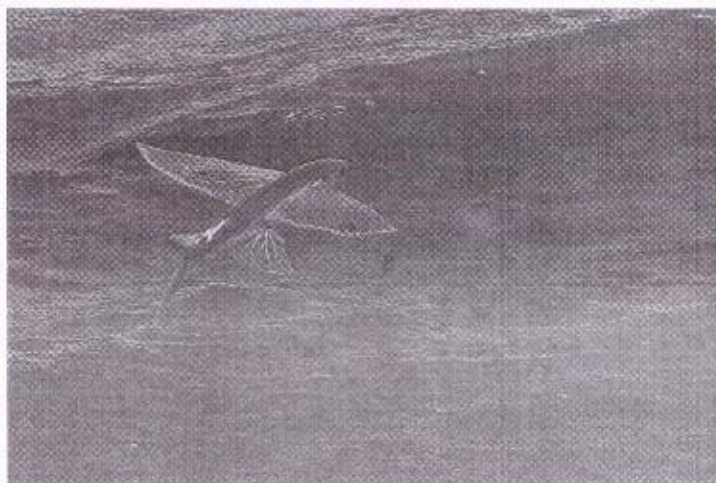
There are more than 1,000 species of sharks and rays, with new species discovered every year.

Normally, sharks feed on fish, often attacking in schools.

Open-ocean species such as the mackerel (*Lamna*), mako (*Isurus*), and thresher (*Alopias*) sharks frequently feed near the surface and are much sought after with rod and reel for sport. Beautifully streamlined and powerful swimmers, those open-ocean sharks are adept at feeding on fast tuna, marlin, and the like.

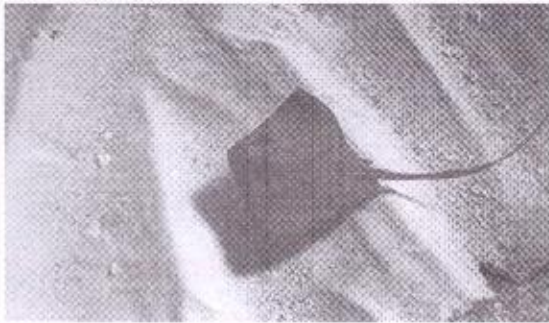
3. FLYING FISH:

Flying fish are ocean fish that have long fins that can be used to escape the water and glide short distances — in order to escape fast-moving predator fish like marlins and swordfish. Flying fish belong to the



order ***Beloniformes***, and inhabit tropical waters in the Atlantic, the Caribbean, and the Pacific.

4. RAY FISH :



Batoidea is a superorder of cartilaginous fishes, commonly known as **rays**. They and their close relatives, the sharks, comprise the subclass Elasmobranchii. Rays are the largest group of cartilaginous fishes, with well over 600 species in 26 families. Rays are distinguished by their flattened bodies, enlarged pectoral fins that are fused to the head, and gill slits that are placed on their ventral surface.

Freshwater fish

Freshwater fish are those that spend some or all of their lives in fresh water, such as rivers and lakes, with a salinity of less than 1.05%. These environments differ from marine conditions in many ways, especially the difference in levels of salinity. To survive fresh water, the fish need a range of physiological adaptations.

EXAMPLES :

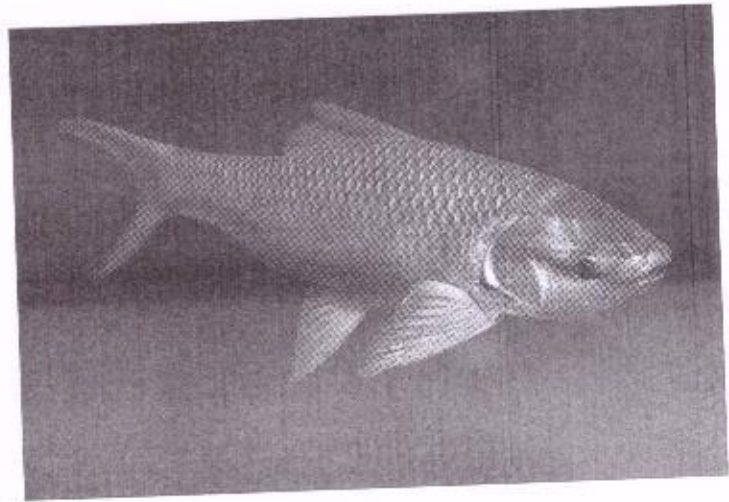
1. POMPRET :

Pomfrets are perciform fishes belonging to the family **Bramidae**. The family currently includes 20 species across seven genera.^[2] Several species are important food sources for humans, especially *Brama brama* in South Asia. The earlier form of the pomfret's name was "pamflet", a word which probably ultimately comes from Portuguese *pampo*, referring to various fish such as the blue butterfish (*Stromateus fiatola*). The fish meat is white in color.



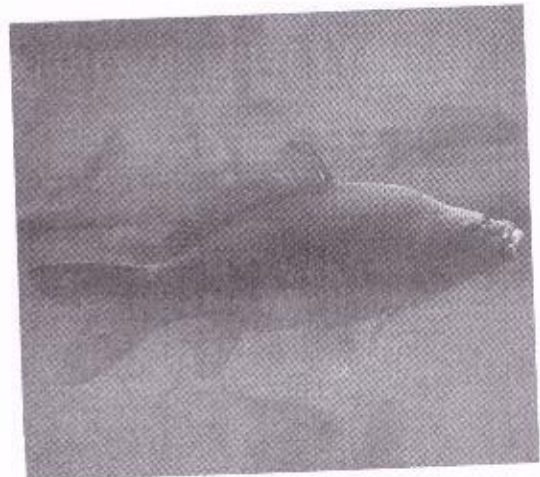
2. ROHU :

The rohu is a large, silver-colored fish of typical cyprinid shape, with a conspicuously arched head. Adults can reach a maximum weight of 45 kg (99 lb) and maximum length of 2 m (6.6 ft),[□] but average around ½ m (1.6 ft). Rohu is very commonly eaten in Bangladesh, Nepal, Pakistan and the Indian states of Tripura, Nagaland, Bihar, Odisha, Assam, West Bengal, Andhra Pradesh, Tamil naidu and Uttar Pradesh.



3. CATLA :

Catla (*Labeo catla*), also known as the major South Asian carp, is an economically important South Asian freshwater fish in the carp family Cyprinidae. It is native to rivers and lakes in



Conclusion

The project may conclude that there is a rich diversity of fish species in a particular ecosystem or region. This could indicate a healthy and thriving aquatic environment.

The project may identify certain fish species that are at risk of extinction or are already classified as threatened or endangered. This conclusion would highlight the need for conservation efforts to protect these vulnerable species.

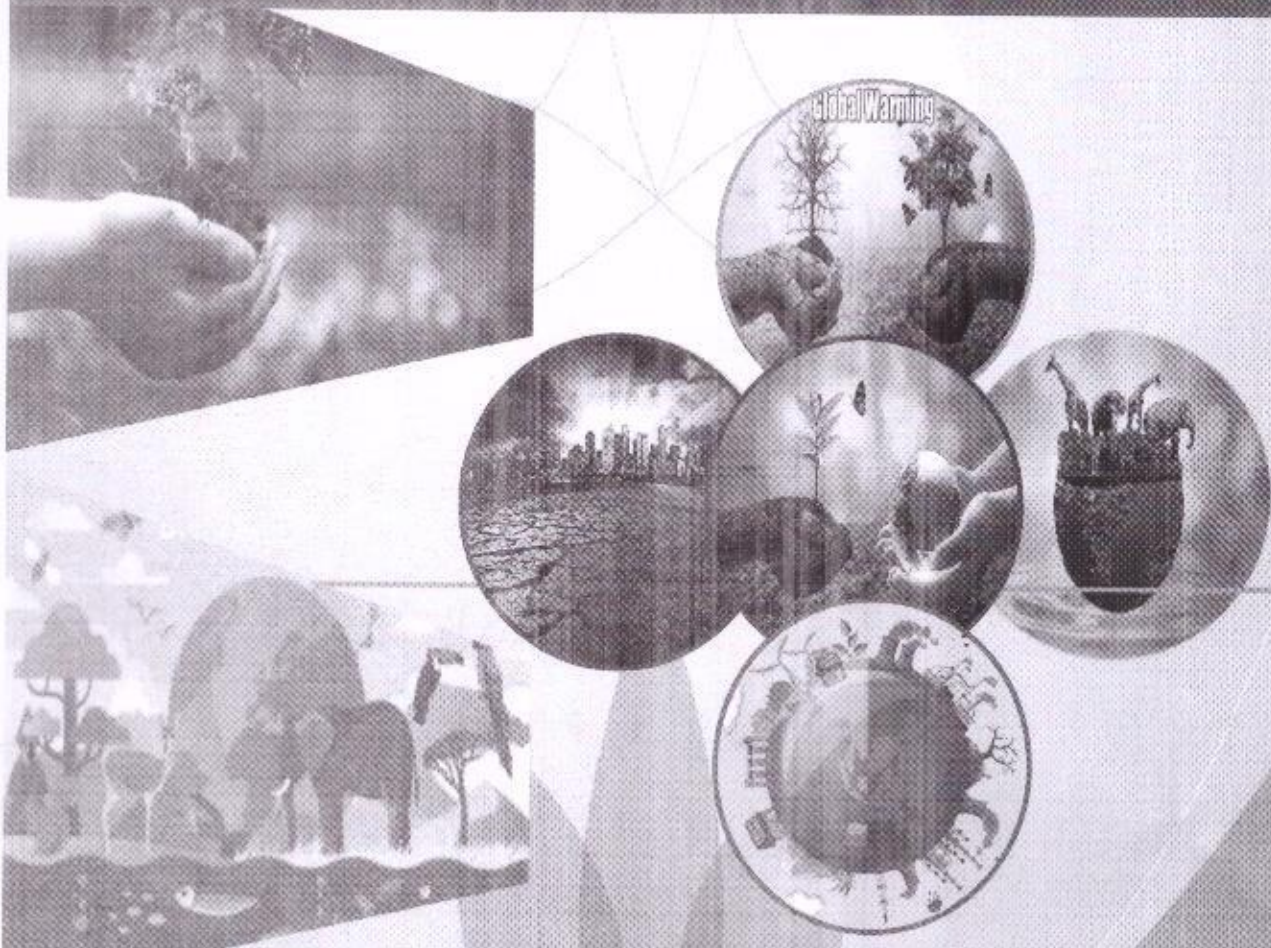
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Environmental Project – Global Warming



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2021 - 2022



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A Project Report on
Global Warming

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Year of Submission

Year 2021-2022

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Union Education Society's Mahila Mahavidyalaya, Solapur

Project on Global Warming

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7	EFFECTS OF GLOBAL WARMING
8	GREENHOUSE EFFECT
9	DANGEROUS CHEMICAL
10	STOP THE GLOBAL WARMING
11	CONCLUSION

P.A.H. Solapur University, Solapur



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This is to certify that Miss. Shaikh Summaiya Saleem
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P.A.H. Solapur University, Solapur. For the B. A. II course in
Environmental Studies and this field/ project work report represents
his/her confide work in the year 2021-2022.

Dr. Z. A. Nayab

Examiner

Dr. F.M. Shaikh

I/C/Principal

I/c. Principal
U.E.S. Mahila Mahavidyalaya,
Solapur.




Declaration of the Student

I Shaikh Summaiya Saleem
Student of B.A. II bearing Roll No 2034 is hereby
declared that the project of environmental studies entitled
“**Global Warming**” is the Original Work and not
submitted anywhere for the publication.

Date : 31/05/2022

Place : Solapur.


**Signature of the
Student**

Declaration of the Supervisor

I, the undersigned supervisor for the environmental studies project hereby declared that the project of Shailch Summaiyar Saleem Student of B.A. II has carried out the field project entitled “**Global Warming**” is for the partial fulfilment of the certificate course in environmental studies proposed by P.A. H. Solapur University, Solapur is the original work and not submitted elsewhere for the publication.

Date : 31/05/2022

Place : Solapur



Dr. Z. A. Nayab



Union Education Society's
Mahila Mahavidyalaya, Solapur

Project on Global Warming

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ACKNOWLEDGEMENT

I would like to express my special thanks of gratitude to University of P. A. H. Solapur University, Solapur. my college Union Education Society's Mahila Mahavidyalaya, Solapur. For giving me the opportunity to work on this wonderful project on Global Warming.

