



ENVIS Newsletter



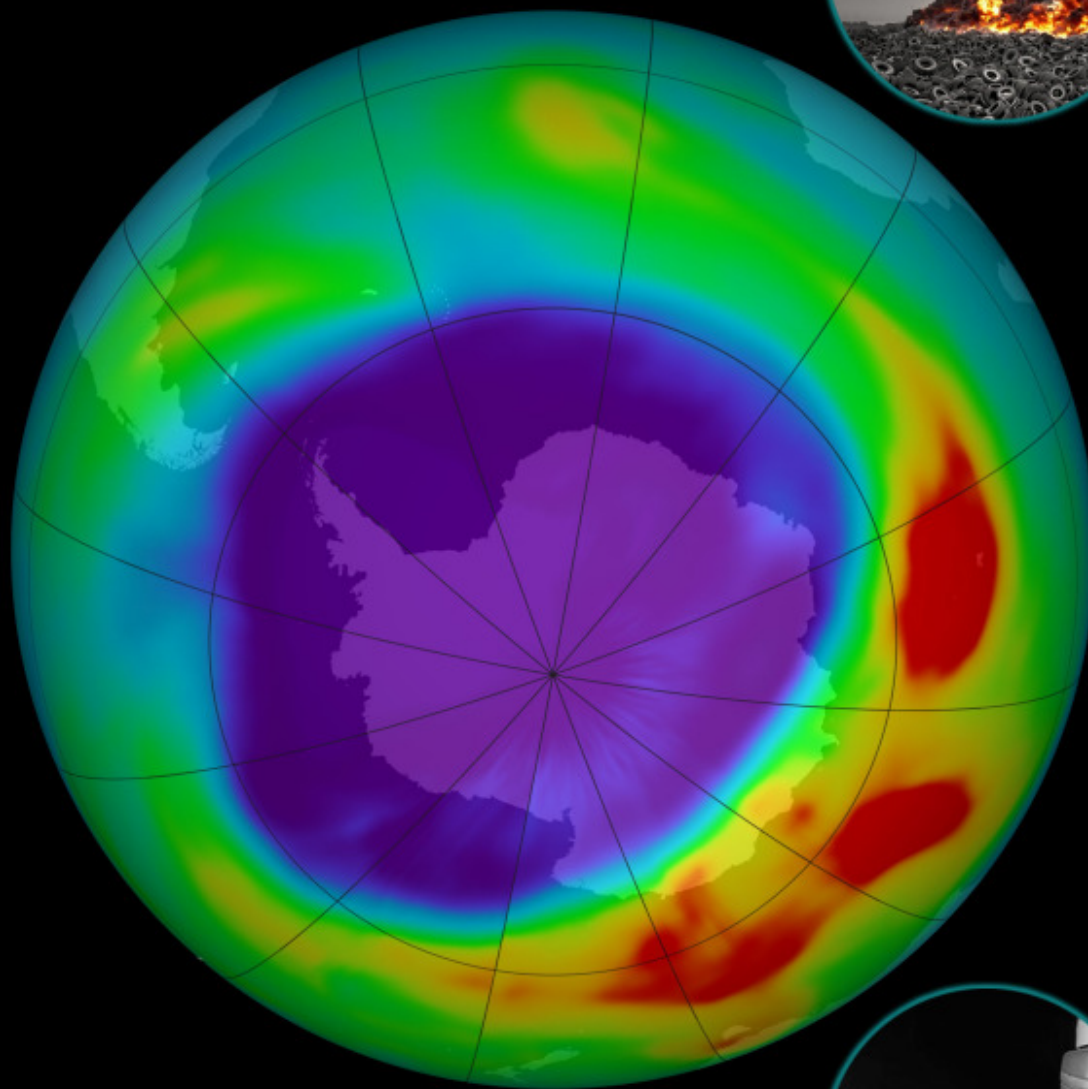
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OZONE HOLE



“Ozone Layer Protection:
The Mission Goes On”

