COURSE CODE:	EMT 521
COURSE TITLE:	Environment and Poverty
NUMBER OF UNITS:	3 Units
COURSE DURATION:	3 hours per week

COURSE DETAILS:

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COURSE CONTENT:

- Poverty- definition
- Concepts of absolute and relative poverty
- Poverty and Environment: The Linkages
- Approaches in poverty measurement
- Environmental indicators of poverty
- Theories of development and underdevelopment in relation to poverty
- Poverty and environmental resources utilization and management
- Poverty factor in the resolution of local and global environmental issues
- Measures for poverty alleviation for environmental conservation

COURSE REQUIREMENTS:

This is a compulsory course for all level students in the Department. It is compulsory that students should participate in all the course activities and have minimum of 75% attendance in order to be qualify to write the final examination.

READING LIST:

Adams, W.M., Aveling, R., Brockington, D., Dickson, B., Elliot, J., Hutton, J., Roe, D., Vira, B. and Wolmwer, W. (2004). Science Magazine, Vol. 306, No. 5699: 1146-1149.

Ajakaiye D O and Adeyeye (2001): The nature of poverty in Nigeria. NISER Monograph Series No13

Alan Gillie, (1996). "The Origin of the Poverty Line", Economic History Review, XLIX/4 726

Alkire, S. and Foster, J. (2011).Understandings and Misunderstandings of Multidimensional Poverty Measurement. Oxford Poverty & Human Development Initiative (OPHI) Working Paper No. 43

Ambler, J. (1999) Attacking poverty while improving the environment: toward win-win options. Paper prepared for September 1999 Forum of Ministers meeting under the UNDP-EC Poverty and Environment Initiative.

Amin, S. (1976), Unequal Development: An Essay on the Social Formations of Peripheral Capitalism, New York: Monthly Review Press

Bradley, D., Huber, E., Moller, S., Nielson, F. & Stephens, J. D. (2003). Determinants of relative poverty in advanced capitalist democracies. American Sociological Review, 68(3), 22-51.

Canadian Council on Social Development (2001). "Defining and Re-Defining Poverty: A CCSD Perspective", October 2001,

Coudouel, A. and Hentschel, J. (2000) Poverty Data and Measurement (draft). World Bank, Washington, DC

Ferraro, V (1996). Dependency Theory: An Introduction Mount Holyoke College, South Hadley, MA, July 1996

Foresight (2000) Foresight: Making the Future Work for You. London: Department of Trade and Industry.

Friedman, M. (2002), Capitalism and freedom, The University of Chicago.

Hagenaars, Aldi & de Vos, Klaas The Definition and Measurement of Poverty. Journal of Human Resources, 1988

Hagenaars, Aldi & van Praag, Bernard (1985). A Synthesis of Poverty Line Definitions. Review of Income and Wealth, Capability, and Social Inclusion: A Case from Kathmandu, Nepal. Journal of Human Development, 6(3), 301-28. York.

Holmberg J. (1991): Poverty, Environment and Development, SIDA, Stockholm.

Ijaiya, G T (2001): Good Governance and poverty alleviation in Nigeria: A policy Framework. Journal of law and social sciences. 1(2):74- 85

IPPR Article: "Government must rescue ‘forgotten million children’ in poverty"

Karl Marx, "The Future Results of the British Rule in India," New York Daily Tribune, No. 3840, August

Kenworthy, L. (1999). Do social-welfare policies reduce poverty? A cross-national assessment. Social Forces, 77(3), 1119-1139.

Martin Ravallion (n.d.) Poverty Lines-, in The New Palgrave Dictionary of Economics, 2nd Edition, London: Palgrave Macmillan} http://dictionary.babylon.com/absolute%20poverty/

Nunan, F. et al. (2002). A study of poverty-environment indicators with case studies from Nepal, Nicaragua and Uganda. Environment Policy Department, Issue paper No 2. February, United Kingdom Department for International Development, London. 71 pp.

Obayelu, A. E. Economics of Poverty, Environment and Natural Resources Use: Policy Implications and Remedies using Nigeria as case study

Ohlsson, Leif, 2000, Livelihood Conflicts - Linking poverty and environment as causes of conflict, Environmental Policy Unit, Sida, SE-105 25 Stockholm, Sweden

Poverty Thresholds (2009). http://www.census.gov/hhes/www/poverty/about/overview/measure.html. Retrieved 2010-12-22

"Poverty Estimates For 2004-05". http://planningcommission.gov.in/news/prmar07.pdf. Retrieved 2009-11-19.

Ravallion, Martin (1992). Poverty Comparisons: A Guide to Concepts and Methods. Living Standards Measurement Papers, The World Bank, 1992, p. 25

Ravallion, Martin; Chen Shaohua & Sangraula, Prem (2009). Dollar a day. The World Bank Economic Review, 23(2):163-184

Rea S. Hederman, Jr., (2006). "Poor poverty yardsticks", The Heritage Foundation, September 8, 2006

Reed, D and Tharakan, P. (2004). Poverty-environment: Developing and Applying Poverty Environment Indicators. WWF Macroeconomics Program Office

Sachs, Jeffrey D. (2005). The End of Poverty, p. 20

Selim, J and Umana, A (2003). The Environment-poverty Nexus. Contribution to the Round Table on Sustainable Development and the Millennium Development Goals held in Bali, Indonesia, in May, 2002.