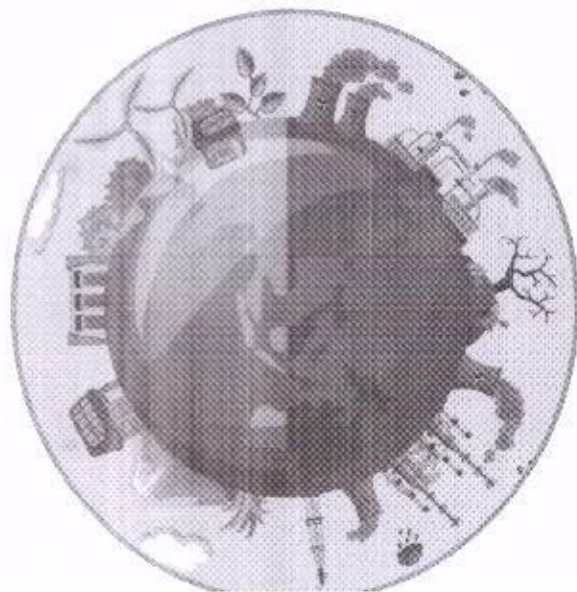
We are feel proud to present our field visit project in environmental studies on the topic of Global Warming and its effects. the subject environmental studies are made compulsory at B.A II. The task of competing this project successful with the grate efforts from several Individuals. this projects would not have been feasible without proper rigorous guidance of environmental teachers Dr. Z. A. Nayab and Mr. Imam Shaikh. Who guided me through-out this project in every possible way and we are also thankful to our college I/C. Principal Dr. F.M. Shaikh for Extending their cooperation and support in making this task easy. Then we are like to thanks our parents and friend who have helped we their valuable suggestion and guidance has been very helpful in various Phase of the completion of the project. At last we are end up by thinking all who helped me ion finalizing the project within the limited timeframe.

INTRODUCTION

Global warming is when the earth heats up (the temperature rises). It happens when greenhouse gases (carbon dioxide, water vapor, nitrous oxide, and methane) trap heat and light from the sun in the earth's atmosphere, which increases the temperature. This hurts many people, animals, and plants. Many cannot take the change, so they die. The average facade temperature of the globe has augmented more than 1 degree Fahrenheit since 1900 and the speed of warming has been almost three folds the century long average since 1970. This increase in earth's average temperature is called Global warming. More or less all specialists studying the climate record of the earth have the same opinion now that human actions, mainly the discharge of greenhouse gases from smokestacks, vehicles, and burning forests, are perhaps the leading power driving the fashion. The gases append to the planet's normal greenhouse effect, permitting sunlight in, but stopping some of the ensuing heat from radiating back to space. Based on the study on past climate shifts, notes of current situations, and computer simulations, many climate scientists say that lacking of big curbs in greenhouse gas discharges, the 21st century might see temperatures rise of about 3 to 8 degrees, climate patterns piercingly shift, ice sheets contract and seas rise several feet. With the probable exemption of one more world war, a huge asteroid, or a fatal plague, global warming may be the only most danger to our planet earth.

Giving voice to a growing conviction of most of the scientific community, the Intergovernmental Panel on Climate Change (IPCC) was formed in 1988 by the World Meteorological Organization (WMO) and the United Nations Environment Program (UNEP). The IPCC's Sixth Assessment Report (AR6), published in 2021, noted that the best estimate of the increase in global average surface temperature between 1850 and 2019 was 1 °C (1 °F). An IPCC special report produced in 2018 noted that human beings and their activities have been responsible for a worldwide average temperature increase between 0 and 1 °C (1 and 2 °F) since preindustrial times, and most of the warming over the second half of the 20th century could be attributed to human activities require a lot of fuel to be burnt which emits a large

amount of carbon dioxide in the atmosphere. Methane is more than 20 times as effectual as CO₂ at entrapping heat in the atmosphere. Methane is obtained from resources such as rice paddies, bovine flatulence, bacteria in bogs and fossil fuel manufacture. When fields are flooded, anaerobic situation build up and the organic matter in the soil decays, releasing methane to the atmosphere. The main sources of nitrous oxide include nylon and nitric acid production, cars with catalytic converters, the use of fertilizers in agriculture and the burning of organic matter. Another cause of global warming is deforestation that is caused by cutting and burning of forests for the purpose of residence and industrialization.



MAN-MADE CAUSES OF GLOBAL WARMING

1. **Deforestation:** - Plants are the main source of oxygen. They take in carbon dioxide and release oxygen thereby maintaining environmental balance. Forests are being depleted for many domestic and commercial purposes. This has led to an environmental imbalance, thereby giving rise to global warming.
2. **Use of Vehicles:** - The use of vehicles, even for a very short distance results in various gaseous emissions. Vehicles burn fossil fuels which emit a large amount of carbon dioxide and other toxins into the atmosphere resulting in a temperature increase.
3. **Chlorofluorocarbon:** - With the excessive use of air conditioners and refrigerators, humans have been adding CFCs into the environment which affects the atmospheric ozone layer. The ozone layer protects the earth surface from the harmful ultraviolet rays emitted by the sun. The CFCs have led to ozone layer depletion making way for the ultraviolet rays, thereby increasing the temperature of the earth.
4. **Industrial Development:** - With the advent of industrialization, the temperature of the earth has been increasing rapidly. The harmful emissions from the factories add to the increasing temperature of the earth. In 2013, the Intergovernmental Panel for Climate Change

EFFECTS OF GLOBAL WARMING

1) Rise in Temperature

Global warming has led to an incredible increase in earth's temperature. Since 1880, the earth's temperature has increased by ~1 degrees. This has resulted in an increase in the melting of glaciers, which have led to an increase in the sea level. This could have devastating effects on coastal regions.

2) Threats to the Ecosystem

Global warming has affected the coral reefs that can lead to the loss of plant and animal lives. Increase in global temperatures has made the fragility of coral reefs even worse.

3) Climate Change

Global warming has led to a change in climatic conditions. There are droughts at some places and floods at some. This climatic imbalance is the result of global warming.

4) Spread of Diseases

Global warming leads to a change in the patterns of heat and humidity. This has led to the movement of mosquitoes that carry and spread diseases.

5) High Mortality Rates

Due to an increase in floods, tsunamis and other natural calamities, the average death toll usually increases. Also, such events can bring about the spread of diseases that can hamper human life.

6) Loss of Natural Habitat

A global shift in the climate leads to the loss of habitats of several plants and animals. In this case, the animals need to migrate from their natural habitat and many of them even become extinct. This is yet another major impact of global warming on biodiversity.



GREENHOUSE EFFECT

The greenhouse effect is when the temperature rises because the sun's heat and light is trapped in the earth's atmosphere. This is like when heat is trapped in a car. On a very hot day, the car gets hotter when it is out in the parking lot. This is because the heat and light from the sun can get into the car, by going through the windows, but it can't get back out. This is what the greenhouse effect does to the earth. The heat and light can get through the atmosphere, but it can't get out. As a result, the temperature rises. The sun's heat can get into the car through the windows but is then trapped. This makes whatever the place might be, a greenhouse, a car, a building, or the earth's atmosphere, hotter. This diagram shows the heat coming into a car as visible light (light you can see) and infrared light (heat). Once the light is inside the car, it is trapped and the heat builds up, just like it does in the earth's atmosphere. Sometimes the temperature can change in a way that helps us. The greenhouse effect makes the earth appropriate for people to live on. Without it, the earth would be freezing, or on the other hand it would be burning hot. It would be freezing at night because the sun would be down.

We would not get the sun's heat and light to make the night somewhat warm. During the day, especially during the summer, it would be burning because the sun would be up with no atmosphere to filter it, so people, plants, and animals would be exposed to all the light and heat. Although the greenhouse effect makes the earth able to have people living on it, if there gets to be too many gases, the earth can get unusually warmer, and many plants, animals, and people will die. They would die because there would be less food (plants like corn, wheat, and other vegetables and fruits). This would happen because the

plants would not be able to take the heat. This would cause us to have less food to eat, but it would also limit the food that animals have. With less food, like grass, for the animals that we need to survive (like cows) we would even have less food.

Gradually, people, plants, and animals would all die of hunger.

atmosphere and surface. It was proposed by Joseph Fourier in 1824 and was first investigated quantitatively by Svante Arrhenius in 1896. Naturally occurring greenhouse gases have a mean warming effect of about 33 °C (59 °F). The major greenhouse gases are water vapor, which causes about 36– percent of the greenhouse effect; carbon dioxide (CO₂), which causes 9–26 percent; methane (CH₄), which causes 4–9 percent; and ozone (O₃), which causes 3–7 percent. Clouds also affect the radiation balance, but they are composed of liquid water or ice and so have different effects on radiation from water vapor. Human activity since the Industrial Revolution has increased the amount of greenhouse gases in the atmosphere, leading to increased radiative forcing from CO₂, methane, tropospheric ozone, CFCs and nitrous oxide. The concentrations of CO₂ and methane have increased by 36% and 148% respectively since 1750. These levels are much higher than at any time during the last 800,000 years, the period for which reliable data has been extracted from ice cores. Less direct geological evidence indicates that

CO₂ values higher than this were last seen about 20 million years ago. Fossil fuel burning has produced about three-quarters of the increase in CO₂ from human activity over the past 20 years. Most of the rest is due to land-use change, particularly deforestation. Over the last three decades of the 20th century, GDP per capita and population growth were the main drivers of increases in greenhouse gas emissions. CO₂

emissions are continuing to rise due to the burning of fossil fuels and land-use change. Emissions scenarios, estimates of changes in future emission levels of greenhouse gases, have been projected that depend upon uncertain economic, sociological, technological, and natural developments. In most scenarios, emissions continue to rise over the century, while in a few, emissions are reduced.

These emission scenarios, combined with carbon cycle modeling, have been used to produce estimates of how atmospheric concentrations of greenhouse gases

suggest that by the year 2100, the atmospheric concentration of CO₂ could range between 541 and 970 ppm. This is an increase of 90-250% above the concentration in the year 1750. Fossil fuel reserves are sufficient to reach these levels and continue emissions past 2100 if coal, oil sands or methane clathrates are extensively exploited. The destruction of stratospheric ozone by chlorofluorocarbons is sometimes mentioned in relation to global warming. Although there are a few areas of linkage, the relationship between the two is not strong. Reduction of stratospheric ozone has a cooling influence. Substantial ozone depletion did not occur until the late 1970s. Ozone in the troposphere (the lowest part of the Earth's atmosphere) does contribute to surface warming.



DANGEROUS CHEMICAL

Some chemicals that cause air pollution and are bad for the environment and people are:

- Ozone- Ozone is produced when other pollution chemicals combine. It is the basic element of smog. It causes many different kinds of health issues dealing with the lungs. It can damage plants and limit sight. It can also cause a lot of property damage.

STOP THE GLOBAL WARMING

What are people doing to stop global warming?

People are doing many things to try to stop global warming. One thing people are doing is carpooling. Carpooling is driving with someone to a place that you are both going to. This minimizes the amount of greenhouse gases put into the air by a car. Another thing that people are doing is being more careful about leaving things turned on like the television, computer, and the lights. A lot of people are taking time away from the television, and instead, they are spending more time outdoors. This helps our planet out a lot. Now, more people are even riding busses, walking to school, and riding their bikes to lower the amount of greenhouse gases in the air. Planting trees and recycling also helps. If you recycle, less trash goes to the dump, and less trash gets burned. As a result, there are fewer greenhouse gasses in our atmosphere. Watch what you buy. Many things, such as hairspray and deodorant, now are made to have less of an impact on the atmosphere. Less greenhouse gasses will rise into the air, and global warming will slow down.

CONCLUSION

Contemporary climate change includes both global warming and its impacts on Earth's weather patterns. There have been previous periods of climate change, but the current changes are distinctly more rapid and not due to natural causes. Instead, they are caused by the emission of greenhouse gases, mostly carbon dioxide (CO₂) and methane. Burning fossil fuels for energy use creates most of these emissions. Certain agricultural practices, industrial processes, and forest loss are additional sources. Greenhouse gases are transparent to sunlight, allowing it through to heat the Earth's surface. When the Earth emits that heat as infrared radiation the gases absorb it, trapping the heat near the Earth's surface. As the planet heats up it causes changes like the loss of sunlight-reflecting snow cover, amplifying global warming.

Global warming is due to the increased carbon dioxide in air due to pollution caused by man so to reduce the global warming man must respect nature. Avoid using unnecessary use of automobiles, planting lots of tree & recycling the objects, making more use of non-conventional energy sources. Due to global warming sea level are increasing Greenhouse effect the nature it increases the temperature which is harmful for environment. At last **SAVE THE NATURE SAVE THE EARTH**

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3. Global Warming by Amit Kumar (2009) Sonali Publication New. Delhi.



Union Education Society's
MAHILA MAHAVIDYALAYA
Siddheshwar Peth Solapur -413001

A Project Report on
Air Polution in Solapur City

Submitted by

Miss: Pathan Saniya Sikandar

Under the guidance of

Dr. Z. A. Nayab

Mr. I. B. Shaikh

Year of Submission

Year 2021-2022

P.A.H. Solapur University, Solapur



Union Education Society's
MAHILA MAHAVIDYALAYA
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CERTIFICATE

ENVIRONMENTAL STUDIES

Exam No: _____

Date: 30/05/2022

This is to certify that Miss. Pathan Saniya Sikandar
has satisfactorily carried out the required field/ project work by the P.A.H.
Solapur University, Solapur. For the B. A. II course in Environmental
Studies and this field/ project work report represents his/her confide work
in the year 2021-2022.

Dr. Z. A. Nayab

Examiner

Dr. F.M. Shaikh

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U. E. S. Mahila Mahavidyalaya,
Solapur.



