

The Tragedy of Commons - Garrett Hardin

The tragedy of commons is a dilemma arising from the situation in which multiple individuals, acting independently and rationally, consulting their own self interest, will ultimately deplete a shared limited resources, even when it is clear that it is not in any one's long term interest for this to open. This dilemma was described in an article titled "The tragedy of commons" written by ecologist Garrett Hardin & it was first published in the Journal Science in 1968.

The concept of the tragedy of commons is extremely important for understanding the degradation of our environment. The basic idea of the concept is that —

If a resource is held in common or ~~extremely~~ used by all, the ultimately that resource will be destroyed. "Freedom in a common brings ruin to all" (To avoid the ultimate destruction we must change our human values and ideas of mortality) — (Solⁿ).

- i. 'Held in common' means resource is owned by a group, all of whom have access to the resource.
- ii. The greater the no. of people using the resource, the faster it is destroyed. Thus, the tragedy of commons is directly tied to over population.
- iii. Resources held by individuals even if the individual destroys the resource, is not an example of the tragedy of the ^{common}.
- iv. Once the stage is set in a dramatic tragedy, there is no escape from unhappy ending.

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v. In brief, tragedy is logically dependent only on the assumption that there is steady growth in the use of land or resources within any finite eco-system; it is not logically dependent on the conventions of any specific political & economic system.

vi. We can avoid tragedy only by altering ourselves, by changing the way we live. There is no technical solution.

Sustainable Development.

The term 'Sustainable development' was first used by 'World Conservation Strategy' presented by the International Union for the Conservation of Nature & Natural Resources in 1980.

Sustainable development means that development should 'keep going'. It emphasises the creation of sustainable improvements in the quality of life of all people through increase in real per capita income, improvements in education, health & general quality of life & improvements in quality of natural environment-resources. Thus, sustainable development is closely linked to economic development. It is a situation in which economic development does not decrease over time. Sustainable Development emerged towards the latter part of the 20th century.

The Brundtland Commission (1987), defined sustainable development as "the meeting of the needs of the present generation without compromising the ability of the future generation to meet their own needs."

Policy Measures for Sustainable Development.

Some of the important policy measures for sustainable development are as follows -

1. Reducing Poverty : Such development projects should be started which provide greater employment, opportunities to the poor. The govt. should expand health & family planning services & education so as to help the poor that will help in reducing population growth.
2. Removing Subsidies : Subsidies on the use of electricity, fertilisers, pesticides, petrol, gas, irrigation etc. led to their wasteful use & environmental problems.
3. Economic Incentive : Economic incentives relate to price, quantity and technology. Incentives are usually in the form of variable fees to resource users for the quantity of pollutants in air, water & land use. They are given rebates if less waste or pollution is generated than the emission standard laid down.
4. Trade Policies : Trade policy in relation to environment has two implications - first, concerning domestic policy reforms which emphasis on the establishment of less polluting industries away from the cities & the use of environmental friendly by adopting cleaner technologies. Secondly, trade policy concerning international trade policy.
5. Public Participation : Public awareness & participation are highly effective to improve environmental conditions. Formal & informal education programmes relating to environment should be conducted in this regard.

6. Participation in Global Environment Efforts: There are many international conventions & agreements on environmental protection & conservation which every country should follow. They include - the Montreal Protocol regarding the phasing out of ozone depleting chemicals, the Basel convention relating to the control of trans-boundary movements & disposal of hazardous wastes, Rio-declaration, Kyoto Protocol etc.

Kyoto Protocol

The Kyoto Protocol is a protocol to the United Nations Framework Convention on Climate Change (UNFCCC), aimed at fighting for global warming. The UNFCCC is an international environmental Treaty with the goal of achieving the "stabilisation of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system."

The protocol was initially adopted on 11th December 1997, in Kyoto Japan & entered into force on 16th Feb 2005. As on September 2011, 191 states have signed & ratified the protocol. The only remaining signatory that not to have ratified the protocol is the United States. Other UN member states which did not ratify the protocol are Afghanistan, Andorra, South Sudan. In 2011, Canada denounced the protocol.

Under the protocol, 37 countries (Annex I countries) commit themselves to a reduction of four greenhouse gases (i.e. CO₂, Methane, Nitrous oxide, Sulphur hexafluoride {CFCs, water vapour & ozone}) & two groups of gases (i.e. Hydro fluorocarbons & per fluorocarbon) produced by them, & all

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members countries give general commitments. At negotiations, Annex I countries (including the US) collectively agreed to reduce their green house gas emission by 5.2% on average for the period 2008-12. This reduction is relative to their annual emissions in a base year, usually 1990. Since, the US was not ratified the treaty, the collective emission reductions, of Annex I Kyoto countries falls from 5.2% to 4.2% below the base line.

Rio Declaration / United Nations Convention : The Earth Summit

It was held in Rio-De Janeiro, Brazil from June 3 to June 14, 1992; attended by representatives of 178 countries. Being the largest global conference on Earth, it is known as Earth Summit. It signed three historic agreements namely -

- Agenda 21, about global action plan to promote sustainable development.
- Convention on climate changes in order to achieve stabilisation of green house concentration in Biosphere within a time frame sufficient to allow ecosystem to adapt to climate changes naturally.
- Biodiversity Convention, the objectives of this convention are conservation of biodiversity (species of animals and plants).

