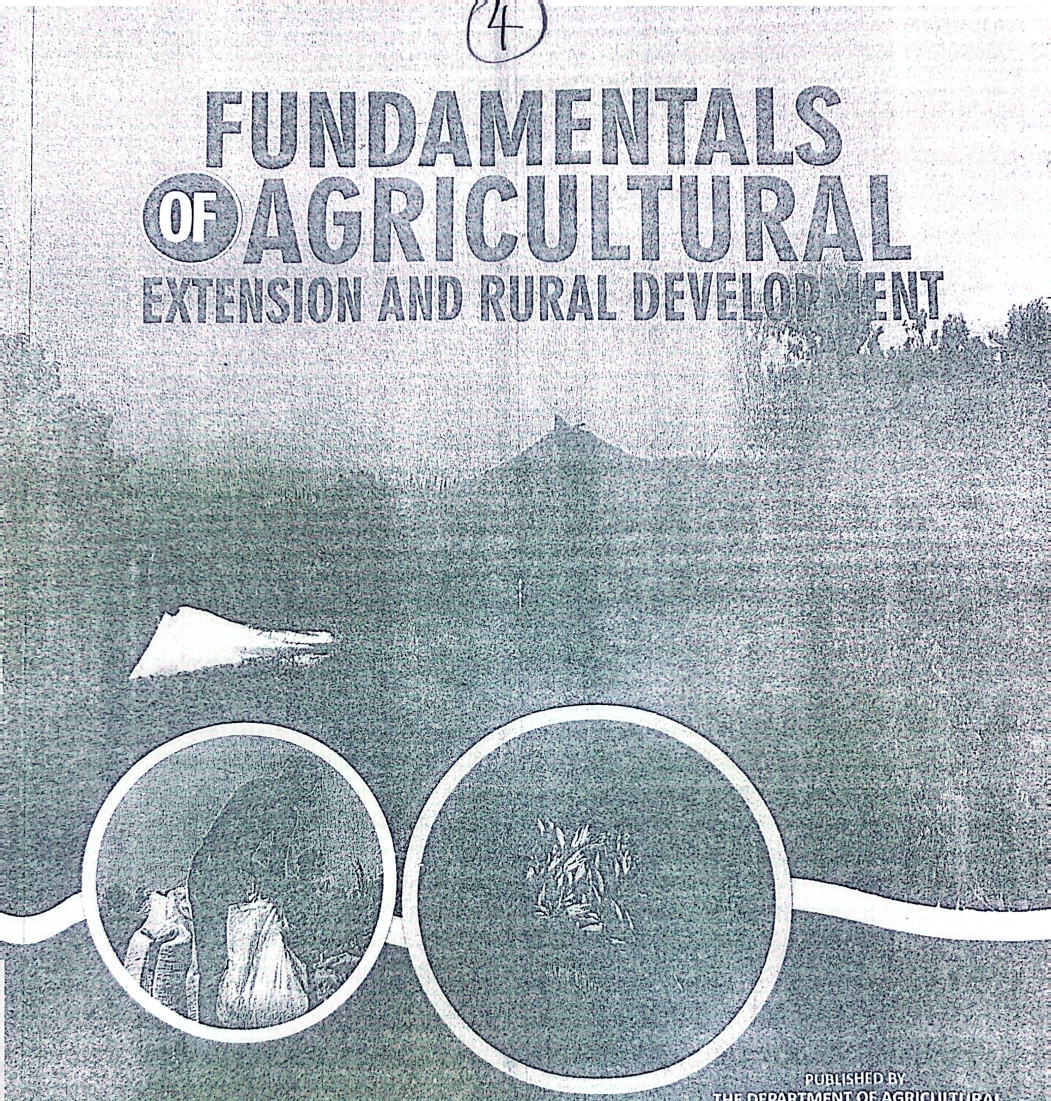
FUNDAMENTALS OF AGRICULTURAL EXTENSION AND RURAL DEVELOPMENT



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CHAPTER TWELVE

CONTEMPORARY ISSUES IN AGRICULTURAL EXTENSION

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*Food Systems
*Food Security and Food Insecurity
*Poverty
*Gender and Rural Poverty
* Sustainable Development
*Livelihood and Sustainable Livelihood

Concept of Food system: The food system encompasses food, nutrition, health, community, economic development, and agriculture. It includes all processes involved in keeping people fed. These processes include growing, harvesting, processing, packaging, transporting, and marketing, consuming, and disposing of food and food packages. It also includes the inputs needed and outputs generated at each step. The food system organization, however, thrives in a favourable social, political, economic, and natural environment.