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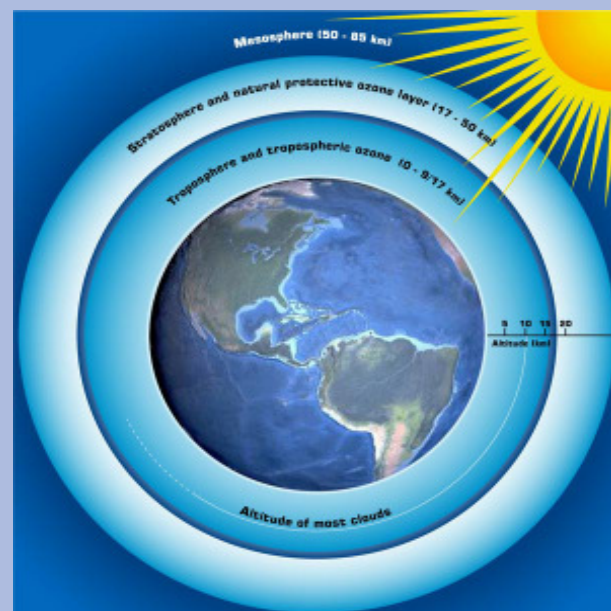
Ozone and its functions

Ozone is a form of oxygen. Oxygen occurs in three different forms in the atmosphere; as oxygen atoms (O), as oxygen molecules (O₂) and as ozone (O₃). Ozone’s unique physical properties allow the ozone layer to act as our planet’s sunscreen, providing an invisible filter to help protect all life forms from the sun’s damaging UV (ultraviolet) rays. Most incoming UV radiation is absorbed by ozone and prevented from reaching the Earth’s surface.

Ultraviolet radiation is one form of radiant energy coming out from the sun, which is invisible, and is so named because it occurs next to violet in the visible light spectrum. The three categories of UV radiation are: UV-A (between 320 and 400 nm), UV-B (between 280 and 320 nm) and UVC (between 200 and 280 nm). Of these UV-B and C are highly energetic and are dangerous to life on earth. UV-A being less energetic is not dangerous. Fortunately, UV-C is absorbed strongly by oxygen and also by ozone in the upper atmosphere. UV-B is also absorbed by ozone layer in the Stratosphere and only 2-3% of it reaches the earth’s surface.

The Atmosphere and the Ozone Layer

We live on the only planet in our solar system and possibly in the galaxy where life is known to exist. All life exists within thin film of air, water, and soil about 15 km deep. This spherical shell of life is known as the biosphere. The biosphere can be divided into three layers; the atmosphere (air), the hydrosphere (water), and the lithosphere (rock and soil). The atmosphere is a mixture of gases and particles that surround our planet.



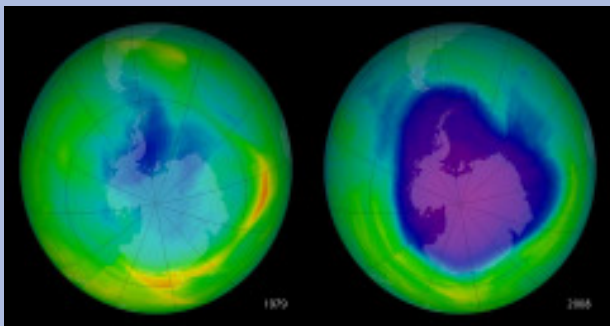
When seen from space, the atmosphere appears as thin seam of blue light on a curved horizon. It is made of layers that surround the Earth like rings. However, 99% of its total mass lies in two regions within the first 50 km above the Earth's surface; the troposphere and the stratosphere. A

part of the atmosphere which contains a high density of ozone lies in the stratosphere and is called the ozone layer.

Depletion of the Ozone layer – the 'Ozone Hole'

Ozone depletion occurs when the natural balance between the production and destruction of stratospheric ozone is tipped in favour of destruction. Although natural phenomenon can cause temporary ozone loss, chlorine and bromine released from synthetic compounds is now accepted as the main cause of a net loss of stratospheric ozone in many parts of the world since 1980. There is strong evidence that global ozone depletion is occurring. The evidence is in the observations of the Antarctic ozone "hole" and atmospheric records indicating seasonal declines in global ozone levels. The term "ozone hole" refers to a large and rapid decrease in the abundance of ozone molecules, not the complete absence of them.

The Antarctic 'ozone hole' was first reported by the British Antarctic Survey Team in May 1985. Ozone concentrations over Halley Bay, Antarctica, had declined 40% from levels during the 1960s. Any disturbance or depletion of this layer would result in an increase UV-B and UV-C radiation reaching the earth's surface leading to dangerous consequences.



