Limit to growth

- There is a prediction that if there is continuation of present course of environmental degradation it will destroy the capability of environment to support the civilized human society.
- Medows developed a complex mathematical model ‘ Limits of Growth’ prepared by a “Club of Rome”
- The Club of Rome was a loose group of about 75 man from 25 nations –the members being an eminent scientists, industrialists, economists, sociologists and educators.
- Meadows developed the limits of growth in 1972.
- Meadows et al. In their publication on limit to growth used a dynamic simulation model to examine the potential environmental consequences of population and economic growth. Their simulation model indicated that

- It predicted that the world will collapse as a result of depletion of limited resources and increase of population within a few decades
- If present world trends in population, industrialization, pollution, food production and resource depletion continue, limits to growth would be reached in 100 years (between 2020 and 2100)
- The policy implication of this model is that to prevent the future disaster we must stop on growth activities considering the resource available.

The basis thesis of limits to growth

- Many critical variables in our global society particularly population and industrial production have been growing at a certain rate.
- Hence the absolute increase is extremely large
- Such increase will became unmanageable unless deliberate action is taken to prevent such growth.
- The physical resources (renewable and non-renewable) is finite (limited).
- Hence sooner or later the growth in population and industrial production will bump (strike) this physical ceiling and will plunge downward with a sudden and uncontrollable decline in the capacity to growth.
- Since technological progress cannot expand all physical resource indefinitely, it would be better to establish conscious limit on out future growth rather than to let nature establish them for us in catastrophic fashion.

Factors affecting growth

- Population-very high growth rate
- Agricultural production
- Natural resources(both renewable and non-renewable)-demand of the resources increases due to increase in demand for food production and other demand
- Industrial production –depends on rate of investment and depreciation
- Pollution-depends on industrial growth as well as increase in consumption

The simplified version of the model

- Per capita output of goods and services depends upon
  - Size of population
  - Amount of land
  - Amount of exhaustible resources
  - Amount of capital resources
  - State of technological knowledge
  - Amount of environmental pollution

  Per capita output will be higher if more natural (renewable) resources is maintained

  If more exhaustible resource stock is maintained

  Higher is the amount of capital assets

  More advance technology is in application

  Lower is the level of pollution

Prediction of the Model

- There must be end to the growth of population and output and the limit to such a growth may come upon us unexpectedly if we are not careful.
- The ultimate limit to growth may became effective either because of exhaustion of non-renewable resources or because of pressure upon limited renewable resources
- Or because of the choking effect of excessive environmental pollution.
- The result of the model was arrived through computer simulation.

•The sooner society begins to work toward sustainability, the greater the likelihood of achieving it.

•Meadows et al after the limits to growth published beyond the limits In this work they observed that:

•Many resource and pollution flows now exceed the limits of sustainability and if unchecked, will eventually reduce food and industrial production and energy use,

•Economic decline can be averted by adopting policies to reduce growth in population and consumption and by increasing efficiency of resource use

•In addition to increased productivity and better technology, achieving sustainability requires maturity, compassion and wisdom.

•The pessimistic conclusions of the limits to growth study was criticized by Solow and others of several grounds.

•Technological innovation causes more or less exponential growth in the productivity of natural resources.

•Greater scarcity of exhaustible resources increases their prices as well as the prices of commodities that utilize these resources. Price increases reduce resource use and stimulate development and substitutes.

•As countries become more affluent population growth decreases; hence, population growth in not exponential.

•Industrial pollution may not increase in proportion to industrial production-pollution can be controlled by emission control, effluent changes and taxes.