The Concept of Food Security:

Several attempts have been made by scholars to define food security based on different contexts. It has been defined as a situation when all people always have physical and economic access to sufficient safe and nutritious food to meet their dietary needs. It also involves food preferences for an active and healthy life. Food security was equally described as a condition that allows all people to have physical, social, and economic access to sufficient, safe, and nutritious food all the time. The food should also meet the nutritional demands of an active and healthy life (FAO, 1996). The world food summit reaffirmed this definition in 2009 and the concept was extended and specified by adding the following four pillars of food security: i. Availability, ii. Access iii. Utilization, and iv. Stability.

Okunmadewa et al. (1990) defined food security as the availability and access to food by any being who requires it. Food security at international, national, and household levels means that the world, nation, and households must produce or have access to enough food to meet its growing population requirements and there must be unhindered trade in food products at relatively stable prices. This implies that there must be adequate availability of food from all sources to meet the per capital food requirements of the population over time. Food security, however, is an all-year access to sufficient, safe, and nutritious food for people all the time to maintain a healthy and

active life. Food security has three (3) dimensions: a. assurance of a safe, nutritionally adequate food supply at national and household levels; a reasonable degree of stability in the supply of food throughout each year and from one year to the next; every household having physical, social, and economic access to food sufficient to meet its needs.

Food Security Measurement and Indicators

Food security measurement is required to classify food insecure households to assess the severity of their food shortages, and to depict the extent of their insecurity (Hoddinott, 2001). Several methods can thus be used for comparison to measure the state of food insecurity at the household level. Considerations are given to costs, time requirement, skill, and susceptibility to misreporting among four outcome indicators namely, a. individual intake household b. calorie requisition c. dietary diversity, and d. index of coping strategies. But household calorie acquisition is found to be a better measurement. Campbell (1991) outlined four components for measuring food security at individual and household levels as follows: i. availability of sufficient quantity of food ii. quality of available food in terms of food types and variety of diet iii. Physiological acceptability relating to feelings of food deprivation, restricted food choice, and anxiety about quantity and quality of food on-hand in the household stores, and iv. social acceptability of consumption patterns determined by social norms in respect of meal frequency, composition, and way of food acquisition such as being able to purchase foods instead of having to beg, scrounge or steal food. Several indicators or tools have been aggregated as there is no single indicator that is appropriate to measure household food security. However, efforts are being intensified to search for accurate, rapid and consistent indicators to measure food security. In a bid to advance measurement indicator for food security, Barrett (2010) reported that the approaches being considered to follow four major 'pillars' (availability, access, utilization, and risk- i.e., stability or vulnerability) which in turn tend to follow different strands of analysis. Hence, the danger in using a single measure which is unrelated to a more holistic food security definition is the tendency for underestimating food insecure individuals.

The Concept of Food Insecurity

Food insecurity can therefore be described as a condition in which people lack basic food intake necessary to provide them with energy and nutrient required for productivity. United Nations reported that food insecurity entails the denial of choices and the opportunity of living a tolerable life. It is noteworthy that food security could be transitory; a situation whereby there is a temporary shortfall in access to adequate food because of instability in food production, increase in food prices, or income deficits (Omonona and Agoi, 2007). It has become clearer that production and availability alone do not lead to food security, since those who lack purchasing power (from permanent

employment income) lack access to a balanced diet. It is therefore evident that where availability and access are satisfactory, necessary biological absorption of food requires clean drinking water, environmental hygiene, primary health care and education. Some observers argue that strategic food stocks of grain are of value only to alleviate temporary food insecurity, the prime purpose of strategic food stocks is to provide emergency reserves against regional, national, local, and seasonal shortages to stabilize food prices and counteract fluctuations in supply and availability. Reserve food stocks are customarily controlled by government agencies, authorized to maintain quantities sufficient for defined time periods. Reserve stocks is essential in regions susceptible to frequent drought, provide short-term relief but cannot be considered a panacea for chronic food insecurity.

