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MEC-108

Economics of Social Sector and Environment

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By: Akanksha Kapoor



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of the
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Sample Question
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QUESTION PAPER

June – 2024

(Solved)

ECONOMICS OF SOCIAL SECTOR AND ENVIRONMENT

MEC-108

Time: 3 Hours]

[Maximum Marks : 100

Note: (i) Answer any two questions from Section A. (ii) Answer any five questions from Section B.

SECTION-A

Q. 1. State the three important functions of environment as a life support system. What is the message for the economy to keep it sustainable?

Ans. Ref.: See Chapter-2, Page No. 15, 'Economy-Environment Interaction' and Page No. 16, 'Life Support System and Sustainability'.

Q. 2. Appraise the nature of education as a good capable of being variously characterised. How does this pose a problem in its financing ?

Ans. Ref.: See Chapter-4, Page No. 39, 'Education as a Public Good' and Page No. 40, 'Nature of Demand for Educational Services'.

Also Add: The Core Financing Problem

The main challenge in financing education arises from its dual nature: it is both a **social necessity** and an **individual investment**. Governments need to decide:

- How much of education should be publicly funded to ensure equity and social welfare.
- How much should be left to individuals, reflecting the private benefits they gain.

This poses several problems:

- **Equity vs. efficiency:** More public funding can promote equity, but may be inefficient if taxpayers subsidize education for those who can afford to pay.
- **Access vs. quality:** Universal free education may lead to overcrowded and underfunded schools, lowering the quality of education.
- **Debt vs. opportunity:** In systems where students fund their own higher education through loans, debt can discourage participation, especially for lower-income groups, even if they would benefit from higher education.

Q. 3. Compare SNA, SEEA and ENRAP from the viewpoint of green accounting of economic activities of a country.

Ans. Here is a comparative table that highlights the key differences between the **System of National Accounts (SNA)**, **System of Environmental-Economic Accounting (SEEA)**, and **Environmental and Natural Resources Accounting Project (ENRAP)** in the context of green accounting:

Aspect	SNA (System of National Accounts)	SEEA (System of Environmental-Economic Accounting)	ENRAP (Environmental and Natural Resources Accounting Project)
Objective	Measures economic activities, production, consumption, and income generation.	Integrates environmental and economic information to measure sustainable development.	Focuses on natural resource accounting and environmental impacts on the economy.
Focus	Economic activities such as GDP, investment, and consumption.	Environmental sustainability and its impact on economic systems.	Monitoring the use of natural resources and their impact on economic sustainability.
Environmental Accounting	Does not include environmental depletion or degradation.	Accounts for environmental costs like depletion and degradation of natural resources.	Primarily focused on accounting for natural resource depletion and environmental impacts on economies.

Aspect	SNA (System of National Accounts)	SEEA (System of Environmental-Economic Accounting)	ENRAP (Environmental and Natural Resources Accounting Project)
Sustainability	Economic sustainability is the main focus, without considering environmental factors.	Focuses on environmental sustainability in addition to economic sustainability.	Strong emphasis on sustainable resource management and natural resource conservation.
Natural Resource Use	Not directly accounted for in detail.	Accounts for both renewable and non-renewable resource use, and degradation.	Explicitly focuses on natural resources like forests, water, minerals, and their sustainable use.
Pollution and Degradation	Does not account for pollution, degradation, or environmental externalities.	Accounts for pollution, waste, and degradation of ecosystems.	Emphasizes the impact of economic activities on environmental quality and resource depletion.
Economic Indicators	GDP, GNI, and other economic indicators.	Extended indicators like Green GDP, which include environmental aspects.	Similar to SEEA, but with more emphasis on resource-specific indicators and sustainable use metrics.
International Standardization	Highly standardized and widely used internationally by all countries.	Standardized by the United Nations, but adoption varies by country.	No universal standard; often implemented through regional or country-specific projects.
Approach	Focused on traditional market-based economic measurements.	Integrates environmental data with economic data to give a comprehensive view of sustainability.	A natural resource-focused approach that emphasizes managing and preserving resources for future generations.
Policy Use	Mainly used for economic planning, budgeting, and development.	Used for designing policies related to sustainability, natural resource management, and environmental protection.	Mainly used by governments and organizations to guide environmental and natural resource policies.
Examples of Use	GDP measurement, national income assessments.	Green GDP, environmental cost-benefit analysis, ecosystem service valuation.	Natural resource management, forest accounting, and resource conservation policies.
Data Sources	Economic data from markets, industries, and sectors.	Economic data combined with environmental data from resource use, pollution, etc.	Natural resource data, environmental impact reports, sustainability metrics.