P.A.H. Solapur University, Solapur



Union Education Society's

Mahila Mahavidyalaya, Solapur

Project on Air Pollution in Solapur City

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Declaration of the Student

I Pathan Saniya Sikandar Student of B.A. II bearing Roll No 2001 is hereby declared that the project of environmental studies entitled "**Air Pollution in Solapur City**" is the Original Work and not submitted anywhere for the publication.

Date : 30/05/2022

Place : Solapur

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Signature of the
Student

Declaration of the Supervisor

I, the undersigned supervisor for the environmental studies project hereby declared that the project of Pathan Saniya Sikandar Student of B.A. II has carried out the field project entitled “**Air Pollution in Solapur City**” is for the partial fulfilment of the certificate course in environmental studies proposed by P.A. H. Solapur University, Solapur is the original work and not submitted elsewhere for the publication.

Date : 30/05/2022

Place : Solapur.

Dr. Z. A. Nayab



Union Education Society's
Mahila Mahavidyalaya, Solapur

Project on "Air Pollution in Solapur City"

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ACKNOWLEDGEMENT

I would like to express my special thanks of gratitude to University of P. A. H. Solapur University, Solapur. my college Union Education Society's Mahila Mahavidyalaya, Solapur. For giving me the opportunity to work on this wonderful project on "**Air Pollution in Solapur City**".

We are feel proud to present our field visit project in environmental studies on the topic of "**Air Pollution in Solapur City**". the subject environmental studies are made compulsory at B.A II. The task of competing this project successful with the grate efforts from several Individuals. this projects would not have been feasible without proper rigorous guidance of environmental teachers Dr. Z. A. Nayab and Mr. Imam Shaikh. Who guided me through-out this project in every possible way and we are also thankful to our college I/C. Principal Dr. F.M. Shaikh for Extending their cooperation and support in making this task easy. Then we are like to thanks our parents and friend who have helped we their valuable suggestion and guidance has been very helpful in various Phase of the completion of the project. At last we are end up by thinking all who helped me ion finalizing the project within the limited timeframe.

A project report on Air pollution in Solapur city

Introduction –

Air pollution means contamination of air, water, or soil by any substance that is harmful to live organisms. It is like an introduction or release of toxic substance into the environment, that can harm the elements in the environment. The pollution can take place because of natural such as volcanic eruption and manmade reasons that are causing more pollution than natural. From the increase number of vehicles to ever growing industrial wastages in the form of air, water, each contributes to air pollution in some way.

What is air pollution-

The air pollution defines any physical, chemical or biological changes takes place in the air and contaminates it, then it is called air pollution. THE CONTAMINATION OF AIR can be caused due to many factors such as poisonous or harmful gases, smoke, fog, dust etc. air pollution affects plants as well as animals.

Air pollution in Solapur city

Solapur city is an area under the Solapur Municipal Corporation, both existing as well as newly acquired. Solapur city is an important district head quarter in western MAHARASHTRA. Geographically the city is located between 17.10 to 18.32-degree north latitude and 74.42 to 76.15 degrees' east longitude. Solapur city is situated at about 550 m from mean sea level. Solapur is the only city in the district with a Municipal Corporation.

Objectives-

- 1- To study the air quality of Solapur.
- 2- To study the air pollution of Solapur city.
- 3- To suggest the control measures of air pollution

1. Air Quality of Solapur City

Maharashtra Pollution Control Board is monitoring the ambient air quality in Solapur city month wise at two locations viz. Ashok Chowk & Saat Rasta (Chitale Hospital) since the year 2000 under the National Ambient Air Quality Monitoring Program (NAAQM). This is a continuing activity of the Board. The air quality parameters, being measured during last three years, include Sulphur dioxide (SO₂), Oxides of nitrogen (NO_x), Suspended particulate matter (SPM) and Respirable suspended particulate matter (RSPM).

The annual average values of the above parameters for last three years (2017, 2018 & 2019) are given in the table below.

	Near Ashok Chowk 2017(in $\mu\text{g}/\text{m}^3$)				Near Ashok Chowk 2018 (in $\mu\text{g}/\text{m}^3$)				Near Ashok Chowk 2019 (in $\mu\text{g}/\text{m}^3$)			
	SO ₂	NO _x	SPM	RSPM	SO ₂	NO _x	SPM	RSPM	SO ₂	NO _x	SPM	RSPM
Max	20	49	207	503	21	50	214	502	21	49	198	478
Min.	16	42	180	253	18	44	167	319	19	46	157	379
	Near Saat Rasta 2017				Near Saat Rasta 2018				Near Saat Rasta 2019			
	SO ₂	NO _x	SPM	RSPM	SO ₂	NO _x	SPM	RSPM	SO ₂	NO _x	SPM	RSPM
Max	21	49	207	503	21	49	223	460	20	50	219	436
Min.	18	44	178	378	19	44	171	394	19	41	161	379

It is seen from the above results that the SPM & RSPM values are exceeding the prescribed limits for these parameters at both the monitoring locations. The reasons for this can be attributed to the heavy vehicular traffic in that area, floating dust, re-suspension of the dust due to arid and dry climatic conditions prevailing in the city, lack of adequate public transport within the city, bad road conditions and thorough passage of the heavy vehicles in the city.

It is also seen from the monitoring results that the maximum values of RSPM were recorded in the months of February and March and the minimum values were noticed in the months of July and August.

- Shivaji Chowk,
- Saat Rasta Chowk
- Near M.I.D.C. Akkalkot Road (New).

The results of the air quality monitoring at the above locations is given below.

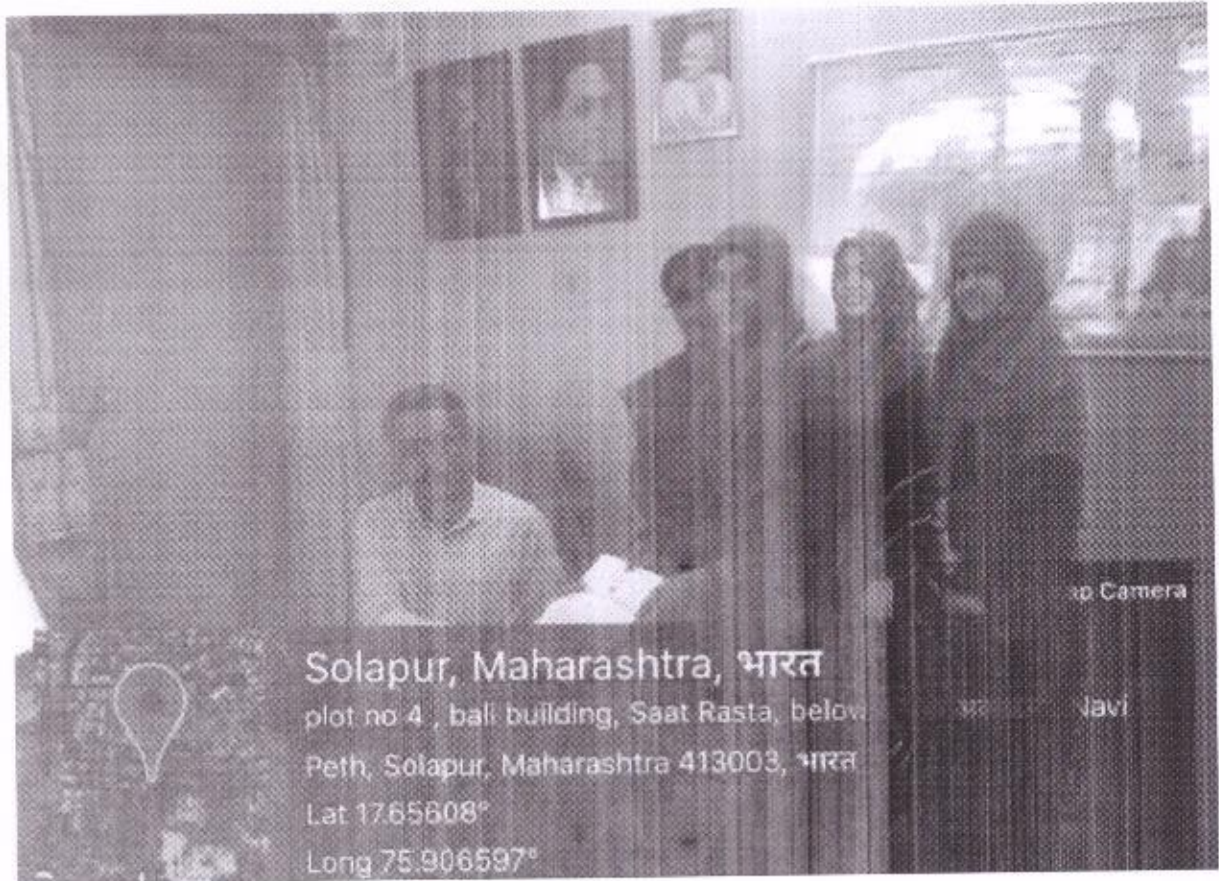
At Shivaji Chowk (Residential & Commercial Area)

Sr. No.	Date	So ₂ (in µg/m ³)	NO _x (in µg/m ³)	RSPM (in µg/m ³)
1	22-10-2018	18.30	25.50	436.70
2	29-10-2018	18.18	24.00	367.60
3	04-11-2018	18.78	38.15	387.20
4	12-11-2018	20.60	33.85	322.40
	Limit	80.00	80.00	100.00

At Saat - Rasta Chowk (Residential & Commercial Area)

Sr. No.	Date	So ₂ (in µg/m ³)	NO _x (in µg/m ³)	RSPM (in µg/m ³)
1	19-10-2018	20.85	30.65	413.50
2	28-10-2018	18.95	22.90	280.30

3	05-11-2018	15.10	32.75	268.30
4	13-11-2018	18.85	31.45	267.90
	Limit	80.00	80.00	100.00



At Akkalkot Road M.I.D.C. (Residential & Industrial Area)

Sr. No.	Date	So ₂ (in µg/m ³)	NO _x (in µg/m ³)	RSPM (in µg/m ³)
1	21-10-2018	15.75	25.50	317.90
2	01-11-2018	17.50	25.50	184.80
3	03-11-2018	18.10	37.90	212.60
4	11-11-2018	14.55	40.55	346.30
	Limit	120.00	120.00	150.00

It is seen from the above air quality results that SO₂ and NO_x levels were within the prescribed limits however; RSPM levels exceeded the limits during the monitoring period. The observed pollution load is attributable to the vehicular movement on National Highway No. 9 which passes through Solapur city.

The results of Ambient Air Quality at the following stations under NAAQM during the period Jan 2018 - April 2019. The results are as under

At W.I.T. Campus, Ashok Chowk, Solapur

Month	So ₂ (in µg/m ³)	NO _x (in µg/m ³)	RSPM (in µg/m ³)	SPM (in µg/m ³)
May 2018	17.25	41.25	151.12	383.62
June 2018	18.66	41.11	149.22	360.33
Limit	80.00	80.00	100.00	200.00

At Chitale Clinic, Saat Rasta, Solapur

Month	So ₂ (in µg/m ³)	NO _x (in µg/m ³)	RSPM (in µg/m ³)	SPM (in µg/m ³)
May 2018	18	42.22	153.44	372.66

June 2018	17.37	41.75	153.37	367.00
Limit	80.00	80.00	100.00	200.00

It is seen from the above AAQ monitoring results that SO₂ and NO_x levels are within the prescribed limits however, RSPM & SPM levels are exceeding the limits. The observed pollution load is attributed mainly due to the increased vehicular movement at the above locations in Solapur city.

II. Sources of air pollution in the City

It may be seen from the data on the AAQ in the foregoing pages that the major contributory sources of air pollution in Solapur city are mainly:

1. Vehicular Pollution
2. Industrial Pollution

1. Vehicular Pollution:

a] It is seen from the gathered data that the Air quality trend in Solapur city is disturbing. This is mainly because of heavy vehicular movement through Solapur

City, re-suspension of the dust on city Roads due to prevailing climatic conditions and bad patches of untarred / unconcretized roads in the city and the frequent dust storms. The traffic and transportation problems in Solapur city can be broadly attributable to the factors as under.