Food Insecurity Measurement and Indicators

Food is required for sustenance while good food consumption pattern is linked with healthy living. The purpose of eating food is to maintain health, prevent diseases and enjoy productive living. Quite a few people abuse this purpose and consume food only for survival. This is because most people lack the basic nutrition knowledge regarding the required food quantity and quality, food selection and its combination, and cooking skills to make consumption of nutritious food a lifestyle. Inadequate nutrition knowledge coupled with inadequate access to food and supply thus results in food insecurity.

Maxwell et al. (2013) compared seven different measures of food security which are: a. coping strategies index (CSI), b. reduced coping strategies index (RCSI), c. household food insecurity and access scale (HFIAS), d. The household hunger scale (HHS), e. food consumption score (FCS), f. household dietary diversity scale (HDDS), and g. a self-assessed measure of food security (SAFS). Vhurumuku (2014) also assessed FCS, HDDS, CSI, Individual Dietary Diversity Scale (IDDS), HHS, SAFS, RCSI and CSI as indicators of food security. Meanwhile food insecurity can set in supposing higher scores are recorded through the mentioned indicators.

Principles of Community Food System

The principles of the community food system include the following.

(i) Food security: Local community food security addresses food access within the country content especially for low-income households and also its goal to develop the rural food base.

(ii) Proximity: It tries to bridge the gaps between the various components of food system. Therefore, the distance between various components is generally shorter than those in urban or natural or global food system.

(iii) Self-reliance: It aims at increasing the degree to which community meets its food needs while selling excess to other communities.

(iv) Sustainability: This focuses on the ability of the community to meet their food needs as well as that of future generations. The process ensures environmental protection, profitability, ethical treatment of food workers and community development.

Goals of Community food system

The overall goal of building a community food system is to meet the food needs of people living in a particular locality or rural area. The specific goals include:

a. Provision of dietary change that complements the seasonal availability of food produced and processed by the local food and agriculture system.
b. Improved access for all community members to adequate, affordable, nutritious diet and use.
c. A stable increasing base of family farms that use integrated production practices to enhance environmental quality.
d. A creation of marketing channels and processing facilities that directly links farmers and consumers thereby conserving resources needed for food transportation.

Strategies for Community Food System

The major strategies for community food system are as follows:

i. Community Supported Agriculture (CSA): Under this strategy farmers and consumers come together in a mutual relationship that fosters opportunity for consumers to buy shares in the farming business thereby creating economic support for farmers to expand production and make food available. Activities embarked upon include:
   - Granting more access to low-income holders through sliding scale fee, friendly duration process, working shares and payment plans.
   - Empowerment programme to educate community members on sustainable agriculture, good nutrition, and proper food handling.

ii. Farmers' markets: Agricultural produce and products are purchased through farmers' markets. This would improve farmers income while fostering availability and varieties of food. This strategy is strengthened through:
   - Guidelines to ensure only locally produced products are sold in the market.
   - Provision of market information and avenues which enable farmers and consumers to share ideas and concerns about market operation.

iii. Community Economic Development: Community economic development initiatives include projects that give people the opportunity to start or enhance food related small businesses and cottage industries as well as efforts to bring supermarkets, local fast-food enterprises etc. This strategy focuses on:

- Initiatives that target job creation for people in low-income community.
- Business that uses locally, regionally, and sustainably grown food and market products.

Definitions and Attributes of Poverty

A concise and universally accepted definition of poverty is elusive. Poverty has been defined as deprivation in the valuable things that a person can do or be. In other words, poverty is a socioeconomic condition of a person's inability to adequately cater for his basic needs of survival. Poverty affects many aspects of the human condition including the physical, moral, and psychological state of the mind. The World Bank classified poverty in terms of lack of access to resources by individuals which leads to a state of powerlessness, helpless, and despair, inability to subsist and protect oneself against economic shocks, social, cultural, and political discrimination, and marginalization among others.

The National Policy on Poverty Eradication in Nigeria summarises the main attributes of poverty as follows:

- Insufficient food
- Lack of access to potable water
- Inadequate nutritional content
- Unfit/unkempt housing
- A high rate of infant mortality
- Low life expectancy
- Inadequate health care
- Lack of productive assets
- Lack of economic infrastructure
- Inability to participate in decision making processes
- State of powerlessness and helplessness
- Deprivation and lack of rights
- Insecurity, vulnerability and exposure to risks, shocks, stresses, hazards, and disasters.

