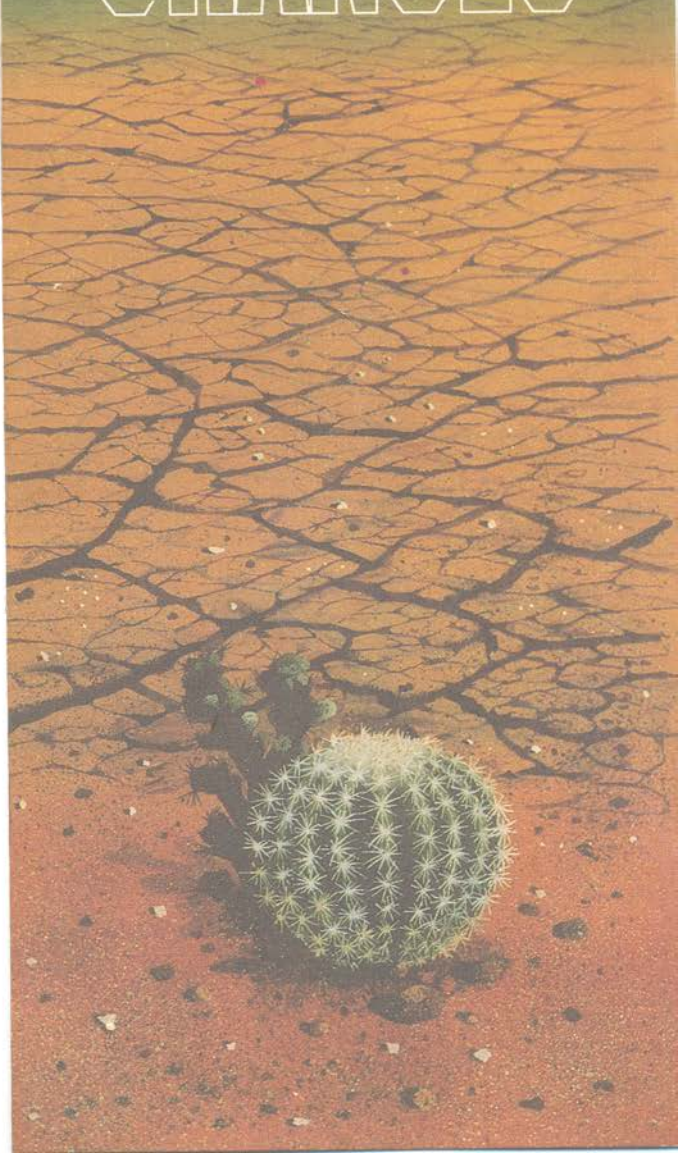


# GLOBAL CHANGES





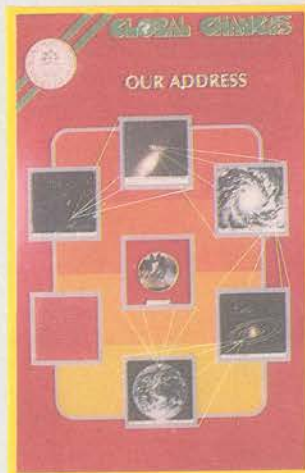


'Global Changes' is an interactive exhibition depicting the environmental changes our planet has experienced through ages and highlighting mother Earth's plight due to deteriorating environmental conditions that may lead to a catastrophe in the foreseeable future. The human race has acted as an agent to hasten this doomsday when the unique life forms on this planet will cease to exist. Environmental protection, therefore, has to be a major parameter in planning for development.



### We are Unique

In this vast universe, the Earth is just a tiny speck of dust. But its location in the solar system, its temperate climate, its spin on its own axis, abundance of free oxygen and water have made the Earth a very unique place. This is the only known planet where life forms of diverse nature exist. The human race is ruling supreme among them.



### Explosive growth

The explosive growth of the human race in population and also in intelligent labour, has vigorously accelerated the slow process of natural changes. To satisfy the human needs, large tracts of green cover over the Earth have been felled, million year old stratas of oil and coal deep inside the

### Pollute to Progress

The insatiable thirst for progress and well being has forced the human race to recklessly tap all available resources on Earth for food, energy and shelter. In the process, our atmosphere and water resources have been polluted.