- i] A steep rise in number of vehicles especially the two wheelers.
- ii] Heterogeneous traffic conditions with limited road capacities

which make thesegregation of traffic very difficult

- iii] Absence of a ring road despite radial expansion of the city.
- iv] Insufficient road carriageway capacities in the congested area.
- v] Crowded intersections leading to increased air and noise pollution.
- vi] Various encumbrances on roads such as encroachments, of religious nature etc.
- vii] Limitations of DP roads to cater to the transport needs since vast stretches of developable lands in the DP do not have any plans for roadnetworking.
- viii] Absence of parking facilities at important locations leading to street parking ofthe vehicles
- ix] The inadequacy of footpaths, their diversions to other uses and joy-walkingleading to obstruction in the vehicular traffic.
- x] In addition to vehicular pollution, the area being draught prone, dry climaticconditions are always prevailing

Poor maintenance of tar roads in the city results into higher level of RSPM

- XI] Bad patches between the city roads and footpaths resulting into higher dustemissions.
- XII] Incidence of storm dust are frequently observed, resulting

into high RSPM and TSPM.

b) **Emissions Load Inventory from vehicles in Solapur city**

Vehicle Type	No. of vehicles	CO	NOx	SO ₂	HC	TSP	PM ₁₀	Total
Cars	6,204	1.750	0.200	0.00290	0.328	0.025	0.017	2.322
2 Wheelers	93,710	6.037	0.050	0.00969	3.210	0.150	0.117	9.573
Rickshaws	5,547	5.045	0.135	0.00648	3.315	0.162	0.126	8.789
Taxis	114	0.188	0.017	0.00013	0.034	0.002	0.001	0.242
Buses	302	0.420	0.444	0.04130	0.082	0.065	0.050	1.082
Trucks	4,074	1.800	2.283	0.17380	0.288	0.331	0.261	5.138
Total	109,951	15.240	3.129	0.23430	7.257	0.735	0.572	27.146

(The values of the pollutants are in tons/ day)

2. Industrial Pollution:

The industrial activity in Solapur city and surrounding areas is mostly confined to small scale sector and there are a very few medium and large scale industries located in Solapur city. The inventory of the industries prepared by MPCB, it is observed that there are total 633 industries in Solapur city. Out of this 7 are large scale, 4 are medium scale and 622 are small scale industries, respectively. Besides, as per the categorization of the industries there are 157 industries of the Red category (highly polluting), 74 Orange category (medium polluting) and 402 Green category industries (Non-polluting).

III. Status of Public Health

There is one medical collage and total 170 hospitals in Solapur city. Shri Chhatrapati Shivaji Medical College and General Hospital, Solapur has conducted a survey on the impacts of air pollution on the health of population residing within

Solapur city limits. The results of this survey are given in the table below.

Number of patients with respiratory tract infections admitted in SCSM General Hospital, Solapur (from 2013 to 2019) is as below.

Code No	Diseases	2013	2014	2015	2016	2017	2018	2019
009	Pulmonary Tuberculosis	770	675	754	703	759	856	210
045	Malignant neoplasm of lip, oral cavity & pharynx	002	056	044	046	048	47	--
111	All other diseases of the upper respiratory tract	219	191	239	139	165	191	--
112	Acute bronchitis & bronchiolitis	023	054	121	082	096	136	--
113	Pneumonia	449	351	423	325	315	329	119
114	Influenza	--	--	--	--	--	--	--
115	Bronchitis, chronic & unspecified emphysema & asthma	410	426	500	446	315	291	--
116	Pleurisy	001	009	004	--	--	--	--
117	All other diseases of the respiratory system	042	086	116	101	099	109	60
	Total	1916	1848	2201	1842	1797	1959	389

The above figures on the health status of the local population are based on the secondary information contributed by the District and Municipal Health Authorities within Solapur municipal limits. The trends seen from the above information does not clearly indicate that the reported respiratory diseases are not solely due to the existing air quality in Solapur.

IV. Details with Regard to Different

Sources of Pollution A Vehicles:

Solapur city has a Sub-Regional Transport Office which keeps record of the vehicle registrations in the city.

1. Number & Percentage share of vehicles:

The information provided by the SRTO Solapur is given in the table below shows the numbers, different categories and their percentage share in the total number of vehicles in Solapur the city in the years 2017, 2018 and 2019 respectively.

Registration of vehicles with RTO Solapur

Sr. No.	Type of Vehicles	2017	2018	2019
1	2 Wheelers	1,62,371	1,79,715	1,98,118
2	Auto Rickshaws	6,403	6,978	7,498
3	Light Motor Vehicles	16,042	17,895	18,967
4	Heavy Vehicles	28,387	30,255	31,594
	TOTAL	2,13,203	2,34,843	2,56,177

It is seen from the above Table that the number of two wheelers has steeply increased in Solapur city which may be partly responsible for the deterioration of the air quality in the city.

The number of other vehicles in Solapur has also increased during last ten years however the road development has not kept pace with these increased vehicles. Besides, the existing roads are having narrow carriageways and hence not capable of taking up this increased traffic volume. This results in the speed reduction of the vehicles and consequent increase in the pollution load. The survey reveals that the vehicles have to compulsorily run at a low speed during the peak traffic hours due to traffic congestion. The heavy traffic density also aids in further aggravating the already increased air pollution in the city.

The Two wheelers and Auto Rickshaws have shown a steep rise in the last three years as per the RTO registration. The table below shows the percentage contribution of air pollution made by the different categories of vehicles in Solapur city.

Sr. No.	Type of Vehicles	% Contribution
1	2 Wheelers	77.33%
2	Auto Rickshaws	2.93%
3	Light Motor Vehicles	7.40%
4	Heavy Vehicles	12.33%

A. Industry:

Solapur is an industrial hub and houses several industries as mentioned earlier in this report. The category wise status of the industries in Solapur city is given in the table below.

Type	Red	Orange	Green	Total
Large Scale	4	2	1	7
Medium Scale	3	-	1	4
Small Scale	150	72	400	622
Total	157	74	402	633

The large and medium scale industries are very few. These industries are not having high Air Pollution Potential (HAPPI) and they are complying with the conditions of the consents granted by MPCB and have taken measures for emission control. The industrial source is not major contributor to the air emissions in Solapur. However, efforts are continued by MPCB to regularly monitor the emissions from the industries in Solapur. Due to power staggering and load shedding effected by MSEB in the state of Maharashtra, the use of DG sets in Solapur city and in the industries has increased substantially. This has become the another source of air emissions in Solapur city.

There are about 29 units (industrial as well as commercial) in the Solapur city who are using the D.G.Sets as alternative source of power. MPCB has already imposed very elaborate conditions for controlling the pollution from the usage of D.G. sets in accordance with E (P) Rules and has been monitoring the emissions from this source.

Domestic Pollution:

The rapid urbanization and industrialization in and around Solapur city has attracted many migrants from various parts of the state to Solapur. This has resulted in expansion of the settlements in Solapur city. Since the first census of independent India & then onwards up to 1991, the population of the city has shown a constant and gradual increase ranging between 15% to 20%. While the city population was 338000 in 1951 (The first census of independent India), the figures were 334000 (1961) 388000 in (1971) 514000 in (1981) & 621000 in (1991) respectively. However, the census of 2001 reveals that the city population has reached

phenomenal figure of 873047 indicating a steep rise in the population of Solapur city as compared to earlier census figures starting from 1951.

Out of the total population of 873037, 444885 are male and 428152 are female respectively.

High property prices has resulted in growth of slums and shanties on the unprotected land in the city. Nearly 25% of the city population is dwelling in the slums. The city has 220 slum pockets out of which 158 are declared and 62 are undeclared. The total populations in the slums, comprising of both declared and undeclared, is 2, 18,905. There is no systemic survey of the slum pockets in the city done by any agency to identify the infrastructural needs and basic civic amenities of the slum pockets and therefore such a study is necessary.

The majority of the household in the organized housing sectors are found to rely on non-polluting liquefied petroleum gas as a fuel for cooking and other domestic needs. However, slum dwellers cannot afford LPG and it is neither readily available to them. Therefore, the slum dwellers mostly depend on any cheap fuel that becomes readily available to them such as wood, bagasse, saw dust, waste paper / boards or any sundry waste. Since the slum dwellers use any kind of available fuel, it contributes to the air pollution from the household sources. Therefore, there is an urgent need to study and quantify the domestic fuel requirements in the slum areas. A more accurate quantification of fuel needs and thrust on the improvement will be able to reduce the air pollution load from this sector.

Not allowing the development of new slum pockets within the expanded Solapur municipal limits will be a better option, however, it still may be a daunting task to prevent the slum proliferation. A precautionary approach and vigilance by SMC and the Revenue Authorities may be necessary to safeguard the vacant areas within the city from encroachment by slum dwellers

Conclusion

It is seen that the reason of Air Pollution in Solapur city is heavy vehicular traffic, floating dust, Lack of public transport, bad road condition etc. on saat rasta and ashok chowk the air pollution is mainly due to the increased vehicular movement. Besides this the number of two wheelers has steeply increased in city which also responsible for the deteriorates of the air quality in Solapur city. The heavy traffic density also aids in further aggravating the already increased air pollution in the city.

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Union Education Society's
MAHILA MAHAVIDYALAYA
Siddheshwar Peth Solapur -413001

A Project Report on
Dust Pollution and its Impact in Solapur City

Submitted by

Miss:

Nadaf Tahyra Md. Hanif

Under the guidance of

Dr. Z. A. Nayab

Mr. I. B. Shaikh

Year of Submission

Year 2021-2022

P.A.H. Solapur University, Solapur



Union Education Society's
MAHILA MAHAVIDYALAYA
Siddheshwar Peth, Solapur-413001

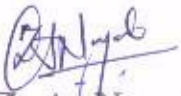
CERTIFICATE

ENVIRONMENTAL STUDIES

Exam No: _____

Date: 30/05/2022

This is to certify that Miss. Nadaf Tahura Md. Hanif
has satisfactorily carried out the required field/ project work by the
P.A.H. Solapur University, Solapur. For the B. A. II course in
Environmental Studies and this field/ project work report represents
his/her confide work in the year 2021-2022.


Dr. Z. A. Nayab
Examiner




Dr. F.M. Shaikh
In-charge Principal
U. E. S. Mahila Mahavidyalaya,
Solapur.

P.A.H. Solapur University, Solapur



Union Education Society's Mahila Mahavidyalaya, Solapur

Project on Dust Pollution and its Impact in Solapur City

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1	Certificate
2	Declaration of student
3	Declaration of Supervisor
4	Acknowledgment
5	Introduction
6	Statistical Report
7	Conclusion
8	Reference

Declaration of the Student

I Nadaf Tahura Md. Hanif
Student of B.A. II bearing Roll No 2028 is hereby
declared that the project of environmental studies entitled
“Dust Pollution and Its Impact in Solapur City” is the
Original Work and not submitted anywhere for the
publication.

Date : 30/05/2022

Place : Solapur

Nadaf Tahura
Signature of the
Student

Declaration of the Supervisor

I, the undersigned supervisor for the environmental studies project hereby declared that the project of Nadaf Tahura Md. Hanif Student of B.A. II has carried out the field project entitled **“Dust Pollution and Its Impact in Solapur City”** is for the partial fulfilment of the certificate course in environmental studies proposed by P.A. H. Solapur University, Solapur is the original work and not submitted elsewhere for the publication.

Date : 30/05/22

Place : Solapur

Dr. Z. A. Nayab



Union Education Society's
Mahila Mahavidyalaya, Solapur

Project on "Dust Pollution and Its Impact in Solapur City"

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4	Vyankatapure Muskan Umer Sharif
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6	Shaikh Niha MEhvish Sabir
7	Pathan Umera Md. Yusuf
8	Mujawar Asifa Allauddin
9	Moholkar Muskan Sabir
10	Shaikh Zakiya Dildar
11	Mulla Tanjila Firoz

ACKNOWLEDGEMENT

I would like to express my special thanks of gratitude to University of P. A. H. Solapur University, Solapur. my college Union Education Society's Mahila Mahavidyalaya, Solapur. For giving me the opportunity to work on this wonderful project on Dust Pollution & its Impact in Solapur City.

We are feel proud to present our field visit project in environmental studies on the topic of Dust Pollution & its Impact in Solapur City. the subject environmental studies are made compulsory at B.A II. The task of competing this project successful with the grate efforts from several Individuals. this projects would not have been feasible without proper rigorous guidance of environmental teachers Dr. Z. A. Nayab and Mr. Imam Shaikh. Who guided me through-out this project in every possible way and we are also thankful to our college I/C. Principal Dr. F.M. Shaikh for Extending their cooperation and support in making this task easy. Then we are like to thanks our parents and friend who have helped we their valuable suggestion and guidance has been very helpful in various Phase of the completion of the project. At last we are end up by thinking all who helped me ion finalizing the project within the limited timeframe

Introduction:

Solapur city is an important district head quarter in western Maharashtra, and is famous for its Bed Sheet weaving industry (Chadder), Handlooms, Power looms and Beedi making Industries. The textile products, especially the chadders and handlooms, manufactured in Solapur have a great demand in countries abroad and therefore those are exported to several countries. Solapur district is one of the fastest growing city in the Maharashtra state, considerably in respect of industries, employment generation, real estate and the amount invested in plant & Machinery due to direct road and rail connectivity to city like Mumbai, Bangalore, Hyderabad, Pune etc. In the order dated 14th August, 2003, Hon'ble Supreme Court had observed that in Solapur city SPM / RSPM levels are alarming and further directed the Maharashtra state to draw a plan for lowering the RSPM levels in the Solapur city. Accordingly, Maharashtra Pollution Control Board (MPCB) had prepared Action Plan for Solapur and submitted it to the Ministry of Environment and Forests Govt. of India on 5th December 2003. The Revised Action Plan for Control of Air Pollution in Solapur, 2004 which was submitted to Ministry of Environment and Forests Govt. of India by Maharashtra Pollution Control Board was based on the Ambient Air Quality monitoring four stations namely Ashok Chowk, Saat Rasta, Shivaji Chowk, Near M.I.D.C. Akkalkot Road (New). For year 2000 to 2003, this action plan concluded that RSPM & SPM levels are exceeding the limits and observed pollution load was attributed in Solapur city.