This comparison highlights how each framework approaches green accounting, with SNA focused on traditional economic metrics, SEEA integrating environmental factors into economic assessments, and ENRAP emphasizing sustainable resource use and management.

Q. 4. “Demands for commodities are derived demands.” Explain this statement with reference to the Becker’s theory.

Ans. Ref.: See Chapter-7, Page No. 76, ‘Demand for Health Versus Traditional Demand Function’.

SECTION-B

Q. 5. Compare the efficacy of carbon tax and tradable permits to contain carbon emission.

Ans. Ref.: See Chapter-15, Page No. 172, ‘Carbon Taxes and Tradable Permits’.

Sample Preview of The Chapter

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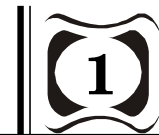
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Economics of Social Sector and Environment

BLOCK-I : SOCIETY, ENVIRONMENT AND ECONOMY

Society, State and Market



INTRODUCTION

In this chapter we will go to learn about the interaction between society, state and market that how they interact with each other and what are their roles in the economy. Alongwith the issues of the poverty and inequality which is the major problem and obstacle for a country's growth and development. And also covered the concept of inverted hypothesis as developed by Kuznets.

CHAPTER AT A GLANCE

INTER-RELATIONSHIP BETWEEN SOCIETY, STATE AND MARKETS

If we talk about in sociological terms, the term 'society' can be defined as network of social relationships and interactions. Thus, a system of social relationships is the most important aspect of society. On the other hand 'State' is a polity under a system of governance with a monopoly on force. It is a body of government making all rules and regulations and consists of officials, institutions and corporations. More specifically the term 'government' refers to the comprises of all constituents of the Union, State and Local governments alongwith all the government institutions and corporations under their control. The term 'market' in economics not only refers to the physical place where both the parties physically meet for the exchange of goods and services but now-a-days it refers to any medium which provides a strong base to customers and sellers to interact with each other and facilitate a transaction in exchange of money. And such transactions can take place online where there is no need to meet physically. So the equilibrium price of a product or service is determined by the interaction of

supply and demand that means when the market is in equilibrium, the prices will not change until and unless some external forces changes the conditions of supply and demand. Due to the modernisation of society, the state and the market can be separated from the society as like an institution, they are nevertheless highly interrelated with each other. In terms of democracy, the society plays a vital dominant role in influencing the decision-making process of the state in a way that state facilitates various rights to the citizens in the form of constitutional rights, etc., so to encourage them participating in the decision-making process. So the relationship between state, society and market is thus, dependent on the system of democratic governance which allows for the formation of the different societal groups. It is not always possible even though with the presence of strong system, failures can also occur in that case also but this can be minimized only with the help of the responsive and developed civil society or organizational groups. So the basic fundamental thing here, is governance has a very big role in involvement although markets can allocate resources efficiently, the state has to provide an efficient incentive and regulatory framework to facilitate the market to work efficiently. So at last for the economic, political and social development of the country development and activation of social capital and its use in the market governance is quite essential.

Role of State in the Market Economy

State regulation of economy has become necessary for the implementation of social policy, and general strategy of socialization in the broadest sense. Imperfections in the market adversely affect the functioning of the market in efficient allocation of scarce resources. So the government should provide

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the merit goods and build socio-economic infrastructure leaving the rest for the operation of market forces. Therefore, the argument is that market failures are no longer enough to justify the state's role as there is no guarantee that the state will be able to remove these distortions. Two theories are derived from the need for the state interventions in the market economy: The Public Interest Theory and the Interest Group Theory. As the name of the theory public interest theory itself depicts the meaning that it is something about the interests of the people so the theory is absolutely about to safeguard the interests of the people in the market by addressing them the factors of imperfect competition, incomplete information and externalities. The main and the vital role of the state is to prevent concentration of market power by promoting competition among economic entities. For the safeguard of the consumers from the incomplete access to information and acquiring of that which involve huge cost so for that state can establish well-designed liability rules to protect the consumers in case of failure of quality of the product so to meet the specified standards. And also such kind of government regulations and interventions is necessity too so that the polluters bear the cost of such bad environmental products generated while producing the goods and services. On the other hand, according to the interest group theory, state intervention in the market is required to protect the interests of the specific groups or regions. So now the role of the state is back nowadays as unregulated market forces may land the economy in crisis. Therefore, we can summarize in brief the role of the state in the market economy as follows:

1. The main vital role of the state is to provide the economy with a legal structure without which market cannot perform efficiently and legal structure involves property rights, rules, regulations, etc.
2. For the correct price signals to both the producers and consumers, competitive market is required which thereby controls the monopoly entities.
3. It is the responsibility of the state to protect the welfare of poor and marginalized groups by implementing affirmative policy actions and which further reduces the inequality in the society.