The Montreal Protocol and its success

The scientific confirmation of the depletion of the ozone layer prompted the international community to establish a mechanism for cooperation to take action to protect the ozone layer. This was formalized in the Vienna Convention for the Protection of the Ozone Layer, which was adopted and signed by 28 countries, on 22 March 1985. In September 1987, this led to the drafting of The Montreal Protocol on Substances that Deplete the Ozone Layer.

The principal aim of the Montreal Protocol is to protect the ozone layer by taking measures to control total global production and consumption of substances that deplete it, with the ultimate objective of their elimination on the basis of developments in scientific knowledge and technological information. The Montreal Protocol is structured around several groups of ozone-depleting substances. The Montreal Protocol requires the control of nearly 100 chemicals, in several categories. For each group or annex of chemicals, the Treaty sets out a timetable for the phase-out of production and consumption of those substances, with the aim of eventually eliminating them completely.

In 1994, the United Nations General Assembly proclaimed 16 September the International Day for the Preservation of the Ozone Layer, commemorating the date of the signing, in 1987, of the Montreal Protocol on Substances that Deplete the Ozone Layer (resolution 49/114).

Implementation of the Montreal Protocol progressed well in developed and developing countries. All phase-out schedules were adhered to in most cases, some even ahead of schedule. In view of the steady progress made under the Protocol, already in 2003, former United Nations Secretary-General Kofi Annan stated "Perhaps the single most successful international agreement to date has been the Montreal Protocol". His views are shared widely in the international community on the success of the Montreal Protocol.

Ozone protection - the Indian scenario

Dr. H. Malleshappa, I.F.S.,*

Ozone and UV over India

Ozone measurements over India were carried out since the 1940s. Since 1957, regular measurements of total column ozone and its vertical distribution in the atmosphere are being carried out in India. These measurements are done by the network of monitoring stations of the Indian Meteorological Department spread across the latitudes of the country. The Physical Research Laboratory, Ahmadabad, has also been measuring ozone for the last four decades. Data collected by the Indian network is published by the World Ozone Centre for the Regional Association. IMD's observatory at the Indian Antarctic station at Maitri record ozone profiles to interpret ozone-depletion. These confirmed the fact that the day-today variations in the ozone amounts in the tropics were small. An exhaustive analysis of annual variation of mean total ozone over India, from 1966 to 1988 showed ozone levels over India between 240 to 320 DU. The National Ozone Centre at Delhi is also the Regional Ozone Centre for the Regional Association II (Asia) of the World Meteorological Organization.

Studies on UV-B radiation over India have also been carried out through a network of stations as part of the Indian Middle Atmosphere Programme (IMAP) and its continuation (IMAP-C) with the Department of Space at the nodal agency. The locations of network stations included New Delhi, Jodhpur, Pune, Mysore, Trivandrum and Vishakapatnam. Some of the salient observations include (i) maximum influx recorded during local noon, (ii) influx values increasing with decreasing latitude, and (iii) indication of anti-correlation between UV flux and total ozone over all the stations.

Reporting of significant trends has been detected in average column ozone in the tropics, further emphasizing the need for critical examination

of long term trends. The surface dosage of natural ultraviolet radiation is reportedly substantially higher in lower latitudes, in which context it is important to assess, potential biological effects, considering the relative levels of ozone at the equatorial and tropical regions. The ozone layer is thinnest during winter over southern India. Importantly, since the total ozone content has tended to be lower hill stations, the UV-B radiations over the hills stations have been found to be higher than over the adjoining plain areas. The Western Himalayan region is expected to receive considerable doses of UV-B radiation due to characteristic atmospheric conditions.

India's Commitment to Montreal Protocol

India acceded to the Montreal Protocol on 17th September 1992 and also ratified the Copenhagen, the Montreal and the Beijing Amendments on 3rd March, 2003. India's per capita consumption of Ozone Depleting Substances is at present less than 3 grams and did not cross 20 gms between 1995-97 as against 300 gms permitted under the Protocol. In 1993, India prepared a detailed India Country Programme (CP) to phaseout of ODS in accordance with its national industrial development strategy. The CP also ensured that the phaseout will be done without undue economic burden to both consumers and industry and provided India with the opportunity to access the Protocol's Financial Mechanism.

