

**Karnataka State Akkamahadevi Women's  
University, Vijayapura**

**Department of Botany  
HCT-2.1 Ecology and Environmental Biology**

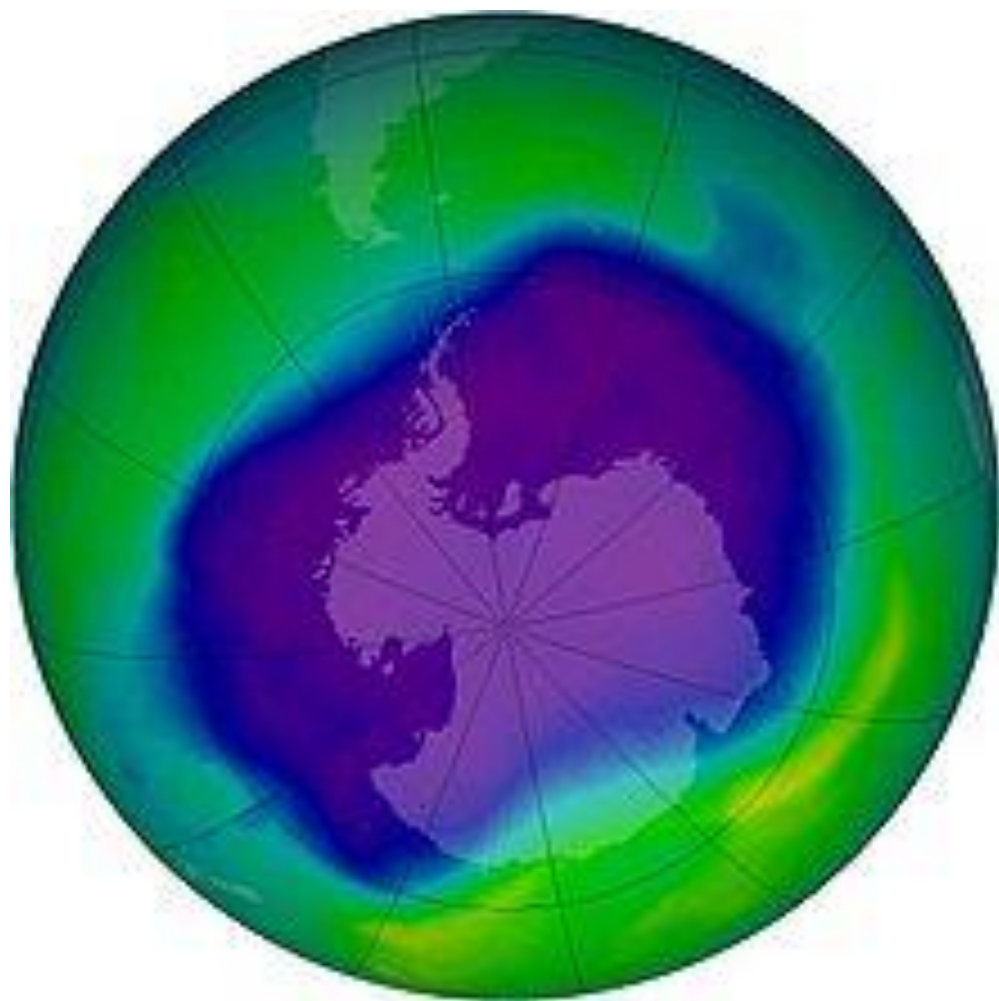
**TOPIC-OZONE DEPLETION**

**Dr. Arati Laddimath**

# OZONE DEPLETION

# THE OZONE LAYER

- The ozone layer is a natural layer of gas in the upper atmosphere that protects humans and other living things from harmful ultraviolet (UV) radiation from the sun.