Health Effects of Respirable and Fine Suspended Particles (RSPM/PM10 and SPM/PM2.5) Respirable Suspended Particulates Matters (RSPM) are Particulates with aerodynamic diameter less than or equal to 10 micrometers, thus also named as PM10, can get deep into the lungs and cause a broad range of health effects, in particular, respiratory and cardiovascular illnesses, including Increasing respiratory symptoms, such as irritation of the air-ways, coughing, or difficulty in breathing; Decreasing lung function; Aggravation of asthma; Development of chronic

bronchitis; Adverse effects on the cardiovascular system; Premature death in people with heart or lung disease. People with heart or lung disease, children and the elderly are most likely to be affected by particulate pollution. Recent medical researches show that the risk for various health impacts increases with exposure and there is little evidence to suggest a threshold below which no adverse health effects would be anticipated. It has also been shown that the health risks would be higher for those particles with particle sizes of 2.5 microns or less, which are commonly referred to as fine Suspended Particles Matters (SPM) or PM.

Statistical Results:

For the purpose to know the present scenario of dust pollution in Solapur city we collected the data of SPM / RSPM from MPCB site, also compared with standard values given by National Ambient Air Quality Standards as mentioned below:

Particles Matters	Standard Values [$\mu\text{g}/\text{m}^3$]	
	Industrial Areas	Residential Areas
RSPM	150	100
SPM	500	200

The monthly average values of RSPM and SPM are calculated for every month for the year 2014 to 2019 and compared with standard values

Table 1.1: Monthly Average RSPM $\mu\text{g}/\text{m}^3$ Values in Solapur City [Municipal Corporation Premises]

Year	2014	2015	2016	2017	2018	2019
Jan	156	162.83	153.5	119.81	154.43	157.96
Feb	159.7	156.14	151.79	114.21	133.56	188.93
Mar	132.35	147.07	169.30	110.57	117.07	107.93
Apr	97.27	122.72	134.92	97.58	116.78	116.23
May	77.42	113.1	101.84	90.06	87.9	90.68
June	60.04	73.53	70	58.03	67.11	59.79
Jul	71.54	60.68	71.41	43.73	41.89	57.24
Aug	74.86	64.48	60.70	46.68	47.29	46.36
Sept	79.54	81.66	76.27	52.28	68.93	59.28
Oct	136.43	121.9	102.42	80.37	107.75	110.97
Nov	124.81	129.47	141.4	130.13	139.69	114.49
Dec	114	151.52	157.14	152.74	173.9	125.48

Graph 1.1: Monthly Average RSPM $\mu\text{g}/\text{m}^3$ Values in Solapur City [Municipal Corporation Premises]

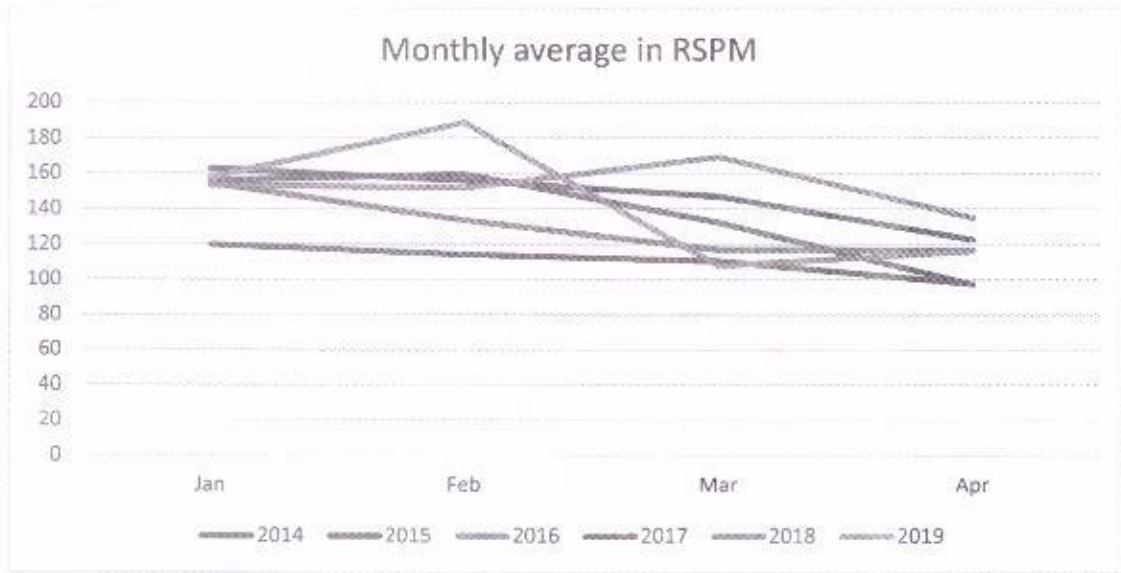


Table 1.2: Monthly Average RSPM $\mu\text{g}/\text{m}^3$ values in Solapur City [WIT Campus AshokChawk, Solapur]

Year	2014	2015	2016	2017	2018	2019
Jan	97.11	86.38	68.00	11.25	77.47	77.00
Feb	103.50	101.25	115.50	83.75	80.00	74.75
Mar	91.67	87.67	99.56	77.75	81.22	76.11
Apr	94.44	70.50	94.33	84.44	81.00	74.33
May	85.75	85.22	72.56	95.44	8.78	73.25
June	86.56	77.67	81.63	79.25	80.63	71.33
Jul	67.33	79.30	71.33	80.78	74.00	75.67
Aug	62.13	63.11	67.22	72.00	75.67	73.33
Sept	60.90	54.11	75.38	82.78	75.67	68.14
Oct	69.00	67.63	73.78	87.00	77.13	75.44
Nov	73.25	64.63	92.89	89.89	75.00	87.00
Dec	68.44	73.11	72.33	71.35	82.33	92.33

• Two days in a week monitoring.

Graph 1.2: Monthly Average RSPM $\mu\text{g}/\text{m}^3$ values in Solapur City [WIT Campus Ashok Chowk, Solapur]

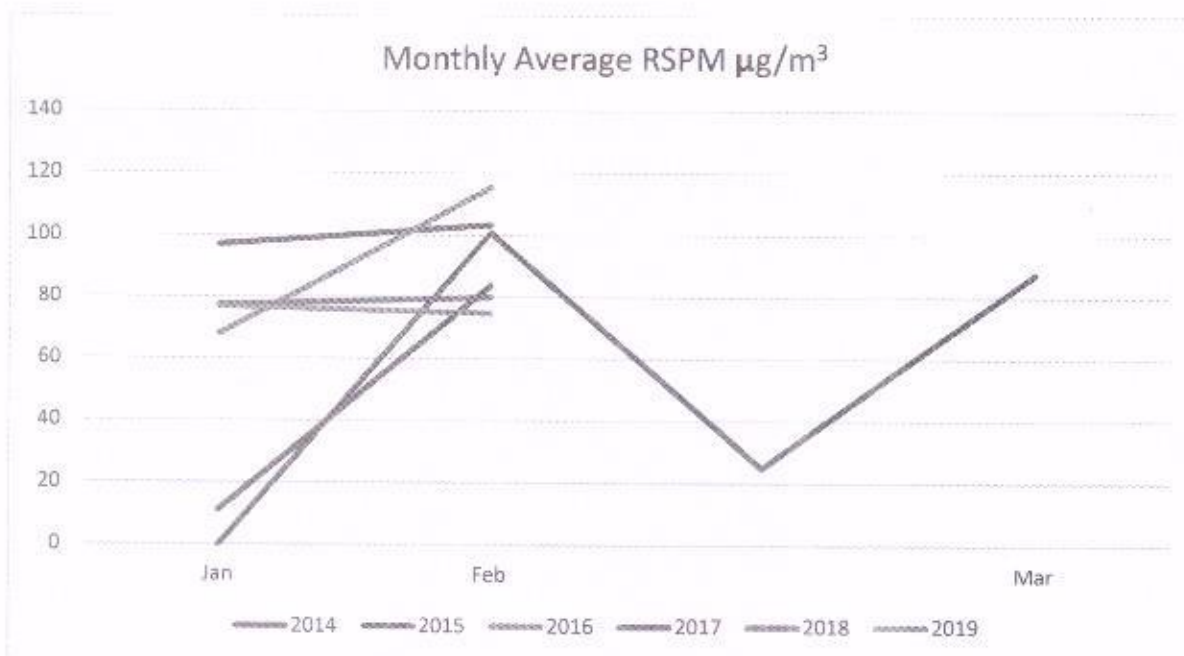


Table 1.3: Monthly Average RSPM $\mu\text{g}/\text{m}^3$ values in Solapur City [Chitale Clinic, SaatRasta]

- Two days in a week monitoring.

Year	2014	2015	2016	2017	2018	2019
Jan	124.25	105.11	91.67	83.33	92.89	79.33
Feb	107.11	114.63	97.88	87.63	77.38	76.50
Mar	97.00	82.67	95.00	85.67	80.63	75.11
Apr	91.58	78.00	89.30	86.56	83.50	77.75
May	75.60	83.88	79.56	88.67	66.33	73.63
June	73.88	86.13	71.33	82.50	85.89	70.78
Jul	86.25	72.89	65.22	76.44	75.25	74.78
Aug	62.40	59.25	76.58	16.88	73.11	71.50
Sept	50.88	66.00	83.33	83.56	74.67	68.88
Oct	63.33	62.44	95.89	82.89	77.63	72.22
Nov	74.44	66.11	75.00	72.89	76.56	76.44
Dec	66.13	68.78	72.89	88.67	76.44	83.88

Graph 1.3: Monthly average RSPM $\mu\text{g}/\text{m}^3$ values in Solapur City [Chitale Clinic, SaatRasta]

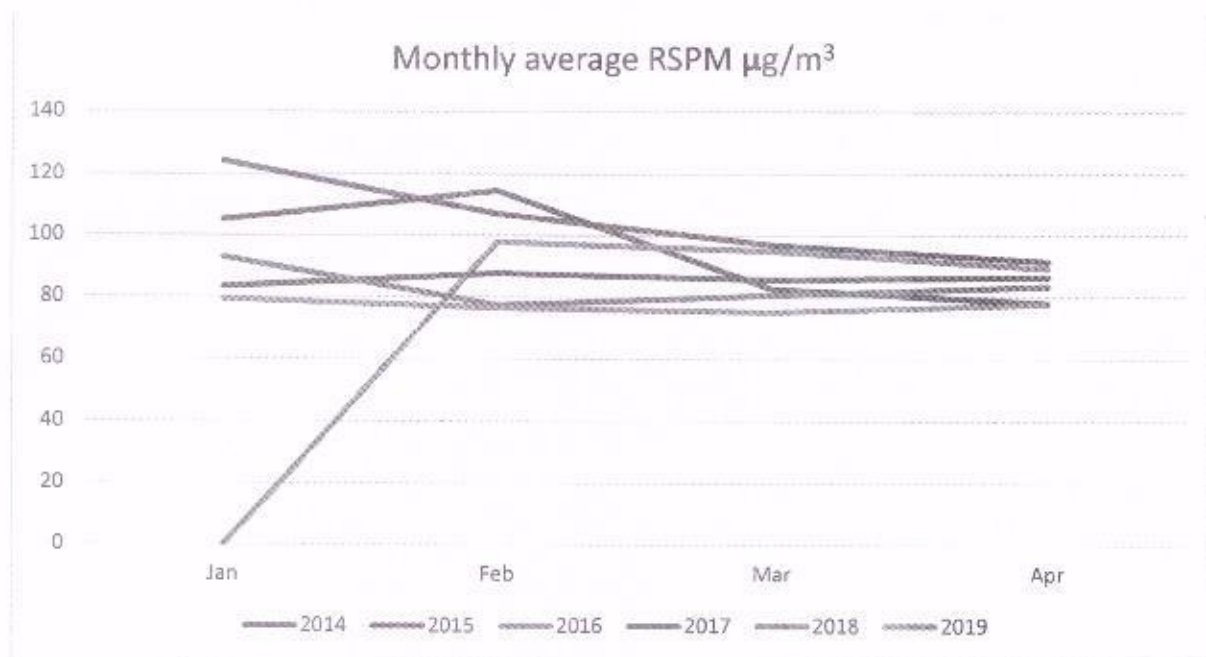


Table 2.1: Monthly Average SPM $\mu\text{g}/\text{m}^3$ values in Solapur City [WIT Campus AshokChowk, Solapur]

Year	2014	2015	2016	2017	2018	2019
Jan	276.89	268.38	297.22	201.56	216.11	296.33
Feb	296.38	243.75	238.75	220.38	211.88	193.50
Mar	276.11	225.22	218.56	233.25	217.00	198.1
Apr	275.00	204.38	214.67	225.44	213.89	200.33
May	257.00	214.11	191.89	240.78	210.78	188.63
June	223.67	202.33	202.63	208.88	211.13	188.00
Jul	230.89	208.50	194.00	209.78	205.11	298.33
Aug	221.25	177.67	182.11	200.78	204.67	199.33
Sept	204.00	175.56	199.63	209.67	198.22	189.14
Oct	218.38	190.00	203.11	227.00	199.63	196.56
Nov	239.38	179.13	239.67	225.00	195.22	208.50
Dec	238.44	206.56	195.33	176.40	206.56	237.33

• Two days in a week monitoring.