The Government of India has entrusted the work relating to ozone layer protection and implementation of the Montreal Protocol to the Ministry of Environment and Forests (MoEF) which is the coordinating Ministry in India for all matters relating to the Montreal Protocol. The MoEF has set up an Ozone Cell as a national unit to look after and to render necessary services to implement the Protocol and its ODS phaseout programme in India.

*- Director, Department of Environment, Government of Tamil Nadu, Chennai.

India's integrated approach

India has played very active roles in all the fifteen Meetings of Parties till date, commencing with becoming a party to the Vienna Convention for the Protection of the Ozone Layer on 19 June 1991. India signed Montreal Protocol on substances that deplete that ozone layer on September 17, 1992. India is listed as an Article 5 country since the level of per capita consumption is much lower than the designated 0.3 kgs per capita.

The national programme for phase out of the ODS was developed to ensure that industry does not suffer from economic dislocation in the process of adopting alternatives. This implied the development of policies to enable ODS phase out in industries, aligning them with the Executive Committee's operating framework, development of institutional capabilities for implementation, regulations implementation including support through appropriate fiscal incentives and training and capacity building of relevant stakeholders. The process of implementation was an evolutionary process which incorporated country priorities and evolution of the Protocol at the international level.

India has set a framework of phasing out both production and consumption of ODS in accordance with the provisions of the Montreal Protocol. India has committed to phase out ODS in a gradual manner. While designing the framework, the need for prioritization of sectors for ensuring high ODS phase out levels and high implementation success rates was recognized. Thus, in cooperation with the different implementing agencies, the phase out of various ODSs through a project by project approach was initiated. Today, production and consumption of CFC and CTC have been completely phased out. While halon production has already been phased out well in advance to the schedule defined under the Montreal Protocol, the consumption of halons has been and is being brought down. Methyl Bromide will be eliminated from use in 2015 except for allowed quarantine and pre-shipment uses and HCFCs will be eliminated by

2040. For most of sectors, a sectoral approach and a performance based project implementation mechanism is being adopted. These reflect India's analysis of barriers and the need to strengthen interventions in response to the specific needs. India has also taken note of some of the principles of efficient management for collective action with reference to the following. It is during the initial stages of the development of United Nations Environment Programme that the developmental imperatives of the developing countries attained prominence.

India's attention is also drawn to the consequences of the shortfall in legitimate supply of ODSs reflected in the likelihood of illegal trade. This implications of illegal trade may cause a backsliding of the positive impacts generated through the systematic efforts this far. In order to counter illegal trade, India will uncompromisingly enforce compliance and prevent the proliferation of illegal use of ODS. India has taken note of the significance of price differentials across borders, as factors responsible for catalyzing illegal trade. The National Academy of Customs, Excise and Narcotics (NACEN), through active collaboration with UNEP, the World Customs Organization and Asian Development Bank, is now poised to emerge as a major customs training organization not only in India but also in the Asia-Pacific region.



High Level Consultation & Practitioner's Training Workshop on Integrating Climate Change Concerns into Development Programmes

Department of Environment, Government of Tamil Nadu along with GIZ conducted "High level Consultation" followed by "Practitioners Training Workshop on Integrating Climate Change concerns into Development Programmes" as part of CCA-RAI (Climate Change Adaptation in Rural Areas of India) project, during 19-22 August, 2014 at M.S.Swaminathan Research Foundation, Chennai, Tamil Nadu.



Dr. H. Malleshappa, I.F.S., Director, Department of Environment, Government of Tamil Nadu welcomed the gathering and presented a brief overview on the Tamil Nadu State Action Plan on Climate Change (TN-SAPCC). The consultation was inaugurated by Shri. Hans Raj Verma, I.A.S., Principal Secretary, Department of Environment & Forest, Government of Tamil Nadu and delivered inaugural address stating the importance of climate change adaptation, emphasising judicious and efficient use of resources such as

energy, need for changing to simple lifestyles which will help mitigate the climate change impacts.