The World Bank report had shown that about 51% of Nigerians lack access to safe potable water while 56% have deficiencies in sanitation and hygiene. In Nigeria, incidence of poverty has been on the increase, rising from 28.1% in 1980 to 44% in 1992 and 65.6% in 1996 but reduced to 54.4% in 2004 (NBS, 2006). Moreover, 70.8% of the

population reported to have lived on less than $1.25/day (international extreme poverty line) in 2005. More recently, poverty indices estimated the Multidimensional Poverty Index (MPI) for the poor in Nigeria at 63.5%, income poor ($1.25 a day) at 64%, income poor ($2 a day) at 84% and Human Development Index (HDI) at 0.511 (UNDP, 2009; OPHI, 2009). Sadly, poverty disproportionately affects women, children, the elderly, and people with disabilities (PWDs).

In some communities in Nigeria, women have low social status and there are restrictions in their access to both education and income generating activity. Women without adequate income commonly depend on men for support, but often get little or nothing. Neither poor families nor the government of Nigeria can adequately support the non-working class while the poor children suffer the consequences through high rates of child morbidity and mortality. Thus, the rate of poverty in Nigeria has worsened since the late 1990s, to the extent that the country is now considered as one of the 20 poorest countries in the world. Over 70% of the population is classified as poor with 35% living in abject poverty.

Types and Components of Rural Poverty

Economists tend to view poverty at a distance on a continuum towards zero purchasing power while its polar opposite - affluence, is a distance on the same continuum toward full purchasing power. The conception in terms of purchasing power is acceptable and useful when considering 'who is able to get what' in the society. Three major types of poverty have been revealed by previous findings. These are: a. Absolute, b. Relative, and c. Zero-sum poverty.

a. *Absolute poverty or destitution* is defined as misery linked to an insufficient resource base, lack of income, narrow margin, high risk of failure, hunger, disease etc.
b. *Relative poverty* is misery linked to experiencing outcomes which are less satisfactory than those of relevant others while not being able to do much about improving one's own outcome so that one must adapt one's aroused aspirations to one's inescapable unsatisfactory outcomes instead of through innovation.
c. *Zero-sum poverty* is also a misery on the other hand linked to patronage, oppression, exploitation, usurpation, and abuse by the powerful others.

Consequently, poverty in the rural areas is a combination of all the types that have been mentioned and for ease of assessment and measurement, the World Bank Glossary of Poverty and Human Development further broke poverty into the following components.

1. Poverty line or poverty threshold: This is the basic or lowest amount of money an individual may have to survive on a daily basis. In 1985, the World Bank set an international poverty boundary at US$1 per person per day for the purpose

of international comparison; it was later reviewed to US$1.25 per day per person. Notwithstanding, nations are expected to establish their own poverty thresholds using either 'cost of basic needs' (food and non-food items) methods, 'food or dietary energy intake' method, or 'food share' method.

2. Functioning and capability: The functioning of a person refers to the valuable things the person can do or be (such as being well nourished, long-living, and activeness in community life) while the capability of a person stands for the different combinations of functioning the person can achieve.
3. Vulnerability: This is susceptibility to risks, poverty, powerlessness, weakness, and hazards. It has two faces - external exposure to shocks, stress, and risk; and internal defenselessness, an inability to cope without suffering damaging loss. For instance, households that are headed by women were found to be particularly vulnerable to poverty.
4. Ultra-poverty: This is a condition where a household cannot meet 80% of the FAO-WHO minimum calorie requirements even when using 80% of its income to buy food.
5. Transient and chronic poverty: Transient poverty is short lived, temporary, or seasonal poverty condition while chronic poverty is a long term or structural poverty.
6. Depth of poverty: The average distance beneath the poverty threshold that is expressed as a percentage of that line. The depth of poverty is measured for the entire population (poor and non-poor) and is usually referred to as poverty gap. It shows the relative closeness of the poor to the line defining poverty, and it can capture a worsening of people's conditions.
7. Incidence of poverty: This happens when poverty is expressed as a headcount ratio, and it is basically an estimation of the fraction of people below the poverty line.

Correlates and Consequences of Poverty

Economic development experts, psychologists and sociologists have traced poverty in the past to the personal characteristics of the poor, lack of motivation to achieve, laziness, fatalistic outlook to life, etc. Political scientists also linked poverty to colonial exploitation, neo-colonialism, instability of government, internal colonialism, globalization, tribalism, corruption, etc. In most instances, the reasons for poverty are somehow also creates conditions that keep such people poor. Nevertheless, the major factors that correlate with (rather than directly cause) poverty include:

1. Overpopulation: A family of ten is more likely to be poorer than one with two, every other thing being equal. For example, a country that has a smaller population and the same aggregate GDP per capita with another country that

has a higher population will have fewer poor citizens. Moreover, number of dependents, age, sex ratio and fertility rates are among poverty indicators.