Graph 2.1: Monthly Average SPM $\mu\text{g}/\text{m}^3$ values in Solapur City [WIT Campus AshokChowk, Solapur]

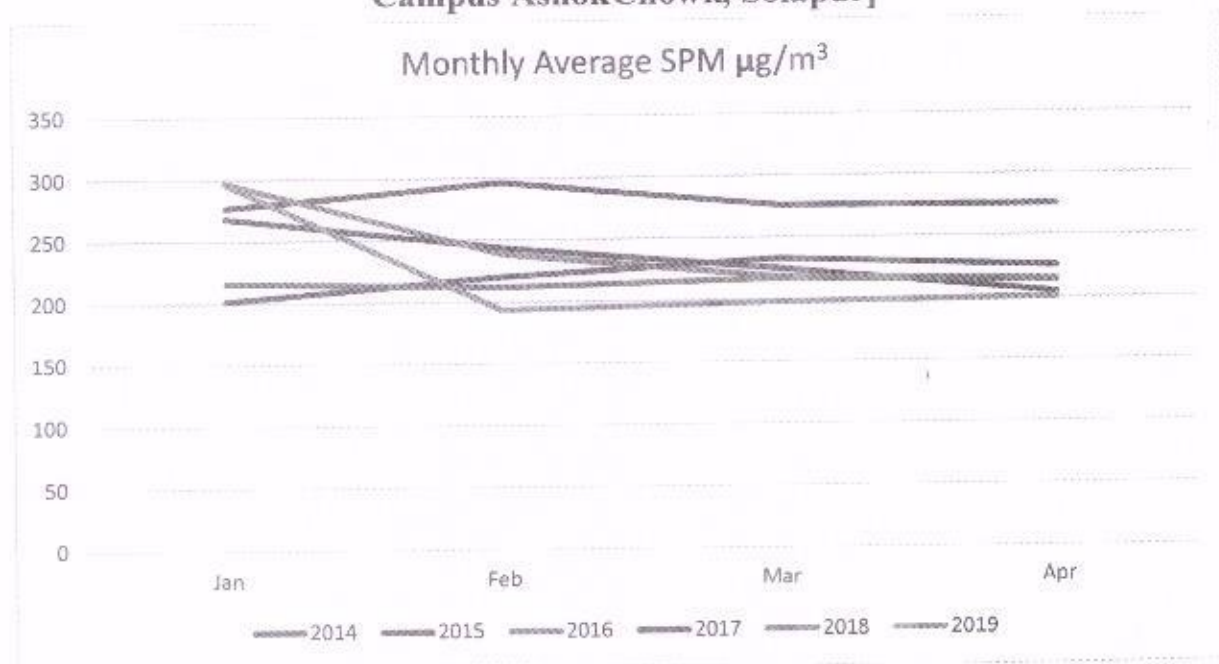
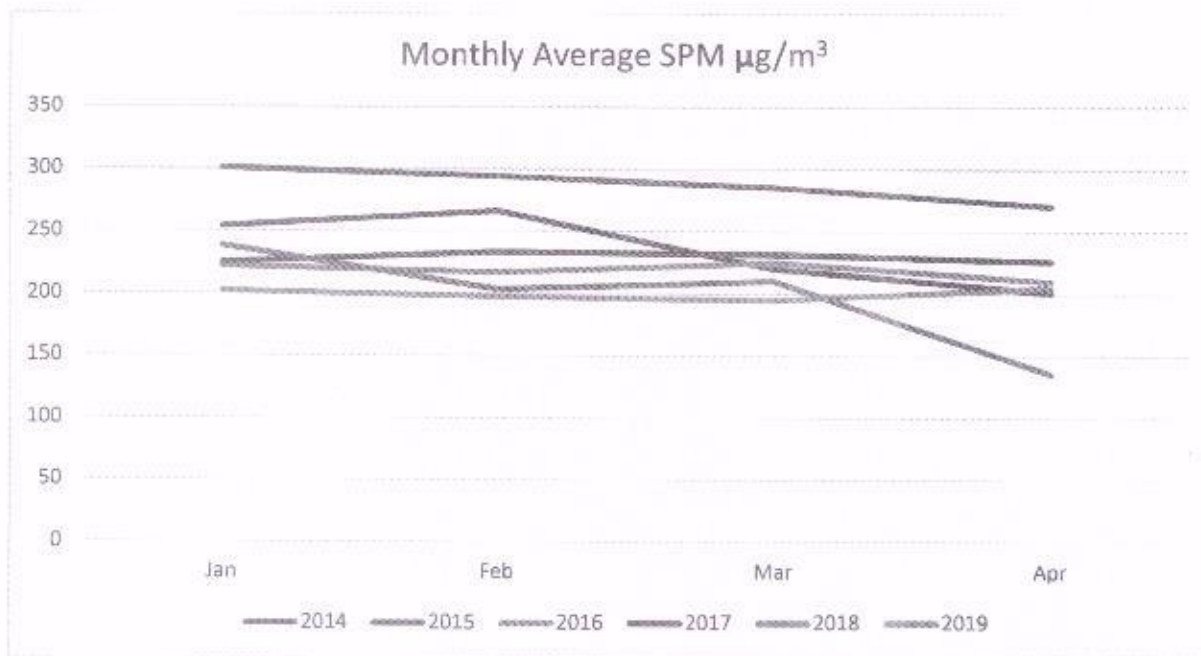


Table 2.2: Monthly Average SPM $\mu\text{g}/\text{m}^3$ values in Solapur City [Chitale Clinic, Saat Rasta]

Year	2014	2015	2016	2017	2018	2019
Jan	301.13	254.33	222.44	225.33	238.78	202.22
Feb	294.22	266.50	217.25	233.88	203.88	197.88
Mar	285.56	220.22	225.33	232.00	210.38	194.89
Apr	270.38	201.00	210.00	226.22	135.75	205.25
May	241.80	214.75	202.44	222.00	204.67	191.33
June	229.50	215.00	199.56	211.00	218.67	187.00
Jul	227.75	197.56	182.68	208.00	206.50	196.89
Aug	209.00	193.13	199.50	25.75	196.44	191.38
Sept	199.88	188.33	209.11	215.56	196.56	193.50
Oct	203.56	182.56	246.89	213.68	202.13	190.89
Nov	249.44	182.78	200.50	246.89	202.56	193.13
Dec	236.25	199.89	193.13	199.56	209.67	246.89

• Two days in a week monitoring.

Graph 2.2: Monthly Average SPM $\mu\text{g}/\text{m}^3$ values in Solapur City [Chitale Clinic, SaatRasta]



It is seen from the above results that the RSPM values in various center of Solapur city is within control except **Municipal Corporation Premises, while SPM** values are significantly exceeding the prescribed standard levels at every across the Solapur city. As it is well known, SPM is more hazardous than RSPM on human health. It is evidential that Solapur population facing the serious problem of dust pollution from 2014. Unfortunately, the results presented in above table are just based on the data collected from only three stations (i.e. SMC, WIT, and Chitale Hospital), which does not reflects the real scenario of dust pollution in Solapur city. In real time it is observed that there is very high level of dust pollution in market area such as Old Pune Nakka, Shivaji Chowk, Tilak Chowk, Madhala Maruti, Kontom Chowk, Kanna Chowk, NaviPeth, Park Chowk, Sattarphut Road, Railway Station, employment Chowk, Gurunanak Chowk, Hodgi Nakka, Demart-Julle Solapur etc. Hence it is very necessary to collect the data from at least from above locations of Solapur city on daily basis which can reflect present scenario of dust pollution in Solapur city.

Also in order to know the Impact of dust pollution on health of Solapur City population, the primary data was collected using the questionnaire method of sample size is 500. Questionnaire was designed so that data could be collected from the number of respondents from various areas (locations). From survey results it is observed that, 93.20% of Solapur citizens are agree that there is significantly high dust Pollution which can be source for serious problems to Solapur city environment. According to our survey 98% citizens of Solapur say that their health is affected due to the dust in the Solapur and they facing the various problems such as coughing, irritation of eyes, sneezing, fever, asthma attack etc.

CONCLUSION:

From above study results reflecting the status of Dust pollution and in impact on environment and hence health of Solapur city. The study results indicate that there is significant dust pollution in Solapur city. The amount dust (RSPM/SPM) particulates increasing year by year. The study results conclude that RSPM level at SMC center (TABLE 1.1) is found out of control from the months January to April and from October to December for every year. Most sensitive results were observed at Saat Rasta and WIT College where SPM level is out of control (TABLE 1.1 to 1.2) every month of years and this is scenario for last 09 years. The analysis results of Primary data reflect that due to the significant growth of dust pollution, Solapur City facing the various health problems such as coughing, irritation of eyes etc. and also the food corners were also significantly affected.

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P.A.H.Solapur University, Solapur



Union Education Society's

MAHILA MAHAVIDYALAYA

Siddheshwar Peth Solapur -413001

A Project Report on

**A Case Study on Munciple Solid Waste
Management of Solapur City**

Submitted by

Miss: Sayyed Nida Rizwan

Under the guidance of

Dr. Z. A. Nayab

Year of Submission

Year 2021-2022

Union Education Society's
MAHILA MAHAVIDYALAYA

Siddheshwar Peth, Solapur-413001

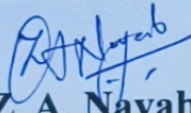
ENVIRONMENTAL STUDIES

CERTIFICATE

Exam No: _____

Date: 15/5/22

This is to certify that Miss. Sayyed Nida Rizwan
has satisfactorily carried out the required field/ project work by the P.A.H. Solapur
University. Solapur. For the B. A. II course in Environmental Studies and this field/
project work report represents his/her confide work in the year 2021-2022.


Dr. Z. A. Nayab

Examiner



Dr. F.M. Shaikh


I/C/Principal

 **I/c. Principal**

Declaration of the Student E. S. Mahila Mahavidyalaya
Solapur.

P.A.H. Solapur University, Solapur



Union Education Society's

Mahila Mahavidyalaya, Solapur

Project on A Case Study on Municipal Solid Waste Management of Solapur City

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Declaration of the Student

I Sayyed Nida Rizwan Student of B.A.

II bearing Roll No _____ is hereby declared that the project of environmental studies entitled **“A Case Study on Municipal Solid Waste Management of Solapur City”** is the Original Work and not submitted anywhere for the publication.

Date : 15 / 5 / 22

Place: Solapur.

Nida
Signature of the

Student

Declaration of the Supervisor

I, the undersigned supervisor for the environmental studies project hereby declared that the project of Sayyed Nida Rizwan Student of B.A. II has carried out the field project entitled “**A Case Study on Municipal Solid Waste Management, Solapur City**” is for the partial fulfilment of the certificate course in environmental studies proposed by P.A. H. Solapur University, Solapur is the original work and not submitted elsewhere for the publication.

Date : 15/5/22

Place: Solapur

Dr. Z. A. Nayab



Union Education Society's
Mahila Mahavidyalaya, Solapur

Project on A Case Study on Municipal Solid Waste
Management of Solapur City

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6	Bagban Fiza Raees
7	Banqari Nikhat Abdul Qadar
8	Bengloore Misbah Murtuza
9	Bepari Mubashrin Saeed Ahmed

A Report On

'A CASE STUDY ON SOLID WASTE MANAGEMENT IN SOLAPUR CITY'

ACKNOWLEDGEMENT

We create Environmental Awareness and controls its pollution. The subject Environmental Studies is made compulsory at B.A. II level. The task of completing this project became successful with the great efforts from several individuals.

We are grateful to the Supreme Court of India & P. A. H. Solapur University Solapur for introducing this subject and making it compulsory.

We are also thankful to:

- 1) Dr. F.M. Shaikh - Principal
- 2) Dr. Z. A. Nayab - Head Environmental Studies

For extending their co-operation and support in making this task easy.

Besides, we also thankful to Mr. Nagnath Birajdar (**Chief Conservancy Superintendent, Solapur Municipal Corporation**) and Mr. Anwar Shaikh (**Chief Sanitary Inspector, Solapur Municipal Corporation**) his workers for cooperation to completing this project successfully was indeed a pleasurable job for



Union Education Society's
Mahila Mahavidyalaya, Solapur

Project on A Case Study on Municipal Solid Waste
Management in Solapur City

Project Information

Place of Visit : Municipal Solid Waste Department, Solapur Municipal Corporation, Solapur
Address : Gurunanak Chowk, Solapur
Date of Visit : 25th March 2022
Time : 10:00 am

Officers Name:

1. Mr. Nagnath Birajdar : Chief Conservancy Superintendent, Solapur Municipal Corporation, Solapur
2. Mr. Anwar Shaikh : Chief Sanitary Inspector, Solapur Municipal Corporation, Solapur

INTRODUCTION

Waste management involves the collection, transportation, processing, recycling or disposal and monitoring of waste materials. It relates to refused materials produced by human activity, and is generally undertaken to reduce their effect on health, environment or aesthetics. Waste management is also carried out to recover resources from it. [1]. Waste management involves the use of solid, liquid, gaseous or radioactive substances with different methods and fields of expertise for each of these. [2]. The primary sources of municipal solid waste include waste generated in domestic, institutional, commercial activities, garden and municipal services. The domestic wastes are high in quantities and vary with time and season. It is generally comprised of organic and inorganic constituents. Now a day the quantity of organic waste is decreasing and the quality of metals, paper and plastics is increasing, indicating that there is growing preference for consumption of packaged food in recent years in modern society. [3]. The problem of municipal solid waste management in major cities has acquired alarming dimensions in India especially during the last decade. The present system of solid waste management in India, like any other developing country, is fraught with many inadequacies in terms of treatment methods and techniques. Illegal dumping is a major problem of significant concerns with regard to human health, safety, property values in particular and quality of life in general urban societies. In addition, it imposes a major economic burden on local government, which is typically responsible for cleaning up these open solid waste dump sites. A poor collection and disposal practice is another problem.