Dr. Nanditha Krishna, Honorary Director, The C.P. Ramaswami Aiyar Foundation, Chennai delivered her key note address on the historical development of concerns for environment, emphasizing on the importance of learning from the past and tapping of traditional knowledge in climate change adaptation. Dr. Sugatto Dutt, I.F.S., Member Secretary, State Planning Commission gave a special address on the importance of climate change at state level planning stressing the need for a multi-stakeholder approach, good governance



and institutional capacity building and innovation in policies/ programmes on climate change. Ms. Anna Kalisch, Advisor, GIZ, gave her input on the background of GIZ support to CCA-RAI in Tamil Nadu, the background and context of training related activities in the State and presented an overview of the intended training workshop content.

The training workshop was then conducted by a trainer team from GIZ who combined the required knowledge and experience in climate change adaptation, training methodology, development cooperation and regional experience by following Harvard Case Method. Number of experts presented



their key note lectures in different thematic area. For an example Dr. Geethalaxmi, Professor from Tamil Nadu Agricultural University, Coimbatore, presented major features of the National Communication climate change. Staff of the ENVIS Centre, Department of Environment also participated in the training workshop. The training program ended with suggestion of participants as a resolution to the Government of Tamil Nadu that was drafted in a participatory process.

Ozone day celebration at Bentinck Girls Higher Secondary School

Ozone day was celebrated at the Bentinck Girls Higher Secondary School, Vepery, Chennai, on 09.09.2014 where 325 NGC/ Eco club teacher coordinators participated. Dr. H. Malleappa I.F.S., Director, Department of Environment, Government of Tamil Nadu inaugurated the programme and delivered the key note address. He emphasized the need for environmental awareness and stressed the role of teachers and students in carrying out the messages to the public.



The programme was organized by the EIDC, Chennai District. During the programme the Director of Environment honoured 11 Teachers with medals and certificates for their performance. G. Thangaraj, Centre in charge of the EIDC, Chennai, Dr. J. Daniel Chellappa, Scientist IGCAR and Dr. Vidhubala, Cancer Institute also participated in the programme.

International Tiger Day celebrations



The International Tiger Day was celebrated by the Department of Environment and the Chennai East NGC students in collaboration with the WWF, Chennai on 28th July 2014 at the Government Museum, Egmore, Chennai. More than 200 school students from various Matriculation and Government Aided schools participated in this programme. Dr. H. Malleappa, I.F.S., addressed the gathering and emphasized the importance of the tiger and its conservation as it is the apex predator and considered as the flagship species. Mr. S. S. Saravanan Education Officer, WWF and Mr. G. Thangaraj District Coordinator, NGC also participated. As a part of the programme, poster painting competitions were also conducted. The winners of the competitions were selected and prizes were distributed. Staff of the ENVIS centre also participated in the programme.

