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M.Com (Applied Economics)

Semester- IV

Paper- Environment and Resource Economics

Topic: Rules Sustainable Development

Meaning:

There are many definitions of sustainable development. But the most popular definition is by the Brundtland Report. It defined sustainable development as “meeting the needs of the present generation without compromising the needs of future generations.” Sustainable development means that development should ‘keep going’. It emphasises the creation of sustainable improvement in the quality of life of all people through increase in real income per capita, improvements in education, health and general quality of life and improvements in quality of natural environmental 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 is development that is ever lasting and contributes to the quality of life through improvement in natural environments. Natural environments, in turn, supply utility to individual inputs to economic process and services that support life. As pointed out by Pearce and Warford, “Sustainable development describes a process in which natural resource base is not allowed to deteriorate. It emphasizes the hitherto unappreciated role of environmental quality and environmental inputs in the process of raising real income and quality of life”.

Sustainable Development Rules:

Different schools of thought have formulated certain rules and approaches to define sustainability from different perspectives.

1. Safe Minimum Standards:

Safe minimum standard analysis is one decision methodology which can be used to address those ecological concerns only which are given little attention in economic cost-benefit analysis. A safe minimum standard is any non-economic criterion which a project must meet to be approved. SMS analysis is a time tested standard operating procedure that is widespread throughout engineering design, health planning and industrial worker safety.

2. Hartwick-Solow Rule:

Hartwick-Solow rule of intertemporal equity states that future generations are able to be at least as well off as current generations by maintaining the constant levels of society's capital stock. While natural resources exhaustion must be translated into the flows of income that are invested into other forms of capital (i.e., human capital).

Figure-1

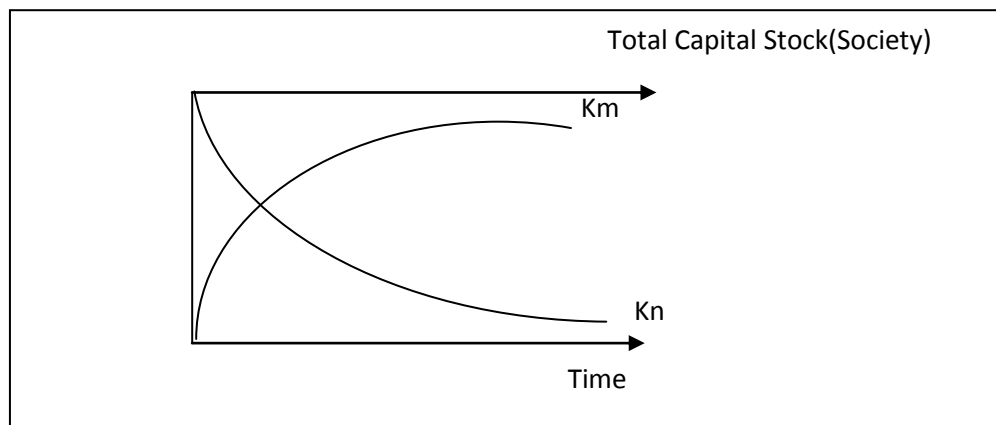


Figure 1. indicates the stock of natural capital (K_n) is falling towards zero over due course of time, but the stock of man-made capital (K_m) is increasing in order to maintain society's capital stock.

Total capital stock includes man-made capital (e.g., accumulated knowledge and embodied training) and natural capital (e.g., forests, ozone layer and natural resource stocks). With sustainability rule, it is permissible to exhaust some of the natural capital endowment so long as the overall capital stock is maintained. Thus, the present generation can make choices that

use up some of the natural capital provided the proceeds from this consumed stock, finance offsetting increase in other capital stock so that subsequent generations are well-off.

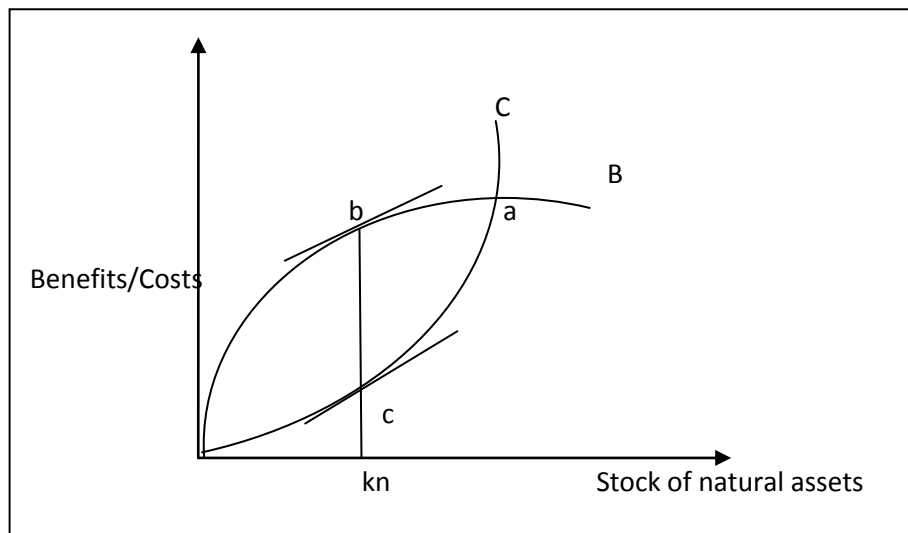
3. London School Thought:

The stock of natural resources assets or of environmental assets includes soil fertility, forests, fisheries, the capacity to assimilate waste, oil, gas, coal, the ozone layer and biogeochemical cycles. The necessary condition for sustainable development is that the natural capital stock should be conserved and improved.

This is interpreted to mean that the natural capital stock should remain at least constant. This can be measured in terms of the cost-benefit analysis of changes in the natural capital stock. If it is reduced, say in terms of clearing forests for cultivating land or for habitation etc., there will be benefits in terms of the use of the land for more productive purposes.

Similarly, when the atmosphere is kept clean, it is a benefit and the damage of polluted environment is a cost. Therefore, sustainability is consistent with maintaining and improving natural assets. The stock of natural assets is shown on the horizontal axis while benefits and costs on the vertical axis in Figure 2. The cost curve C shows that as the stock of natural capital (K_n) increases, there are increasing costs in the form of foregone benefits for not conserving the environment.

Figure-2



The benefit curve shows the benefits to users and non-users of natural environments. If the difference between two curves is the maximum, then it is a situation of optimum stock of environment. In terms of the figure, the difference is equal to be and K_n optimum stock of environment. If the difference is less than be, or the existing stock is to the left of optimum level K_n , then there is a need for improvement in environmental quality and vice versa.

Some economists do not agree that more importance should be attached to natural capital than to man-made capital and human capital. According to them, sustainable development relates to the conservation and improvement of the overall capital stock comprising natural, man-made and human. This view is consistent with efficiency and intergenerational equity.

4. Daly's Operational Principles for Sustainable Development: Herman Daly has formulated four principles of sustainability:-

First, Daly calls upon the need to maximize resources efficiently with respect to renewable resources by exploiting them on a profit maximizing sustainable yield bases.

Second, with respect to the physical volume of inputs into the economy and its outputs by consciously limiting the over scale of resources use.

Third, technical progress for sustainable development should increase efficiency rather than an increase in throughput.

Fourth, with respect to non-renewable resources to maintain the total stock of natural capital by depleting non-renewable natural components (such as mineral deposits) at a rate corresponding to the creation of renewable substitutes.

Suggestive References

1. Robert Goodland and George Ledec, Neo-classical Economics and Principles of Sustainable Development (1987).
2. Hanley N., Shogren J.F. & White B. – Introduction to Environmental Economics.