POVERTY

Poverty, the state of one who lacks a usual or socially acceptable amount of money or material possession. Poverty is said to exist when people lack

the means to satisfy their basic needs. There are two concepts of poverty Absolute and Relative. Absolute poverty can be defined as the state in which a subject lacks the means to meet his or her basic needs such as food and nutrition, clothing, shelter, healthcare facilities. On the other hand, relative poverty refers to the condition in which people are deprived of the minimum amount of income needed in order to maintain the average standard of living in the society they live in. Based on the income required for maintaining this minimum level of living, a poverty line is estimated. Because according to this analysis can be done that who is below this defined poverty line and *vice versa* as for the clearly distinction of poor and non-poor people. And this can be judge by this thing that a household having income level below the subsistence level is termed as poor and above it as non-poor. So it is observed that the poverty is estimated on the basis of consumption expenditure as it is more appropriate and necessary element as compare to the income because consumption not only depends on the current income but also on the past savings, accumulated assets and debts.

Measurement of Poverty

Some people are poor because they lack income, food, clothing and shelter and the cannot improve their skills and income earning capacity as they lack the essential needs for survival. So let us discuss some measure of the poverty. There are various methods of measurement of poverty. So the major methods of measuring poverty are discussed below:

Headcount Ratio

Headcount ratio is the population proportion that exists, or lives below the poverty threshold. One of the undesirable feature of this ratio is that it ignores the depth of poverty, if the poor becomes poorer, the head count index does not change. So it is estimated as:

$$P_0 = N_p/N$$

Where P_0 is headcount ratio; N_p is the number of poor; and N is the total population. For instance, if the Monthly Per-Capita Consumption Expenditure (MPCE) of 60 million households out of 179 million households of rural India is below the cut-off point, the headcount poverty ratio is $60/179 = 0.3352$. This implies, 33.52% of rural households in India are below the poverty line. If the value of MPCE (say Y_i) in a sample of household is below the poverty line (say Z),

i.e. $Y_i < Z$ then the i th counted as poor. If the value of $Y_i > Z$, then the i th household is counted as non-poor. Thus, the aggregate value of 'Proportion of poor household' by the headcount method (P_0) in a region can be represented as follows:

$$P_0 = 1/N \sum_{i=1}^N Y_i \text{ (if } Y_i < Z)$$

Therefore, headcount is simple to calculate and is widely used to estimate the absolute poverty, but has several weaknesses. That are, *Firstly* it does not tell us anything about the relative intensity of poverty in the two regions. *Secondly*, it does not indicate how poor the poor really are as a slight transfer of income from among the poor families alters the poverty estimate drastically. *Thirdly*, headcount ratio calculated from household level consumption data, does not capture the discrimination in consumption level across members like say by gender. Due to these weaknesses the measure of poverty calculated as 'poverty gap ratio' is superior to the headcount ratio.

Poverty Gap Ratio

The poverty gap ratio is the mean shortfall of the total population from the poverty line (counting the non-poor as having zero shortfall), expressed as a percentage

of the poverty line. It helps to understand the severity of poverty. It is estimated as:

$$P_1 = 1/N \sum_{i=1}^N G_i / Z$$

Where P_1 is poverty gap index; N = number of households; G_i = poverty gap i.e., the difference between the MPCE Y_i and the level of Z taken as the minimum income required for basic sustenance. If the value of $Y_i > Z$, then G_i is taken as equal to 0 and if $Y_i < Z$, then G_i is taken as equal to $Z - Y_i$. We can see the calculation in the Table further in the chapter. The poverty gap index for Region I (0.0133) is less than that of Region II (0.119) while by the headcount ratio the estimated poverty level was the same for both the regions. It helps the policy planners to better formulate the policies so to reduce the poverty. Poverty gap index also has some limitations. As like the headcount ratio it also violates Dalton's transfer principle as shown in Table below. So in both the regions, P_0 and P_1 are the same whereas apparently the severity of poverty in Region II is more than Region I. Thus, poverty gap index can give us an estimate of intensity of poverty between the regions but cannot provide a measure of the severity of poverty.