# MEANING

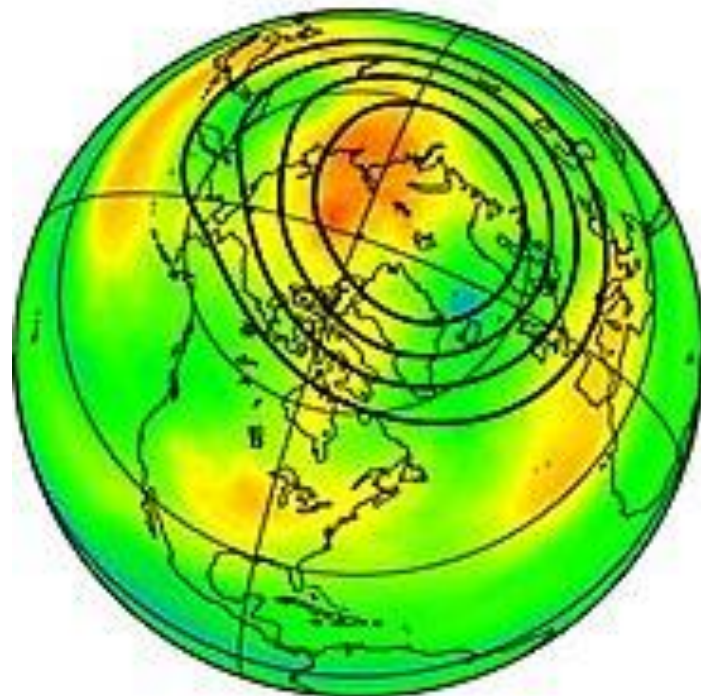
- The thinning of ozone layer due to the reaction with ozone depleting substances (ODS) is known as ozone layer depletion

# OZONE DEPLETING SUBSTANCES

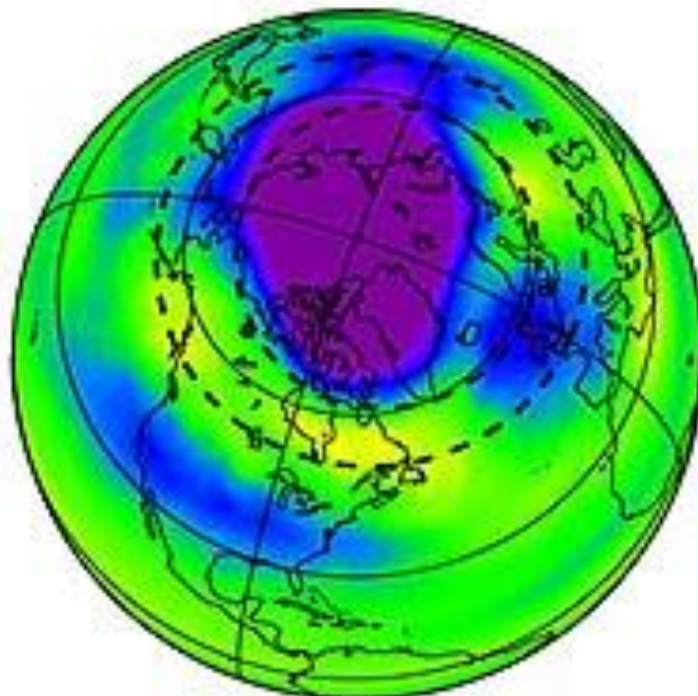
- 1. Chlorofluorocarbon(CFC)
- 2. Nitrogen oxides
- 3.Sulphur oxides
- 4. Carbon tetra chloride
- 5.Chlorine