2. Resource base: This refers to the amount and variety of natural resources that are potentially available in the society. They comprise the level of expertise or technology locally available to tap, exploit and develop.
3. Wars and instability of government: The absence of continuity in government developmental programmes and recurrent changes in managements often translate to perpetuation of poverty among the administered. Wars disrupt lives and people become refugees, orphans, widows and disabled as a result. Coincidentally, these cluster of people form the bulk of the poor.
4. Illiteracy, inadequate education, and unemployment: Education is linked to the development of human capital, work skills and earning potentials. It is equally related to socio-political participation, that is, the latitude of freedom, self-respect, and fundamental human rights a person can enjoy in his community.
5. Mismanagement and insensitive leadership: Retrogression in people's socio-economic status becomes inevitable when funds meant for the execution of poverty alleviation programmes are diverted. Additionally, poverty margin becomes wider when leaders are selfish and insensitive to the plights of those they rule.

Other conditions that aggravate poverty scenarios are:

a) Neglect of rural infrastructure
b) Environmental problems
c) Civil unrest
d) Inequality in income distribution
e) Economic orientation
f) Rapid increase in population
g) Over-dependent on oil exports
h) Domestic policy mistakes, etc.

Consequences of Rural Poverty

Among the poverty indices are the inability to feed well, poor health and high susceptibility to health problems; infant mortality, low life expectancy, poor housing or lack of shelter, single parent families, street children due to parental neglect or abuse, inability to send children to school, high school drop-out rates, mental derangement, prostitution, development of slum settlements in cities, increased male out-migration from rural to urban areas due to joblessness, edginess among unemployed youths, upsurge in cases of drug abuse and violent crimes, loss of self-esteem, powerlessness or inability to participate meaningfully in social and political life.

Poverty Eradication Strategies in Nigeria

Nigeria has remained on the list of poverty-stricken nations despite its affiliation with the United Nations and this has further prevented the country from attaining improved living standards. The long period of oppressive military rule which culminated in its exclusion from Commonwealth in 1995; corruption at high places; and insincerity of implementers of poverty alleviation programmes are fundamental reasons why the country has remained poor. Also included in the list of factors entrenching the country in poverty are gross under-development of natural resources; exclusion or inadequate involvement of stakeholders in needs identification, project execution and evaluation; international debt servicing burden etc. In a bid to lessen the poverty indices, Nigeria has, over the years, embarked on various educational, socio-cultural, political, and economic reforms, either on its own initiative or as a response to internationally agreed action plans on poverty alleviation. Nevertheless, the United Nations through its development assistance framework is consistently cooperating with countries like Nigeria to improve living standards and eradicate poverty. Examples exist in the UNDP, IFAD, FAO, UNICEF, and the World Bank who have assisted various states of the country to execute poverty reduction projects through self-employment and increased food production. Foreign donors such as Global 2000 and other NGOs have also achieved over 98% guinea worm eradication success as of 2003 and assisted in sinking boreholes for safe drinking water.

Nigeria has equally established specialized ministries at the federal and state levels to complement development assistance from foreign agencies. Women and youths have been better included (through affirmative action) in participation at all levels of governance. There is an increased level of involvement and engagement as we now have more women ministers, legislators, senators, deputy governors, judges, heads of sensitive organisations such as the Customs, Drug Law Enforcement Agency, and Universities etc. The wives of the administrative Head (First Ladies) at all levels have also engaged themselves in poverty alleviation programmes through their work with the girl child, rural women empowerment, prevention of prostitution and trafficking among young unemployed girls and abuse through sexual harassment and rape. Human Rights Lawyers have filed many litigations in the court of law to defend the voiceless and the vulnerable in the society. Federation of Women Lawyers has also defended the rights of widows and other women who are poor and defenceless. More classrooms are being built through Universal Basic Education and the World Bank leading to higher school enrolments in most states of the federation. Meanwhile, the poor include, not only, the rural dwellers, but retirees who have not been paid their due retirement benefits and pensions including able-bodied unemployed.

