Concept of Limits to Growth

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Background

The concern for environment was growing throughout the 60s and the 70s.

A debate started on the ‘side effects’ of economic growth.

Many questions were being raised linking economic growth, population growth and environmental deterioration.

Some of the questions were-

- Does population growth lead to environmental deterioration?
- Is poverty the worst polluter?
- Does economic growth always lead to environmental degradation?
- Will economic growth go on and on?
- Will there be a time when economic growth will reach a limit and so on?

The Club of Rome was founded in 1968 by an international group of philosophers, economists, managers, scientists, technologists and others.

The members of the Club of Rome took up a great project to identify the problems of mankind like poverty, environmental degredation, unplanned urbanization, unemployment, inflation of price and other economic disorders. The Club's objective was also to formulate suitable policies on environmental and survival grounds.

The meeting of the Club of Rome in 1970 resulted in the appointment of an international investigation team under Prof. Dennis Meadows. The team was asked to analyze five basic factors that ultimately control the limit of growth of earth:

1. Population
2. Agricultural production
3. Natural resources
4. Industrial production
5. Pollution

Prof. J. Forrester and his colleagues of MIT, USA prepared a model called ‘System Dynamics’.

The processed data and the findings were published in 1972 under the title of ‘Limits to Growth’.

The specific analysis to ‘Limits to Growth’ was undertaken by his colleagues Dennis Meadows, Donella Meadows, Jergen Randers and William W. Behrens.

‘Limits to Growth’ represents the expression of the first official concern about the population growth and its implications for the future well being.

Assumptions

1. A finite stock of non-renewable resources
2. Limited agricultural land
3. Limited capacity of the environment to absorb pollutants
4. Limited productivity of agricultural crops
5. Exponential growth of population, pollution and industrial output so long as resource supplies.
6. Forms of technological change (such as birth control, agricultural productivity, capital) are built into the model provided there is money for them and that environmental technology (such as resource recycling and pollution control) is also developed.

Predictions

The model is more a projection than a prediction.

1. The global population, food production and output in manufacturing industry will experience massive growth and finally may exceed controllable limit and finally collapse in 21st century.
2. The earth will reach at the edge of the limit, because of high degree of pollution, extreme use of agricultural land and over use of fund resources. The combined effect of all of these will lead to collapse of entire system of human society.
3. The reserves of eleven essential mineral resources including copper, gold, lead, mercury, natural gas, crude oil, silver, zinc and tin may experience absolute depletion. The industrial production will be affected badly.

4. If the present rate of population growth, industrialization, pollution, food problem and resource depletion rate remain unchecked, the human civilization on earth may reach at the ‘limits of growth’ within coming hundred years.

5. Even the technological advancement will not be able to enhance Functionability or amount of resources.

6. To arrest and check the disaster and destruction, population control and balancing of economic growth is desirable. In this way, zero economic growth will attain global equilibrium.

THE LIMITS TO GROWTH COMPUTER RUNS

Standard Run (1): assumes growth in all factors industrialization—capital diverted from investment to search for resources—collapse of industry—collapse of dependent service and agricultural sectors—lack of food and health services-population decline.

Run (2): assumes problem of depletion solved by high resource availability. High resource availability—high industrial output—high pollution—increased death rate—eventual resources depletion