DATA COLLECTION

The data has been obtained from Municipal Corporation and other reliable sources.

OBJECTIVES-

To study the solid waste in Solapur city.

To study the solid waste of different zone in Solapur city.

To study the solid waste management in Solapur city.

4- To study the effects of solid waste.

DATA COLLECTION

The data has been obtained from Municipal Corporation and other reliable sources.

RESULTS AND DISCUSSION

Waste Generation –

Solapur city has in all 98 wards. These are divided in six Zones. Each zone consists of 16 to 17 wards. The existing solid waste management in Solapur city is scheduled zone wise [9]. Total waste generated in Solapur corporation area is 420MT/day. The total quantity of solid waste generation is 75,000 Kg/d of which 50% is biodegradable (dry), 25% recyclable 15.3%, green (wet) and 9.9% debris and silt. The solid waste in zone 4 has 53.33% biodegradable, 16.6% recyclable, 9.3% debris and silt, 20.6% green and vegetable waste. The green waste is maximum 21.4% in zone 6 due to vegetable markets as compared to other zones. More commercial activities involving us the use of plastic, glass, and paper, cardboard and metal sheets has constituted 24.6% waste as recyclable in zone 5. About 51% of the total solid waste collected from entire city is biodegradable processing the energy potential, if harnessed with anaerobic digestion, gasification or palletization technologies.

Table-1

Details of Solid Waste generation and its nature in each zone of the Solapur city

Sr. No	Zone No	Biodegradable (kg/d)	Recyclable (kg/d)	Debris (kg/d)	Green waste (kg/d)	Total (kg/d)
1	Zone-1	35000	20000	6000	9000	70000
2	Zone-2	37500	18750	7500	11500	75000
3	Zone-3	34000	15500	6200	9300	65000
4	Zone-4	40000	12500	7000	15500	75000
5	Zone-5	32000	16000	7000	10000	65000
6	Zone-6	34000	15000	6000	15000	70000
		212500	97750	39700	70050	420000

Institutional Arrangement

Table-2

Institutional manpower involved for solid waste collection and transportation in each zone of the Solapur City

Zone	Zone-1	Zone-2	Zone-3	Zone-4	Zone-5	Zone-6
Total no of supervisory staff	CSI-SI-9	CSI-I SI-9	CSI-I SI-9	CSI-I SI-9	CSI-I SI-9	CSI-I SI-9
Total No of Subordinate Staff	Jamadar-9 Bigari-92 Driver-9	Jamadar-1 Bigari-153 Driver-9	Jamadar-7 Bigari-54 Driver-10	Jamadar-4 Bigari-91 Driver-6	Jamadar-5 Bigari-107 Driver-6	Jamadar-4 Bigari-101 Driver-7
Total-736	111	183	81	111	128	122

Source – Solapur Municipal Corporation report – March -

Institutional Arrangement –

Zone 2 has wide spread and generates high quantity of solid waste, hence requires involvement of 183 personal in its management. Zone 3 is relatively dense and requires less manpower (81). The total work manpower involved in solid waste collection is 736 and is controlled by the department in charge of SWM unit.

Zone wise Details of collection System –

Table -3

Zone wise collection provision in Solapur City

Zone	Container	Square Bin	Round Bin	Open Square
Zone-1	46	82	16	98
Zone-2	23	64	54	86
Zone-3	35	117	27	93
Zone-4	21	36	44	78
Zone-5	16	100	87	97
Zone-6	46	93	42	101
Total	187	492	270	553

Source – Solapur Municipal Corporation

Prevention of littering and storage- To enable citizens to dispose waste, community bins are provided at reasonable distances depending on local requirement. But still in some areas the people throw the waste in open spaces. In Solapur there are 949 community bins and 553 open spaces where people throw the waste.

Waste Collection-

Table -4

Door to door solid waste collection in each zone and total labours involved

Zone	Solid waste generated(MTD)	Solid waste collected through hand carts through door to door collection (MTD)	Number of hand carts	Labour
Zone-1	73.00	1.6	8	8
Zone-2	75.00	1.2	6	6
Zone-3	67.00	2.4	12	12
Zone-4	75.00	2.0	10	10
Zone-5	65.00	3.2	16	16
Zone-6	70.00	1.6	8	8
Total	420.00	12.0	60	60

Source – Solapur Municipal Corporation

Generation of waste in Solapur is 420 MT /day out of which 347 MT/day is collected by the Corporation solid waste management authorities and 73 MT /day remain uncollected which constitutes about 20% of the waste generated that remains uncollected daily. It causes the environmental problems and affects human society many ways.

Disposal –

The waste is disposed daily to the landfill site located on Tuljapur road and Bhogaon. The disposal is dumped in landfill and open giving rise to contamination and the treatment process is not followed. Most of the waste dumped on open. The landfill sites are not well maintained, which create the threat of groundwater contamination due to leachate percolation. Open dumped garbage serves as breeding ground for disease vector such as flies, mosquitoes, cockroaches, and rats affect the other pests. The waste sometimes is taken by local farmers as fertilizer. Most of the waste remains laying down in open causing pollution with the odor and smell unless degrades naturally. A treatment plant of anaerobic digestion is in progress to extract energy from organic waste generating the biogas.

Impact on workers-

The information on health impacts was collected by personal interview. The general impacts are summarized in following lines. Workers, who are associated with the process solid waste management at different level, are vulnerable as far as health hazards are concerned due to constant and longtime direct

contact with solid waste. Workers get health problems like accidental injuries like individual cuts from scarp waste materials and they may also lead the poisoning from chemical wastes. Sometimes injuries caused by infected sharp metal waste. Further eye and skin infections due to exposure of infected dust are also reported in workers. Apart from these health problems, workers also face problems like asthma, T.B., and some respiratory diseases. Sweepers are suffering from back-ache due to regularly sweeping for a considerable distance per day. Those workers who are loading garbage into trucks are facing eye problems and it was observed in field work that their eyes were red in color. During waste loading processes dust particles spread in the surrounding air and it creates problem of air pollution. The impacts of solid waste on the workers can be minimized by following the guidelines and prescribed rules.

CONCLUSION

Solapur is one of the leading urban centers in India. The management and disposal of solid waste is not scientific and it creates serious environmental problems. In-sanitary method of waste disposal is also a serious health concern, particularly in rainy season. Lechite and high humid conditions increases the risk of health problems. The combined effects of uncollected wastes, poor handling and inadequate disposal safeguards for municipal wastes have always implications for public health leading to the chances of transmission of diseases, the spread of epidemics and loss of healthy urban and amenable environment.

Vote of Thanks



Thanks to giving us for valuable information
on Municipal Solid Waste Management
Project **Mr. Nagnath Birajdar Sir** and **Mr.
Anwar Shaikh Sir**

P.A.H.Solapur University, Solapur



Union Education Society's

MAHILA MAHAVIDYALAYA

Siddheshwar Peth Solapur -413001

A Project Report on

Deforestation

Submitted by

Miss: Shaikh Alfiya Shabbir

Under the guidance of

Dr. Z. A. Nayab

Year of Submission

Year 2021-2022

Union Education Society's
MAHILA MAHAVIDYALAYA

Siddheshwar Peth, Solapur-413001

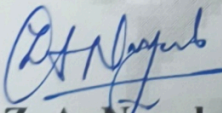
ENVIRONMENTAL STUDIES

CERTIFICATE

Exam No: _____

Date: 25/05/2022

This is to certify that Miss. Shaikh Alfiya Shabbir
has satisfactorily carried out the required field/ project work by the P.A.H. Solapur
University. Solapur. For the B. A. II course in Environmental Studies and this field/
project work report represents his/her confide work in the year 2021-2022.


Dr. Z. A. Nayab

Examiner

Dr. F.M. Shaikh

I/C/Principal


I/c. Principal
U. E. S. Mahila Mahavidyalaya,
Solapur.



Declaration of the Supervisor

I, the undersigned supervisor for the environmental studies project hereby declared that the project of Shahk Alfiya Shabbir Student of B.A. II has carried out the field project entitled "Deforestation" is for the partial fulfilment of the certificate course in environmental studies proposed by P.A. H. Solapur University, Solapur is the original work and not submitted elsewhere for the publication.

Date: 25/05/22

Place: Solapur

Dr. Z. A. Nayab

A Report On
'DEFORESTATION'
ACKNOWLEDGEMENT

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Union Education Society's
MAHILA MAHAVIDYALAYA,
SOLAPUR

Siddheshwar Peth Solapur -413001

A PROJECT REPORT
ON
Environmental Studies

Deforestation

Submitted by B.A - II Year Students

Sr. No	Name of the Students
1	Chhuri Saleha Shakeel
2	Dharurkar Iram Sabha A Wahid
3	Fulmami Madeeha Begum Saifan Sab
4	Hawaldar Summiyaa Abdul Gani
5	Hotagikar Fatima Bi Riyaz Ahmed
6	Shaikh Alfiya Shabbir
7	Shaikh Alisha Ishaque
8	Shaikh Azba Bi Ejaj
9	Shaikh Basirat Abdul Wahab

Under the guidance of
Mr. Imam Shaikh

Year of Submission
2021-2022

INDEX

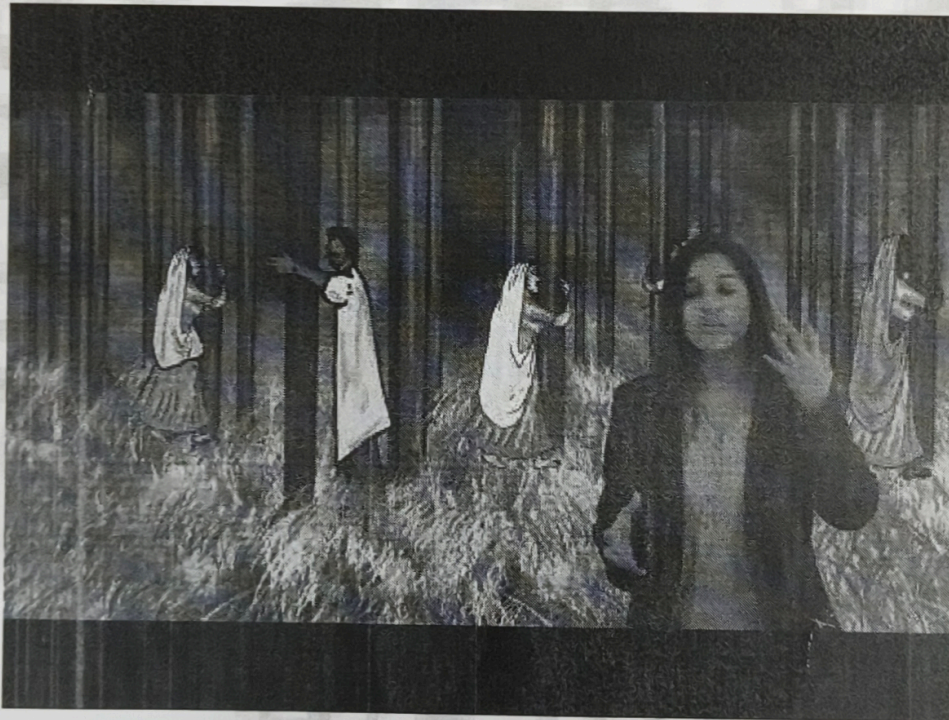
Sr. No	Title
1	Definition of Deforestation
2	The Data Behind Deforestation
3	Causes of Deforestation
4	Deforestation Affect on Environment
5	Effects of Deforestation
6	Control on Deforestation

Deforestation Process

1. Chemistry
2. Environmental Chemistry
3. Deforestation

What is Deforestation?

Deforestation can be defined as the large-scale removal of trees from forests (or other lands) for the facilitation of human activities. It is a serious environmental concern since it can result in the loss of biodiversity, damage to natural habitats, disturbances in the water cycle, and soil erosion. Deforestation is also a contributor to climate change and global warming.



Why are Forests Important?

- Forests combat climate change by absorbing greenhouse gases (such as carbon dioxide) and acting as a carbon storehouse.
- They are a source of oxygen, food, clean water, and medicine.