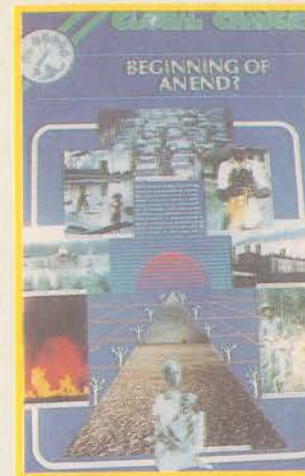


### Lessons from the Past

Since its birth, this planet has had many catastrophes leading to major geological and climatic changes. As a result large forests have turned into barren ice-fields, ocean beds have turned into lofty mountains and thriving biological species have become extinct. But all these changes took place through slow natural mechanisms allowing considerably long time for the major changes to take place.



womb of the mother Earth have been extracted; all these have triggered new mechanisms of change. The polluted air we breathe now or the polluted water that flows down our rivers or the chemical fog often seen over our megacities are all indications of the swiftly changing environment around us. How long



### The Ozone Hole

Some other man-made chemicals that the scientists term as CFC's (Chlorofluorocarbons) move very high up in the atmosphere and act as catalysts to destroy the protective Ozone layer in

will the human race survive on the face of the Earth?



### The Greenhouse Earth

The superlative intelligence of our race has churned out millions of products for human consumption and also tons of dangerous chemicals and harmful byproducts. These chemicals added to the traditional pollutants like carbon dioxide, methane, nitrous oxide and sulphur dioxide accumulate high up in our atmosphere creating a trap for the heat radiation emitted from the earth's surface. These gas layers do not allow the long wavelength, low energy heat radiation to escape into space through them. The result - an increasingly hot green house that will one day melt the polar ice caps and raise the level of water in oceans to inundate coastal regions.

the upper atmosphere. Harmful ultra-violet rays from the sun so far protected by the Ozone layer shield pass through the holes induced by the CFC's in it and cause immense harm to the body



cells of human beings and other animals. How long life forms will survive on Earth ?



## Progress at What Cost?

**R**apid urbanisation and rapid industrialisation have created immense economic welfare for some nations. In acquiring such wealth, huge quantities of natural resources have been exploited to bring forth very large amount of riches to very few groups of people. Today the whole world suffers for such indiscriminate exploitation of nature. In the last decade of the 20th century, 25 per cent of the human population in economically advanced countries produce 80 per cent of the harmful pollutants. Progress therefore, has been achieved at the cost of deforestation, depleting energy resources, emission of harmful gases and above all, suffering of each and every member of the human race. The time has come to act consciously for the protection of our environment.



**T**he present day climate on the earth is a part of the ice age which has started about 18000 years ago.

**T**he estimated age of the earth is about 5 billion years.

**T**he global population has been doubled from 2.5 billion to 5 billion in just 37 years (1950-1987)

**I**t is estimated that the tropical forests of this planet are vanishing at a rate of 50 hectares (124 acres) per minute.

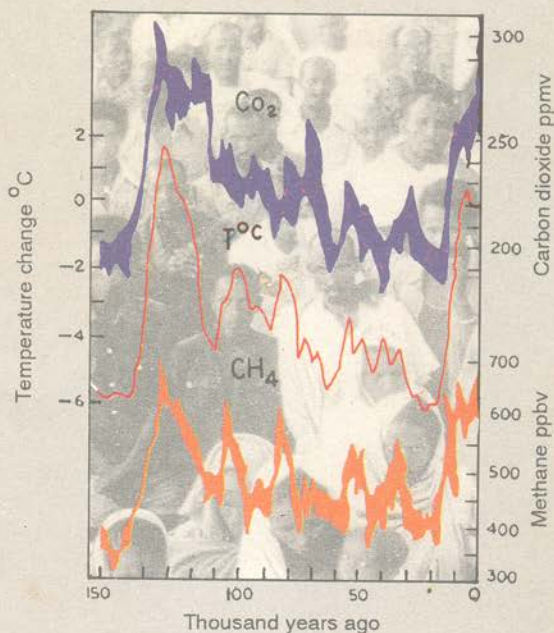
**T**he DODO of Mauritius has become extinct since the late 17th century. This flightless bird has been hunted by the early immigrants for food.

**T**he greenhouse gases are carbon dioxide, methane, nitrous oxide, sulphur dioxide.

**S**ome of the dreaded reducing agents that lead to the formation of holes in the Ozone layer in the upper atmosphere are

- Chlorofluorocarbons (CFC) used in refrigerators and airconditioners.
- Methyl Chloroform - used in cleaning solvents and aerosols.
- Carbon tetrachloride - used in bleaching and dry cleaning.
- Halons - used in firefighting equipments.

**C**urrently about 25% of the world's population mainly from the rich countries consume about 80% of the world's natural resources and produce most of the pollutants.



Designed & Published by

**National Council of Science Museums**

Sector V, Block GN Bidhan Nagar.  
Calcutta-700091. INDIA