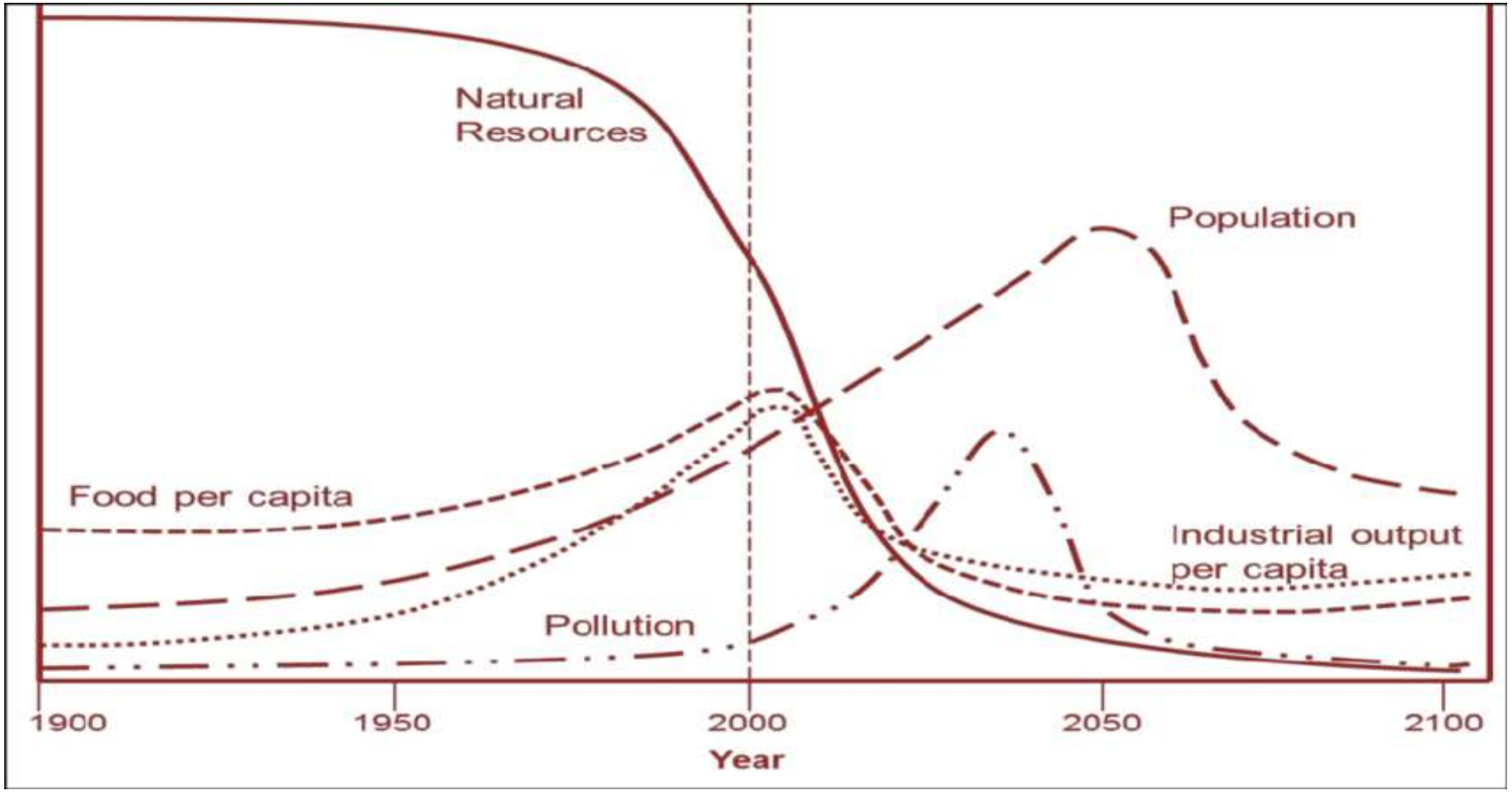
Run (3): assumes problem of depletion solved by technical developments High resource availability—high pollution—eventual halts in industrial output, food production and service industry—high death rate.

Run (4): assumes pollution solved by technical developments. Rising population and industrial output—overexploitation and exhaustion of arable land—food shortages—capital diverted to agriculture—collapse of industrial output—population falls.

Run (5): assumes technical development increases land yields increased food and industrial outputs—higher population— higher death rate—eventual resource depletion.

Run (6): assumes voluntary birth controls reduce population. Voluntary population controls—insufficient reduction in population—food production crisis—population falls.

Run (7): all solutions combined. Land overuse—food shortages— resource depletion— excessive pollution— food production crisis— rising death rate.



Limits to Growth Model

Criticism

1. The model treats the world as a single unit.
2. The large multivariate sub systems have been clubbed together
3. The dynamics of resources is neglected in the model.
4. Systems dynamics and computer modelling methods have inherent shortcomings.
5. The model is based on inadequate data and empirical information.
6. The environmental concerns and hostility to growth predicted in the model reflect the biased interests of the rich and the powerful.
7. The ‘Limits to Growth’ analyzes global averages in an aggregative way and is insensitive to regional differences and the specific situations of less developed countries.

Implication

The Limits to Growth report highlights the dangers posed by the relentless pursuit of material wealth by the developed countries. It warns readers about the consequences of unconstrained growth by the industrialized countries.

Depletion of non-renewable resources, deterioration of environment and the population explosion. The report calls forth policy makers, NGOs and the people in general to protect environment, save non-renewal resources and control population.

References

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