“Green Day” Awareness Programme at Sivagangai

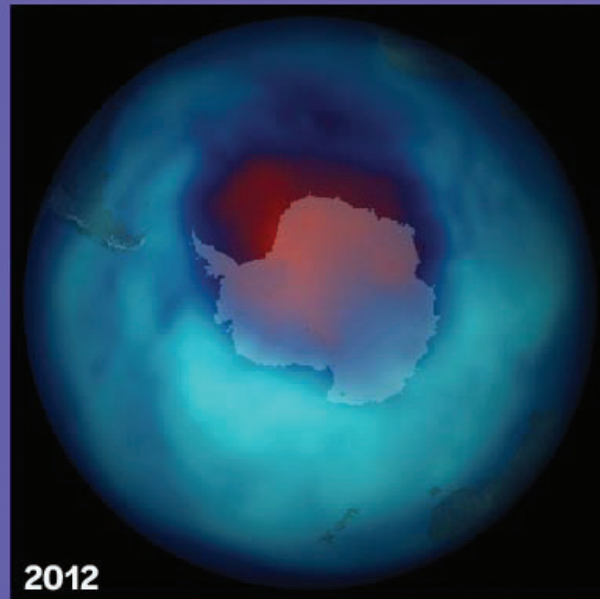
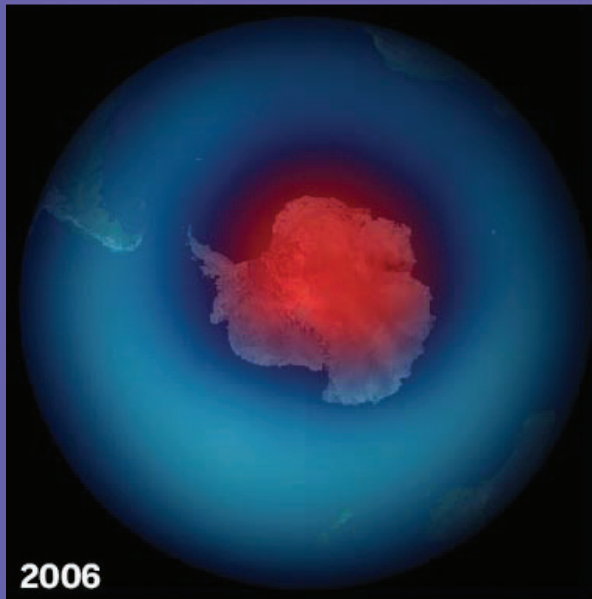
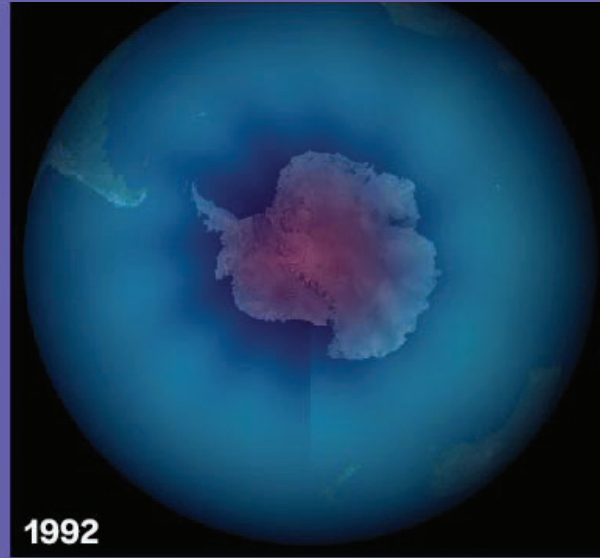
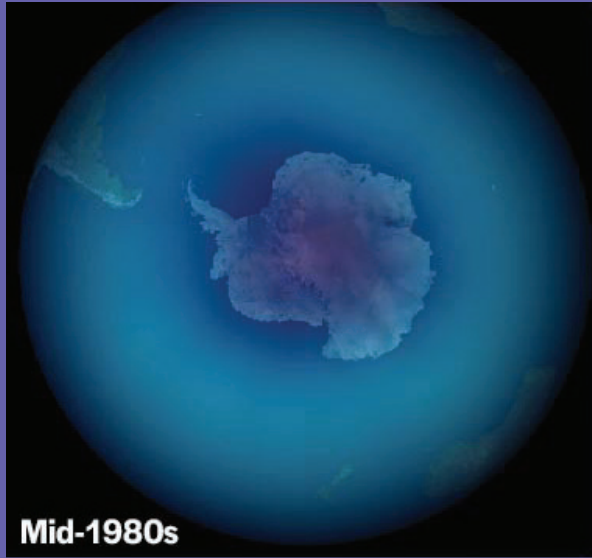
An awareness programme titled “Green Day” was conducted on 19th August, 2014 by Department of Environment in collaboration with the Education Department and Viswa Women Service Society at Sivagangai. Awareness on the importance of greenery and reduction of pollution was conveyed to the public through an awareness rally in which about 400 NGC students participated. After the rally an awareness meeting was conducted at the Raja Higher Secondary School school.



Thiru. L. Durai, State coordinator NGC/Eco-club, Department of Environment, spoke on the importance of environmental conservation. Thiru L. Sekkappan, PA to CEO, Sivagangai, Smt. Lakshmi Gandhi, District NGC coordinator and Thiru. P. Raja Vidhyadharan, District Eco-club coordinator also participated and delivered lectures on the importance of environmental awareness programmes.

The Ozone Layer is on track to recovery

Secretary-General Ban Ki-moon hailed the efforts of the international community in protecting the atmosphere, noting that with the global phase-out of 98 per cent of ozone-depleting gases, the ozone layer is now on track to recover over the next five decades.



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Disclaimer: The information in this newsletter has been compiled from various sources and does not necessarily depict views of the ENVIS Centre, Department of Environment, Government of Tamil Nadu.