Social Capital and Safety-Nets

Social capital: is a sociological concept used in business, economics, organizational behaviour, political science, public health, and the social sciences in general to refer to connections within and between social networks. It can be defined as a general problem-solving approach for the modern society because it shares the core idea that social networks have value. Social capital refers to networked ties of goodwill, level of support, common language, shared norms, social trust, and a sense of mutual obligation that people can derive value from, hence, it is about value gained from being a member of a network. For instance, using a tractor for farming (physical capital) or university education (human capital) can increase productivity for both individual and group so do social contacts affect the productivity of individual and groups.

According to Woolcock (2001), there are three types of social capital.

1. Bonding social capital: This refers to ties between people in similar situations such as immediate family, close friends, and neighbours.
2. Bridging social capital: This encompasses more distant ties of like persons such as close friends and colleagues at work.
3. Linking social capital: This implies ties among people in dissimilar situations such as those who are entirely outside of the community.

Social Safety-Net: This is a system of available payments in cash or in kind which will keep people's incomes from falling below some socially accepted minimum level. It is a mode of payment that covers old people, the sick, disabled, unemployed etc. Social safety net is a non-contributory transfer programme seeking to prevent the poor or those vulnerable to shocks and poverty from falling below a certain poverty level. Safety net programmes are mostly executed by public sector (federal, state, or aid donors), private sector such as private firms, charity organisations, NGOs, and informal household transfer.

Methods of Implementing Social Safety-Nets

An adequate safety-net programme should be a system that, at the least, targets a group of beneficiaries who share some ideologies. The programme should have mechanism that will register the beneficiaries, set up programme conditionality, monitor and evaluate its performance. More importantly, a stakeholders' strategy that clearly assigns specific tasks and responsibilities to each agent is critical for the success of the programme. It is noteworthy to acknowledge that every intervention is unique in its complexity and there is a need to adapt such interventions to local circumstances. It is equally important to stage a fluent communication mechanism and a solid data processing system. Some methods used in implementing safety-nets are listed.

- Cash transfers.
- Food based programmes such as supplementary feeding scheme and food stamps, vouchers, and coupons.
- In-kind transfers such as school supplies and uniforms.
- Conditional cash transfers.
- Price subsidies for food, electricity, or public transport.
- Public works.
- Fee waivers and exemptions for health care, schooling, and utilities.

Beneficiaries of Safety-Nets Programme

a. The chronic poor: This is category of people who are extremely poor to the extent that they can hardly afford a good meal per day. Even in good times these households are poor and can be mostly found in rural areas.
b. The transient poor: This group are near the poverty threshold and can easily fall below the line when an individual from the household or the economy faces hard times. Unemployed or underemployed households fall into this category.
c. Those with special circumstances: These are sub-groups of the population for whom general stability and prosperity alone will not be sufficient. Their vulnerability may stem from disability and/or social vices like ethnic discrimination, displacement due to conflict, drug abuse, domestic violence, or crime.

Gender and Poverty

Globally, almost 852 million people are chronically hungry because of extreme poverty while up to 2 billion people lack food security intermittently due to varying degrees of poverty. Over 60% of the world's under-nourished people are in Asia and a quarter in Africa. The proportion of people who are hungry is greater in Africa (33%) than Asia (16%). The FAO figures as of 2009 indicated 22 countries, 16 of which are in Africa where undernourishment prevalence rate is over 35%. Poverty may be regarded as the inability to access necessities of life and an individual will be deemed poor if they are not able to access food, shelter and clothing. Poverty has some patterns, that is why today, of every ten cases of extreme poverty (less than $1.25 per day), seven would live in villages and rural areas all over the world. However, driven by the need for education, health care and better income, rural poverty is migrating to urban areas in the hope of getting a better chance and an equitable share in opportunities; but often end in despair and destitution.

Poverty also harms certain gender more than the other. It has been observed that poverty is more predominant among women than men due to the following reasons:

a. Gender disparities in rural empowerment exist everywhere such as the burden of unpaid work at home, lack of education and bargaining power, and lack of access to assets constitute significant economic disadvantages for women compared to men.

b. Women tend to be more risk averse compared to men when engaging in rural works and farming. This is also recognized as a factor responsible for poverty among women.

c. Gender dimensions of rural employment change over time and vary across nations.

d. Women are less educated in most rural areas. Culture in more cases hinders women's education as most rural people prefer to educate their male children than the female ones..