Table : Headcount Ratio and Poverty Gap Ratio in Two Regions

Region	MPCE (in Rs.) in 7 Sample Households							Z = Rs. 800	
	1	2	3	4	5	6	7	P_0	P_1
Region I	1200	1100	1000	975	900	700	700	0.286	
$G_i = Z - Y_i$	0	0	0	0	0	100	100		
G_i/Z	0	0	0	0	0	0.125	0.125		$0.250 \div 7$ 0.036
Region II	1250	1150	1400	1100	850	750	650	0.286	
$G_i = Z - Y_i$	0	0	0	0	0	50	150		
G_i/Z	0	0	0	0	0	0.0625	0.1875		$0.25 \div 7$ = 0.036

Note: P_0 is Headcount Ratio (i.e., no. of households below $Z \div 7$) and P_1 is Poverty Gap Ratio ($1/7 \sum G_i/Z$).

Squared Poverty Gap Ratio

It measures the severity of poverty for each area. By squaring the poverty gap for each household/individual, this measure gives greater weight to those that fall far below the poverty line than those that are closer to it. It is obtained as:

$$P_2 = 1/N \sum_{i=1}^N (G_i/Z)^2$$

To see the differential impact of P_2 as compared to those of P_0 and P_1 discussed above, let us again take the same example that was used to calculate P_0 and P_1 (Table ahead). Since the value of P_2 in Region II (0.04) is higher than that for Region I (0), as a measure of severity of poverty, P_2 is more sensitive and powerful than the headcount ratio and the equi-weighted poverty gap ratio.

Table : Measure of Poverty by the Squared Poverty Gap Ratio

Region	MPCE (in Rs.) in 8 Sample Households								Squared Poverty Ratio (P_2)
	1	2	3	4	5	6	7	8	
									P_1
Region I	950	1100	1000	975	750	775	790	1400	$Z = 800$
$G_i = Z - Y_i$	0	0	0	0	50	25	10	0	
G_i/Z	0	0	0	0	0.0625	0.03125	0.0125	0	
$(G_i/Z)^2$	0	0	0	0	0.0039	0.0010	0.0002	0	$1/8 \sum (G_i/Z)^2 = 1/8 * 0.0051 = 0.00064 \approx 0$
Region II	1250	1150	1400	1100	550	600	490	1200	
$G_i = Z - Y_i$	0	0	0	0	250	200	310	0	
G_i/Z	0	0	0	0	0.3125	0.25	0.3875	0	
$(G_i/Z)^2$	0	0	0	0	0.0977	0.0625	0.1502	0	$1/8 \sum (G_i/Z)^2 = 1/8 * 0.3104 = 0.0388 \approx 0.04$

Multidimensional Concept of Poverty

Poverty is often defined by one-dimensional measures such as income. But no one indicator alone can capture the multiple aspects of that constitute poverty. Multidimensional poverty is made up of several factors such as poor health, lack of education, inadequate living standard, lack of income, disempowerment, poor quality of work and threat from violence. International measure of acute poverty covering over 100 developing countries uses three dimensions and 10 indicators):

Dimensions

1. Health

- (a) Nutrition
- (b) Child mortality

2. Education (Knowledge)

- (a) Years of schooling
- (b) School attendance

3. Standard of living

- (a) Cooking fuel
- (b) Sanitation – sanitation facility
- (c) Drinking water
- (d) Electricity
- (e) Housing – housing material for roof, walls and floors
- (f) Assets – radio, t.v., telephone, computer, refrigerator, bike, car, etc.

The headcount ratio can also be used to measure multidimensional poverty

$$H = q/n$$

Where 'q' – the number of multidimensional poor
'n' – the total population.

The intensity of poverty (A)

$$A = \frac{\sum_1^q c}{q}$$

Where 'c' is the total weighted deprivations experienced by the poor.

The Multidimensional Poverty Index (MPI) is the product of headcount ratio (H) and the intensity of poverty (A). The MPI is computed as:

$$MPI = H * A$$

Decrease in MPI may be observed due to the reduction in the percentage of people identified as poor (H) and reduction in intensity of poverty (A).

Table below shown the data estimated by the Alkire and Seth (2013) of MPI for India using National Family Health Survey (NFHS) data for 1998-99 and 2005-06. Their estimation shows that the MPI declined from 0.300 to 0.251 (i.e., a net decline of 16%). The decrease was mainly due to the reduction in the percentage of people identified as poor (H) and reduction in the intensity of poverty (A).