—— Strong Long Wave

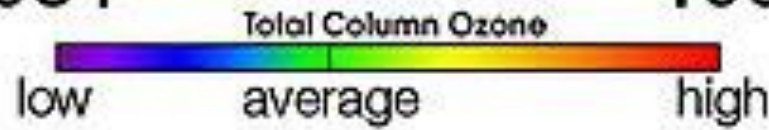
----- Weak Long Wave



1984



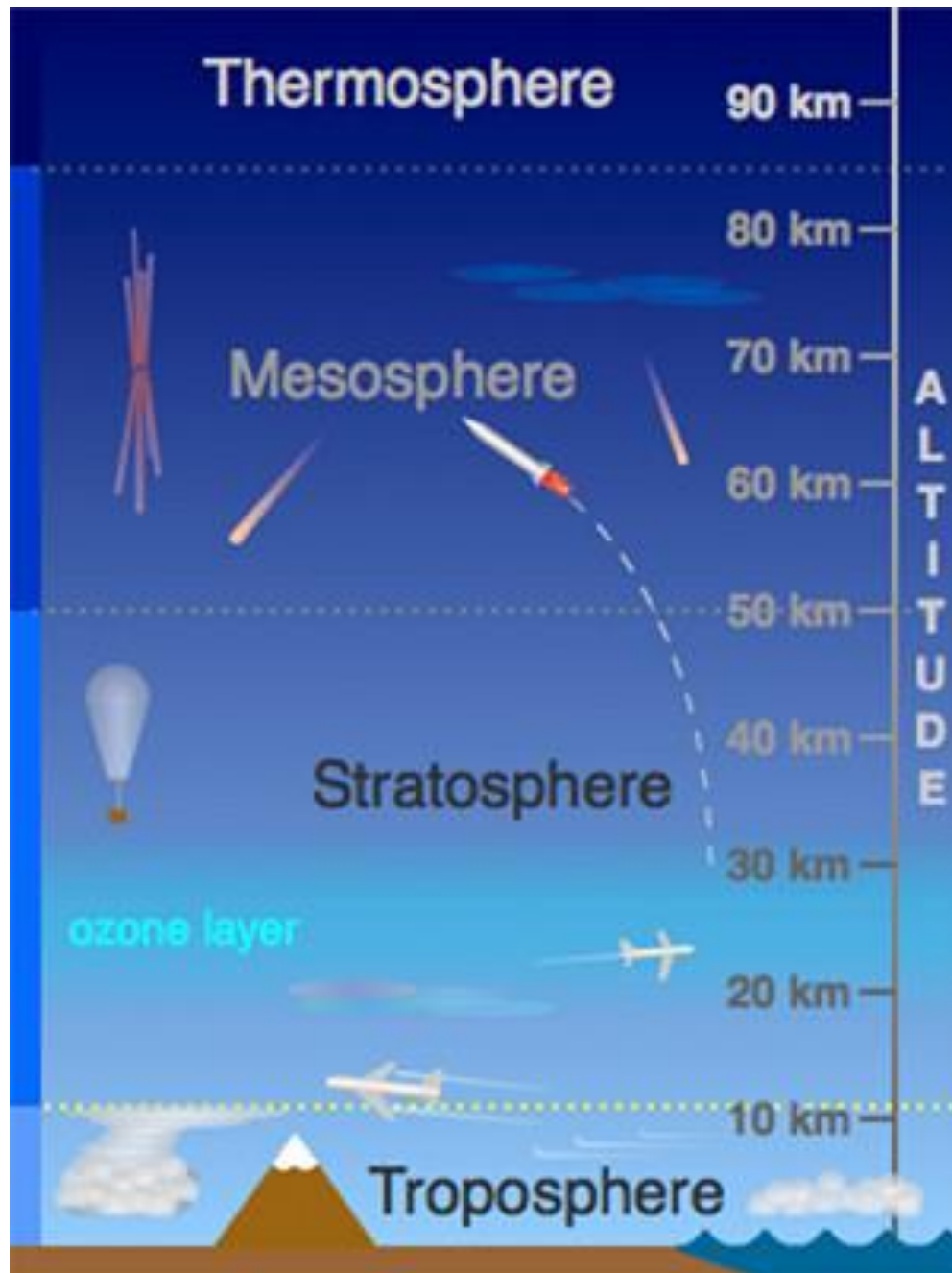
1997

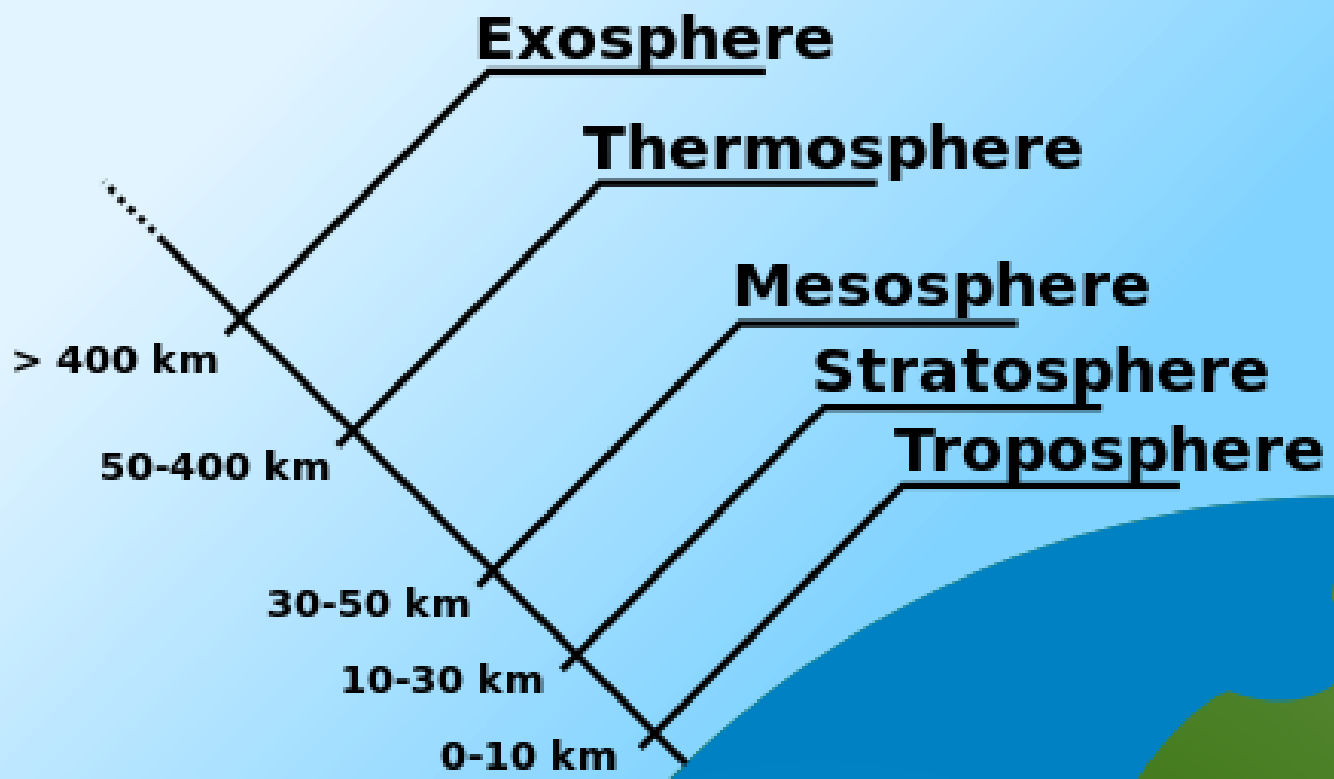


# CONCEPT

- Ozone layer depletion refers to **decrease in the amount of ozone in the stratosphere** which is of vital significance to all living forms.
- It protects us from the ultraviolet radiation of the sun which is harmful to most living beings. When there is less ozone in the stratosphere, more ultraviolet radiation hits us.
- Infact, it could be compared to blocking the heat on a hot day ie acts as a natural sunblock.