- They play a vital role in the water cycle – they work to add water to the atmosphere via the process of transpiration.
- Forests help mitigate the disastrous effects of floods by acting as a floodwater sink. Therefore, deforestation also increases the vulnerability of the landmass to certain natural calamities.
- The large mass of trees in forest areas combats soil erosion by providing mechanical support to the soil.
- Forests are home to over 50% of all known species on the planet. They account for over 80% of the land-based biodiversity. Globally, forests are home to approximately 30,00,00,000 human beings.
- They are also a source of raw material for many commercially important products such as paper, wood, and fabric.
- Approximately 1.6 billion jobs are forest-dependent. Forests also account for approximately 1% of the world's GDP (gross domestic product).

The Data behind Deforestation

- Forests cover approximately 31% of the total land surface of the Earth.
- Tropical forests harbour over half of all land-based animal and plant species in the world.
- Between the years 2000 and 2012, over 568 million acres of forest have been claimed by deforestation.
- Approximately 9 million acres of virgin tropical forest were cut down in the year 2018.
- The Amazon rainforest, which is the source of 20% of the world's oxygen supply, loses approximately 1.32 acres of its area **every minute** due to deforestation.

Causes of Deforestation

What are the Human Activities that Cause Deforestation?

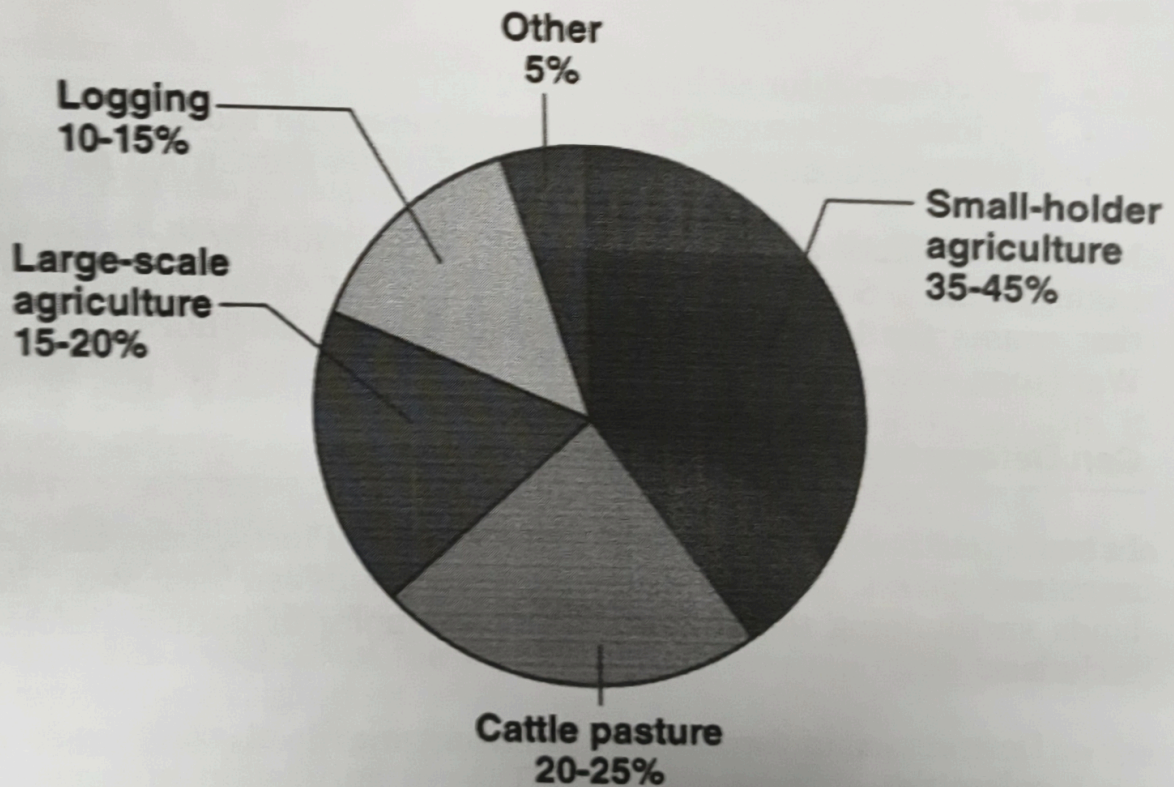
The primary anthropogenic activities (human activities) that contribute to deforestation include:

- Agriculture – small-scale and large-scale farming
- Logging – cutting of trees for use as raw material

- Mining and urban expansion – clearing of forest area for the construction of infrastructure.

According to the secretariat of the UNFCCC (United Nations Framework Convention on Climate Change), agriculture is the root cause of 80% of deforestation. Logging accounts for another 14% and the cutting of trees for use as wood fuel account for 5%. A pie-chart detailing the driving cause of the deforestation of tropical forests between the years 2000 and 2005 is provided below.

CAUSES OF TROPICAL DEFORESTATION



Slash-and-burn agriculture is one of the most destructive forms of agriculture that results in large-scale deforestation. It involves the burning of a large area of forest land and the subsequent plantation of crops in the same soil (which is now fertilized by the ashes of the burnt trees). Despite the practice being abandoned by several developed countries, it is still followed in some Southeast Asian countries.

What are the Secondary Factors that Contribute to Deforestation?

Illegal logging, which accounts for approximately 80% of all logging activities, involves the harvesting and sale of timber in violation of the law. Corrupt government officials may accept bribes from illegal loggers and offer access to protected forest areas in return. Therefore, corruption can be viewed as an indirect cause of deforestation.

Overpopulation and population growth increase the requirement for several resources such as food and infrastructure. These requirements can, directly or indirectly, result in deforestation. For example, a huge explosion in the population of a city can result in the deforestation of the surrounding area for:

- The construction of homes and other buildings.
- Agriculture (to meet the increased demand for food).
- The construction of roads, dams, and other infrastructure.

Military conflicts among humans can also result in deforestation. For example, the U.S. military made extensive use of Agent Orange (a defoliant that causes the leaves of trees to wither and fall off) during the Vietnam War (1955 – 1975).

Can Deforestation Occur due to Natural Causes?

In some relatively rare cases, the deforestation of forest areas can be traced to natural causes. For example, volcanic eruptions can burn away the forest lands surrounding the volcano. Other examples of natural deforestation include:

- Destruction of forests due to hurricanes, floods, and other natural calamities.
- Invasion of the forest ecosystem by parasites that destroy trees.
- Forest fires are sparked by lightning and other natural phenomena.

It is important to note that natural factors have a very small stake in the overall deforestation of the Earth's land surface (anthropogenic factors account for almost all of it).

How Does Deforestation Affect the Environment?

Increased Carbon Dioxide Levels in the Atmosphere

Forests serve as a carbon sink by absorbing atmospheric carbon dioxide during photosynthesis. Since carbon dioxide is a greenhouse gas, deforestation is a direct contributor to the greenhouse effect and (consequently) global warming.

Apart from being responsible for allowing gaseous carbon dioxide to linger in the atmosphere, deforestation also contributes to increased carbon dioxide emissions. The CO₂ emissions caused by deforestation account for approximately 12% of all anthropogenic carbon dioxide emissions.

Deforestation and the Water Cycle

- Since trees play a vital role in the water cycle, deforestation can contribute to significant disturbances in it.
- Trees and plants regulate the moisture content in the atmosphere via the process of transpiration (they absorb groundwater through their roots and release it into the atmosphere from their leaves and flowers).
- Also, their roots burrow into the soil and create macropores in it. These macropores allow water to penetrate deeper into the soil, thereby increasing the water-holding capacity of the soil.
- Dead plant material (such as leaves and twigs) that fall to the surface of the ground impart several properties to the soil, such as increased water-holding capacity.
- Approximately 30% of the world's freshwater supply can be sourced from tropical rainforests.
- Deforestation is accompanied by reduced humidity, owing to the absence of transpiring trees. The water content in the soil and the groundwater levels also decline in the cleared land.
- It is not uncommon for deforested land to experience extremely arid climates. In fact, deforestation has been linked to desertification and droughts.

Soil Erosion as a Consequence of Deforestation

Trees tend to bind their roots to the soil bedrock, thereby reinforcing the soil. Additionally, the plant litter generated by trees offers protection to the surface of the soil. In the absence of trees (as a consequence of deforestation), the soil becomes vulnerable to erosion.

Deforestation of sloped lands is often accompanied by landslides, which can be explained by the loss of soil adhesion due to the absence of trees. The extent of erosion is amplified by certain natural calamities such as floods (note that the plant litter found on forest surfaces helps reduce the amount of soil washed away).

Since soil erosion is a direct contributor to eutrophication, deforestation can be viewed as a contributor to other environmental concerns.

Effects of Deforestation on Biodiversity

Forests play host to a wide spectrum of wildlife. In fact, tropical rainforests are believed to be the most diverse ecosystems on the planet. Deforestation poses a grave threat to this biodiversity. On a local scale, the clearing of forest land can cause a decline in the population of certain species. On a global scale, however, deforestation can result in the extinction of several desirable species.

Approximately 50,000 species (consisting of plants, animals, and insects) are lost every year as a consequence of deforestation. Studies suggest that over 40% of all plant and animal species in the Southeast Asian region will undergo extinction over the course of the 21st century.

The implications of large-scale biodiversity loss are difficult to predict, but it is highly probable that it would have an adverse effect on the food web. Also, the extinction of one species may play a leading role in the extinction of another via the phenomenon of co-extinction.

Other Effects of Deforestation

How Does Deforestation Affect the Economy?

Deforestation facilitates the generation of raw materials for a wide range of industries. Examples include the agriculture industry, the wood industry, and the construction industry.

However, the overexploitation of wood and timber can have a negative impact on the economy. The short-term economic gains made from deforestation are accompanied by reduced long-term productivity.

For example, overenthusiastic timber harvesting from a forest area may increase the overall output temporarily, but the declining forest area will eventually cause the harvest to decline. The overall forest output is greatly reduced by such practices.

According to some reports, the global GDP may see a 7% decline by the year 2050 due to deforestation and other factors.

Therefore, a sustainable approach to the usage of forest resources is ideal for the economy.

Deforestation and Human Health

Deforestation can, directly or indirectly, provide a channel for the propagation of many infectious diseases. Since deforestation is often accompanied by the loss of indigenous species, it is not uncommon for new species to flourish in deforested lands.

In Malaysia, the geographic shift of the fruit bat population (as a consequence of deforestation) facilitated the transmission of the Nipah virus. Fruit bats, which are known to be vectors of the disease, lost their natural habitat due to deforestation and started feeding in the orchards surrounding habited areas. Through proximity, the Nipah virus spread from fruit bats to pigs, and then to humans.

Increased soil erosion (due to deforestation) can result in the formation of pools of stagnant water. These pools serve as breeding grounds for mosquitoes, which are vectors of several deadly diseases such as malaria and yellow fever. Some theories also suggest that deforestation has contributed to the propagation of the human immunodeficiency virus (HIV).

How can Deforestation Be Controlled?

Role of Governments and other Administrative Authorities

The following strategies can be implemented by governments to combat deforestation:

- Implementation of security measures and strict laws to prevent illegal logging.
- Increasing the count and range of forests under government protection.
- Carefully planning the construction of infrastructure (roads, dams, etc.) in order to minimize the loss of forest area.
- Investing in new technologies in the agricultural industry (such as hydroponics) and helping farmers implement eco-friendly agricultural practices (such as cyclic agriculture).
- Optimizing the management of forests by banning inefficient agricultural practices (such as slash-and-burn agriculture).
- Facilitating the production and use of wood alternatives to reduce the demand for timber. For example, bamboo can serve as an alternative to wood fuel.
- Launching new reforestation campaigns to restore deforested lands.
- Investing in forest plantations – forests planted with high yielding trees can offer 5 – 10 times the output (per hectare) of a natural forest.

Role of Individuals

Every human on the planet shares the responsibility of preserving its resources (for other humans, other species, and for future generations). An individual can contribute to the prevention of deforestation by implementing the 3R (Reduce, Reuse, and Recycle) principle in their daily lives.

Reduce – Reducing the amount of paper consumed by using alternatives wherever possible.

Reuse – Avoid use-and-throw products to prevent wastage.

Recycle – Diligently recycle all used wood and paper products.

Individuals can also combat deforestation by spreading awareness about its negative consequences and participating in tree-planting campaigns.

To learn more about deforestation and other important environmental concerns (such as soil pollution), register with BYJU'S and download the mobile application on your smartphone.

What are the key causes of deforestation?

One of the leading causes of deforestation is agriculture and cattle grazing. Forest land is frequently cleared and transformed into agricultural land in order to keep up with the ever-increasing demand for food (which can, in turn, be linked to overpopulation). The four commodities that are majorly responsible for tropical deforestation include palm oil, timber, soy, and beef. Generation of grazing land for cattle is another leading cause of deforestation.

What are the environmental effects of deforestation?

One of the most important negative consequences of deforestation is global warming and climate change. Over 20% of the world's greenhouse gas emissions can be sourced from the deforestation of tropical rainforests. Since the roots of trees provide support to the surrounding soil, deforestation also contributes to soil erosion (the removal of trees makes the soil vulnerable to erosion).

How can deforestation affect the water cycle?

Trees are known to absorb groundwater through their roots and subsequently release it into the atmosphere via the process of transpiration. Thus, trees play a vital role in the water cycle by regulating the atmospheric water vapour levels and also by providing a platform for water to enter the atmosphere from below-ground levels.