Ways of reducing poverty among women

1. Empowerment programmes targeted at women.
2. Prioritising women education.
3. Prioritising women employment, encouraging 30% affirmative action.
4. National budget for women's needs to be institutionalized in all the arms of the government
5. Women should be allowed to have a voice in projects or programmes that affect their lives.
6. Credit facilities or soft loans should be provided for women farmers by the government agencies, international donors, and non-governmental organisations.
7. Policy to mandate equal gender attention should be implemented alongside people with disabilities (PWDs).
8. Fostering gender awareness among rural dwellers

Steps to carry women along in developmental projects: Participation of women in programmes and projects that affect their lives is a key factor in alleviating poverty in rural areas. Some of these steps are:

i. Utilization of appropriate channels to communicate women.
ii. Facilitate women's participation in project meetings.
iii. Help women speak up through local dialect, dialogue, and spokesperson where necessary.
iv. Hold separate meetings with women when necessary.
v. Both men and women should be involved in decision making process before and after the projects.
vi. Women should be given preferential treatment while voting for felt needs.

The demand for food, non-food grains and exports keep on increasing by the day while the resources are shrinking, and the productivity of some resources already being utilized is threatened by environmental degradation. Growth in total factor productivity is reported to have declined slightly in major crops. Returns to investment in agricultural research and rural infrastructure are reported to be high but investments remain low. The term 'Sustainable Development' is being widely used, as the world today has become very much concerned about the factors adversely affecting ecology and environment. The droughts, floods, scarcity of fuel fodder, pollution of air and water and the likes are engaging serious attention of people all the world over.

Sustainable Development may be defined as 'development towards meeting the needs of the present generation without compromising the needs of the future generation'. It is a process in which development can be sustained for future generations. It affords to the future generations the same, if not more, capacity to prosper as the present generation. Thus, sustainable development focuses on inter-generation equity in the exploitation of development resources and opportunities.

The definition of sustainable development should account for a network of parameters which will ultimately determine the feasibility of the model for direct beneficiaries, non-beneficiaries, national values, the environment, and the stability of the system. In its actual sense, 'Sustainability' can be defined with the following constituents:

i. Economic sustainability: This implies that the financial model of the development tool is sound and robust. It also implies that development tools are in tune with the core competency of the region marked for implementation; that the products are matched to market demand; and that linkage with market is well maintained. Moreover, sustainable development systems must achieve financial stability over a period of time.

ii. Technological sustainability: Technology will be the driving force behind the development tool employed. It will lead to better and faster operations, lower wastage, higher grade products and services and will cut down the costs. Modern sustainable development tools need to be technologically sustainable, which means that they should be upgradable and capable of applying competitive technologies.

iii. Social sustainability: Modern institutions, whether private or government ought to accept that one of their primary interfaces comprise people who would not necessarily be their customers. The new requirement of sustainable development systems is to be a partner in the lives of the people, to bring about positive change in human development. This may come about not only as corporate social responsibility and welfare schemes, but also as dedicated

enterprises in the area of societal uplift which would work closely with the local community, building capacities and living standards.

iv. Environmental sustainability: One of the most crucial challenges of the twenty-first century is that of climate change due to global warming caused by man-made greenhouse gases. Globally, we release into the atmosphere close to 30 trillion kg of carbon dioxide-equivalent greenhouse gases which come from our industries, power plants, vehicles, homes, shops and agricultural fields. Out of this, roughly half is absorbed by natural sinks like oceans, soil and forests while the rest is released into the atmosphere forming a 'blanket' of greenhouse gases which trap the infrared radiation from the earth's surface and prevent it from going out into space.

Sustainability Indicators: Some important indicators of sustainable development are as follows: GDP growth rate, Population stability, Human resource development index, Clean air index, Renewable energy proportions, Material intensity, Recycled proportions, Transport intensity, Water use, and Soil degradation. There are several other indicators like forest coverage ratio, housing conditions, crime rates, cultural stability, and social tension. There will be difficulty of course, in the case of certain indicators like cultural stability index yet attempts should be made to conduct a detailed Environmental Impact Analysis (EIA) of developmental projects and programmes to ensure long-term sustainability of economic development.

Elements of Environmental Sustainability: Reducing emission, reducing water and soil pollution, protecting biodiversity, preserving natural resources - flora and fauna, waste recycling using waste to wealth technology, awareness of ecology in the community, and accountability on environment.