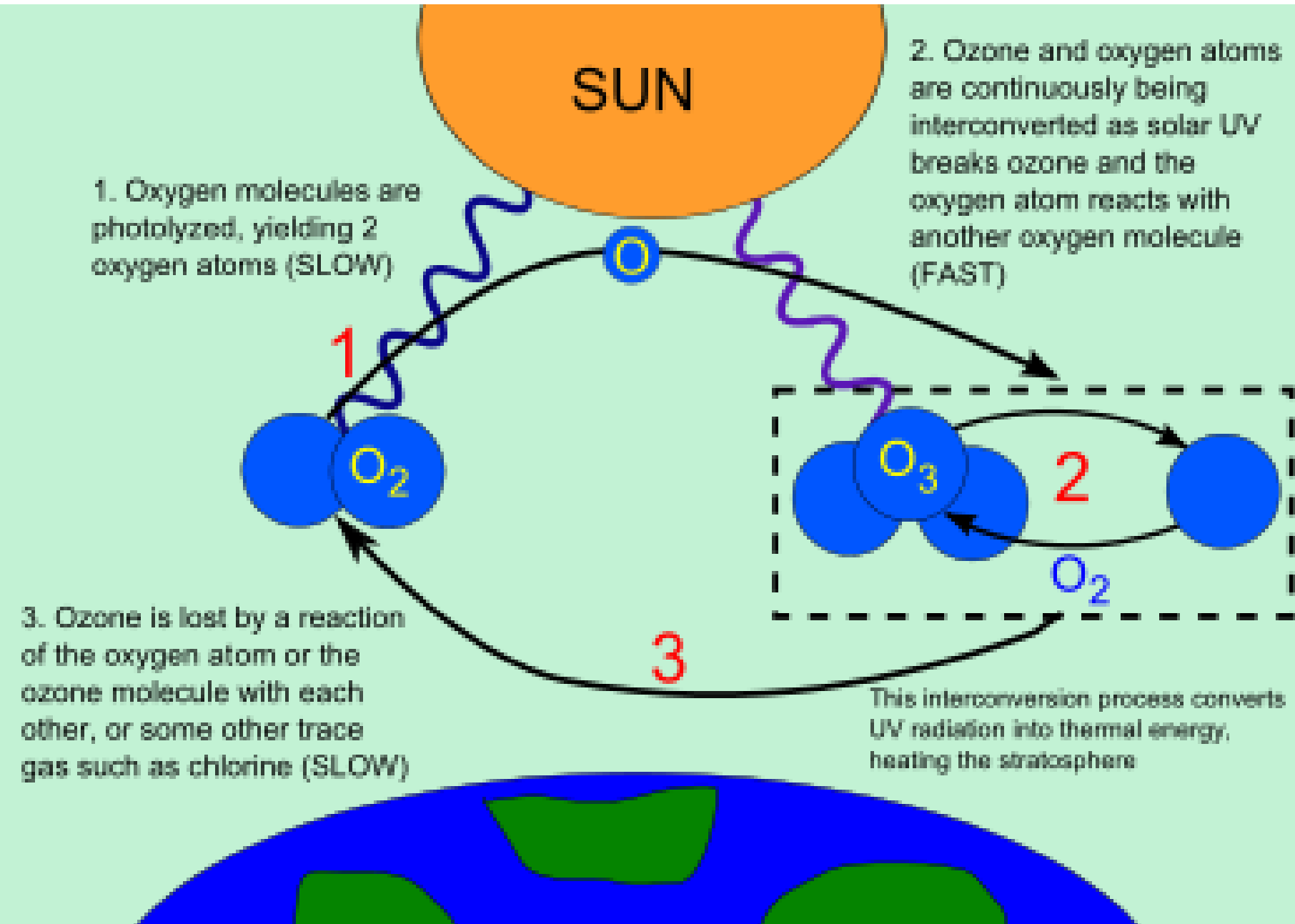






\*It is constantly being made by the **action of sunlight** on oxygen. Some oxygen (O<sub>2</sub>) molecules absorb energy from the sun's ultraviolet UV rays and split to form single oxygen atom atoms. These atoms combine with remaining oxygen (O<sub>2</sub>) to form ozone (O<sub>3</sub>) molecules

\* The TOMS (Total Ozone Mapping Spectrometer) is a satellite-borne instrument used to gain a global picture of ozone levels



# CAUSES

- 1. Over burning of fossil fuel
- 2. Rockets firing
- 3. Flying jets
- 4. Usage of air conditioners and refrigerators

# EFFECTS

- Plants exposed to UV radiation showed 25 to 50% reduction in growth and chlorophyll content
- Reduction of fish productivity which effects the people who consume marine resources
- UV-B radiations cause skin cancer, cataract and loss immune system
- Weaken immune systems specially of people exposed to AIDS virus, resulting in the shortening of the time between infection and development of full blown AIDS

# CONTROL MEASURES

- An international agreement called the Montreal protocol was signed by over 30 nations which limits the production and use of ozone-depleting substances
- Ozone depleting substances like chlorofluorocarbons(CFCs)are banned in Austrelia and USA
- Their temporary replacements, like hydrochlorofluorocarbon (HCFCs)are also found to be slightly ozone-depleting, though not to the same extent. Hence even HCFC's are being ruled out

- Substances like carbon tetrachloride (used in dry cleaning) and methyl bromide (used as an insecticide) are also being banned as they have been found to be ozone depleting
- To create awareness, the World's Ozone Day is observed on the **16<sup>th</sup> September** every year



Thank you

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**Topic-GANGA ACTION PLAN(GAP)**

**Dr. Arati Laddimath**

# **GANGA ACTION PLAN(GAP)**

- The Ganga action plan was, launched by Shri Rajeev Gandhi, the then Prime Minister of India on 14 Jan. 1986 with the main objective of pollution abatement, to improve the water quality by Interception, Diversion and treatment of domestic sewage and prevent toxic and industrial chemical wastes from identified grossly polluting units entering in to the river.

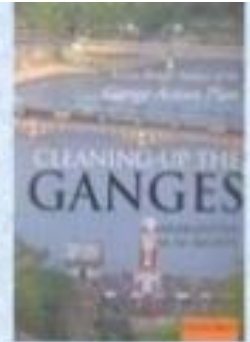
- The Ganga is the largest river in India & second greatest river in the world with an extraordinary religious importance for Hindus.
- It is worshipped as the goddess Ganga in Hinduism.
- Along its banks are some of the world's oldest inhabited places like Varanasi & Patna.
- It provides water to about 40% of India's population in 11 states.
- In modern times, it is known for being very polluted.