Environmental Legislation in India.

The year 1972 was a landmark in the history of environmental management in India. The national committee of Environmental Planning & Coordination (NCEPC) was set up in 1972 to prepare reports on the state of environment.

in India. It was setup to promote greater co-ordination & integration in environmental policies & programme.

The important legislation that have been made for environmental management in India are as follows —

- 1) The water prevention & control of Pollution Act 1974: This is the first national law for pollution control enacted in 1974. This act provides for the establishment of pollution control board at the centre & state, for the purpose of prevention, abatement & control of water pollution.
- 2) The wildlife Protection Act 1972: This act was enacted to provide for the protection of wild animals & birds. It also provided for the regulation of possession, acquisition & trade in wild animals & animal productivity.
- 3) The Water Prevention Control of Pollution Act 1977: This act requires the local authorities & designated industries to pay a tax for water consumption.
- 4) Forest Conservation Act 1980: The govt. in 1980 amended the Indian Forest Act to prevent the state govt. from converting any reserved forest into a non-reserved forest without a prior approval of central authorities.
- 5) The Air prevention & control of Pollution Act 1981: The act empowers the state board to lay down the standard for emission of air pollutants into the atmosphere from industrial plants, automobiles etc. The steps for prevention & control of air pollution are given by this act.
- 6) The Environmental Protection Act 1986: Under this act the central govt. was empowered to take all necessary measures for the purpose of protecting & improving the quality of

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environment. The act empowered Ministry of Environment & forest, the power to directly order the closure of firms that violate effluent controls.

7) Factories (Amended) Act-1987: This act permits employees to inform the factory inspectorate directly about the safety violation during the operation of the plant.

8) The public Liability Insurance Act 1991: This act provides for public liability insurance for the purpose of providing immediate relief to the person affected by accidents during while handling hazardous substances.

9) National Environment Tribunal Act-1995: The United Nations conference on Environment & Development (Earth Summit) held at Rio-De-Janeiro in 1992, promoted by the govt. of India to enact this law. In the conference the resolution called upon the member countries to develop national laws, fixing liabilities in cases of industrial accidents & providing compensation for the victims of pollution & other environmental disasters.

The above analysis reveals that, India's environmental policy has improved in terms of regulatory measures. But its implementation is hampered by conceptual problems in understanding the nature of the problems. Therefore, with the current trends towards the economic liberalisation & globalisation, there is a need for an approach that would create incentives for developing cleaner technology & faster cleaning industries.

Common Property Resource (CPR)

An important area where market may fail to allocate resources efficiently is when it is impossible to deny access to an environmental asset. It is CPR that often leads to inefficient allocation of resources & leads to the problem of commons.

A property on which well-defined collective claims by an exclusive group are established, the use of the resource is subtractive, having the characteristics of a public good such as indivisibility shall be termed as the CPR. Some prominent examples of CPR, are common grazing grounds, village panchayats, lakes and tanks, certain types of forest assigned to the communities, water bodies & so on. From environmental point of view, bio-diversity also comes under the category of CPRs.

A CPR in principle has two basic characteristics.

A well defined group or community has to have the exclusive rights on the use of the resource. There is the non-excludability condition that no member of that community can be excluded from the use of the resource. However, no single individual in the group has any exclusive property rights on those resources.

Use of the resource is subtractive in the sense that use of it by any user would reduce the welfare of the other members of the group.

On the practical grounds however, there are a few additional characteristics —

→ Almost like a public good, there can be some degree of indivisibility of the resource.

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- A particular group or community can have exclusive rights on the use of & access to the resource without ownership rights.
- Exclusion of users outside the group to those resources is often problematic.
- There ought to be a set of rules regarding the use of the resource & sharing its benefits.

CPR assumes the nature of 'open access' whenever one or the other characteristics mentioned above are violated. A much referred to the problem with CPR is the 'tragedy of commons'. Whenever any of the set rules & regulations characterised for CPR are violated, individual choice may prevail over social choice. At that time it is very rational for an individual to over extract or overuse the CPR & get not be responsible individually for the damage. Therefore, when CPR assumes the nature of 'open access', it leads to over exploitation of resources. If one person's consumption of an asset rivals second person's consumption but both have legal access to the asset, both the persons have an incentive to capture as many of the benefits that the asset provides as soon as possible before the other person captures them. In such cases, they may over use the asset ~~relative~~ relative to what is best for the society. When overuse occurs as a result of non-exclusion the market fails to signal the true scarcity of the asset. This potential problem associated with non-exclusion & open access have been recognised & the issue was

popularised by Hardin (1968) article entitled 'The Tragedy of Commons'.

Fishing grounds are the best examples of a potential open access resource given that more fish caught by one person implies less fish for all others. All fishermen have an incentive to increase their fishing effort beyond the point where the market price for the fish equals the marginal cost of harvesting. Scarcity value of the resource is ignored. The result is over fishing & depleting of the stock to a level that can't sustain itself.

Thus, when CPR assumes the nature of open access, it results in overuse of the resource that may lead to the problem of sustainability & thus the problems of commons.