Nexus between poverty and environment: The relationship between poverty, environment and development is quite complex and there is a huge diversity of its pattern and situation. To capture this diversity in terms of a single perception of 'vicious circle' (Poverty-Environment-Degradation-More poverty) would be naïve. The basis for vicious circle perception lies in the fact that in developing or relatively poor countries, the poor depends directly on natural resource environment for their livelihood while the degraded environments can accelerate the process of impoverishment.

Definitions of Livelihood

Livelihood has been defined as comprising the capabilities, assets, and activities required for a means of sustenance. Livelihood is a survival technique adopted by people to acquire capabilities, assets, income, and activities for obtaining the provisions of life. The concept of livelihood has also moved from parameters of production, income, and employment only, to incorporate the multiple ways people survive. More importantly,

livelihood is now looked at from a more holistic perspective which encompasses social and economic dimensions, reduced vulnerability, and environmental sustainability. However, in the process of securing a livelihood, people can be constrained by factors which pose threats to their livelihoods. A livelihood is sustainable when it can maintain stability in the event of shocks as well as consistently boost its capabilities and assets over a long period without undermining the natural resource base. Household livelihoods are regarded as secure if a sustainable access to income and resources to meet basic needs are met.

Moreover, livelihood entails those activities that are performed to live for a given life span while securing water, food, fodder, shelter, clothing, medicine, and the capacity to acquire the mentioned necessities of life. This can be achieved either by working as an individual or as a group for meeting self-requirements and those of the entire household on a sustainable basis but with dignity. The social scientists have extended livelihood to include total way of living. This means that an individual, family, or other social groups must engage in activities that would yield income or resources that can be used or exchanged to satisfy other needs. In other words, livelihood can be summarily defined as how an individual provides for his living or needs in a decent, dignified, and sustainable manner. Chambers and Conway (1991) stated that livelihood comprises the capabilities, assets (stores, resources, claims and access) and activities required for a means of living. It has therefore, become very important to protect, manage, and govern the environment for livelihoods to be sustainable and agriculture is the right channel to achieve this objective.

Agriculture production ought to be sustainable even though it is being exposed to risks because of climate change, over exploitation, overuse and direct loss of habitat and species. Changes in land use and biodiversity are mostly caused by agriculture which may degenerate to underground water depletion, agrochemical pollution, soil exhaustion including global climate change. The conversion of natural habitats to produce food, fibre, timber, fuel and animal feed has been the main driver of biodiversity loss. Hence, it is high time that we put sustainable agriculture into practice to overcome loss of biodiversity and severity of global warming.

Sustainable Livelihood

The concept of sustainable livelihood was firstly introduced by the Brundtland Commission on Environment and Development and the 1992 United Nations Conference on Environment and Development expanded it to capture advocacy on poverty eradication. The concept of sustainable livelihood is an attempt to go beyond the conventional definitions and approaches to poverty eradication. It is regarded as the ability to cope and recover from unexpected shocks as well as enhancing current and future capabilities. Sustainable livelihood is based on capabilities, assets (both material

and social resources) and activities required for a living. Sustainable livelihood, however, provides access to basic needs, opportunity to thrive alongside a sense of identity and belonging. Livelihood can only be pronounced to be sustainable when it can cope with and recover from the stresses and shocks; not only these but also when it is always able to maintain or enhance its capabilities and assets. Livelihood should not undermine natural resource base otherwise; it would not be regarded as being sustainable. Sustainable livelihood, therefore, can be defined as a means of providing for living in a manner that it can withstand unforeseen adverse conditions and does not jeopardise the future generations' ability to provide for their needs. Many authors have worked and argued in different ways that, sustainability of rural livelihoods should form the basis for improved rural development and poverty alleviation.

Summary and Conclusion

This chapter has discussed food security through households' availability, access to nutritious food all the time or round the year while food insecurity could be as a result of instability in food production, increase in food prices or income deficits. Food security and food insecurity are concepts that require better understanding by the students in higher institutions of learning. Both concepts have a wider scope that translate to community food system and rural entrepreneurship. Social safety-nets and social capital are very important and necessary particularly among the rural poor in order to lift their income above the poverty level. There are different types and methods of implementation that are very clear for any organisation or government to implement so as to assist the rural poor. Gender issues relating to poverty were also discussed such as women's vulnerability to poverty unlike men. Sustainable rural livelihoods have a global recognition because of its relevance to development be it in social, agriculture and environment to mention a few.

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