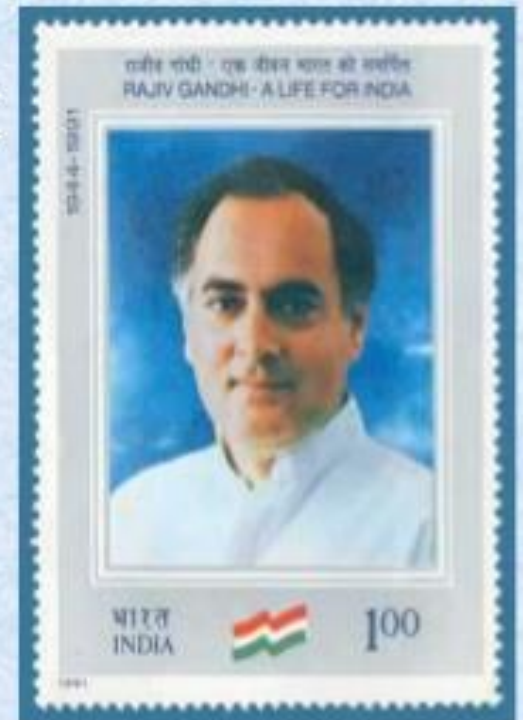




# Ganga Action Plan



The Ganga Action Plan or GAP was a program launched by Rajiv Gandhi in April 1986 in order to reduce the pollution load on the river. It also included the tributaries of the Ganges namely Yamuna, Gomti, Damodar and Mahanada.



# The other objectives of the Ganga Action Plan are as under.

- Control of non-point pollution from agricultural run off, human defecation, cattle wallowing and throwing of unburnt and half burnt bodies into the river.
- Research and Development to conserve the biotic, diversity of the river to augment its productivity.
- New technology of sewage treatment like Up-flow Anaerobic Sludge Blanket (UASB) and sewage treatment through afforestation has been successfully developed.
- Rehabilitation of soft-shelled turtles for pollution abatement of river have been demonstrated and found useful.
- Resource recovery options like production of methane for energy generation and use of aquaculture for revenue generation have been demonstrated.
- To act as trend setter for taking up similar action plans in other grossly polluted stretches in other rivers.

- The ultimate objective of the GAP is to have an approach of integrated river basin management considering the various dynamic inter-actions between abiotic and biotic ecosystem.



- Notwithstanding some delay in the completion of the first phase of GAP it has generated considerable interest and set the scene for evolving a national approach towards replicating this program for the other polluted rivers of the country.
- The Government of India proposed to extend this model with suitable modifications to the national level through a National River Action Plan (NRAP). The NRAP mainly draws upon the lessons learnt and the experience gained from the GAP besides seeking the views of the State Governments and the other concerned Departments/Agencies.

- Under NRCP scheme the CPCB had conducted river basin studies and had identified 19 gross polluted stretches and 14 less polluted stretches along 19 rivers, which include 11 stretches situated along 7 rivers of M.P.

# Phases of the GAP

## Phase – I



Phase – I, launched in June 1985 was the first attempt of Government to clean the river Ganga. To accomplish this task a total of 2061 projects of pollution abatement covering 25 towns in 3 states – UP, Bihar & West Bengal were sanctioned at a cost of Rs. 462 crores.

## Phase – II



Since GAP Phase – I did not cover the pollution load of Ganga fully, GAP Phase – II was approved from 1993 onwards. It included the Gomti Action Plan, Yamuna Action Plan and Damodar Action Plan and Mahanada Action Plan

# About Ganga Action Plan I

- \* The Ganga rises in the Garhwal Himalaya from the Gangotri Glacier, some 4100 meters above the sea level under the name of Bhagirathi.
- \*The river flows through the Himalayas till another two streams, the Mandakani and the Alakhnanda join it at Devprayag. It is below this confluence that the river is known as the Ganga proper.
- \*The Ganga Basin which is the largest river basin of the country houses about 40% population of India.
- \*The river after traversing a distance of 2525 kms. from its source, meets the Bay of Bengal at Ganga Sagar in West Bengal. During the course of its journey from the hills to the sea, municipal sewage from large urban centres, trade effluents from industries and polluting waste from several other non-point sources are discharged into the river resulting in its pollution.

# Objectives of Ganga Action Plan I :

- At the time of launching, the main objective of GAP was to improve the water quality of Ganga to acceptable standards by preventing the pollution load reaching the river. However, as decided in a meeting of the Monitoring Committee in June, 1987 under the Chairmanship of **Prof. M. G. K. Menon**, then Member, Planning Commission, the objective of GAP was recast as restoring the river water quality to the 'Bathing Class' standard which is as follows:

Bio-Chemical Oxygen Demand (BOD)

3 mg/l maximum

Dissolved Oxygen (DO)

5 mg/l minimum

Total Coliform

10,000 per 100 ml

Faecal Coliform

25,00 per 100 ml

◦ Thank you