Sen, A. (1999), Development as Freedom, Oxford, Oxford University Press.

Sen, A. (2005), The Argumentative Indian, London: Allen Lane. 8,

Shyamsundar, P. (2002). Poverty-Environment indicators. Environmental Economics Series. Paper no 84. World Bank, Washington, D.C. January, 32 pp. Available at: http://lnweb18.worldbank.org/essd/essdext.nsf/44ByDocName/PovertyandEnvironmentIndicators2002189KPDF/$FILE/PovertyandEnvironmentIndicators2002.pdf

Sunkel, O/ (1969). "National Development Policy and External Dependence in Latin America," The Journal of Development Studies, 6(1): p. 23).

The World Bank Group (1996): "Nigeria: Targeting communities for effective poverty alleviation." Findings: African Region, No 68, August

UNDP (1997): Human Development Report 1997, New York

UNDP (2000) The Challenge of Poverty. New York: United Nations Development Programme. On-line at: http://www.undp.org/uncdf/pubs/cdf30/poverty.htm

UNDP (2001) World Population Prospects: The 2000 Revision. New York: United Nations Development Programme, Population Division, Department of Economic and Social Affairs. On-line at: http://www.un.org/esa/population/publications/wpp2000/wpp2000h.pdf

US Census Bureau. (2010). "How the Census Bureau Measures Poverty". http://www.census.gov/hhes/www/poverty/data/threshld/thresh09.xls. Retrieved 12 July 2011.

Wagle, Udaya. (2005). Multidimensional Poverty Measurement with Economic Well-being,

Wagle, Udaya. (2007). Multidimensional Poverty: An Alternative Measurement Approach for the United States? A paper presented at the 2007 Eastern Economics Association conference in New York

Working out of Poverty: A study of the low paid and the working poor by Graeme Cooke and Kayte Lawton

World Bank (1997). Poverty and Welfare in Nigeria. Federal Office of Statistics, National Population Commission and the World Bank.

World Bank (2000) Poverty Trends and Voices of the Poor. www.worldbank.org/poverty/data/trends/income.htm

World Bank (2000b) World Development Report 2000/01: Attacking Poverty. World Bank, Washington, DC.

World Commission on Environment and Development (WCED) (1987): Our Common Future, Oxford

LECTURE NOTES

DEFINITION

'[Poverty] is deprivation in the most essential capabilities of life, including leading a long and

healthy life, being knowledgeable, having adequate economic provisioning and participating fully in the life of the community' (UNDP, 1997).

Poverty has been defined according to what is prioritised as a 'need'. It is usually conceptualised as an economic or social condition, and has major implications for policy. Income/consumption measures are conventionally used to map poverty. A person is poor when their personal income or consumption is below a specified 'poverty line' (Coudouel and Hentschel, 2000). However, personal income can vary greatly from year to year, is only appropriate for wage-earners, and has less relevance to the poor. Many poor people rely on their own production and informal-sector activities in which the concept of profit is unclear, rather than on a formal income. In the 1960s consumption of goods and services gained favour as a superior poverty indicator, as it presents a more stable indicator over time than income. A bundle of goods deemed necessary for meeting basic needs is identified, consisting of food expenditure and modest expenditure on non-foods. For the poor, poverty is a local, diverse and dynamic condition. While poverty relates to a lack of physical necessities, assets and income, it is also more than this. Closed economic opportunity, vulnerability and insecurity have been identified as key components of living in poverty: According to the World Bank, 'to be poor was to experience ill-being in many ways, and to suffer multiple disadvantages that reinforce each other and interlock to trap them' (World Bank, 2000).

Poverty can be described as a state of being poor: the state of not having enough money to take care of basic needs such as food, clothing, and housing. Poverty, condition of having insufficient resources or income. In its most extreme form, poverty is a lack of basic human needs, such as adequate and nutritious food, clothing, housing, clean water, and health services. Extreme poverty can cause terrible suffering and death, and even modest levels of poverty can prevent people from realizing many of their desires. The world's poorest people—many of whom live in developing areas of Africa, Asia, Latin America, and eastern Europe—struggle daily for food, shelter, and other necessities. They often suffer from severe malnutrition, epidemic disease Extreme poverty, which threatens people's health or lives, is also known as *destitution* or *absolute poverty. Relative poverty* is the condition of having fewer resources or less income than others within a society or country, or compared to worldwide averages. In developed countries, relative poverty often is measured as having a family income less than one-half of the median income for that country.

Who are the rural poor?

According to the World Bank (20004), 24% of the population of developing countries live on less than US$1 a day and total nearly 2 billion people. In absolute terms, most of these live in South Asia (where there are 522 million people classified as poor). Proportionately, the problem is greater in sub-Saharan Africa where 290 million poor people constitute 46% of the population – over 34% of these are not expected to live beyond the age of 40). 278 million poor people live in East Asia and the Pacific (213 million in China) and 78 million in Latin America (about 16% of the population). Three-quarters of the world's poor live in rural areas, often areas of low productivity and ecological fragility such as the Loess Plateau of China, the highlands of Bolivia and Nepal, the Sahel and other deserts, and the humid tropics of Africa, Asia and South America (World Bank, 2000).

The International Fund for Agricultural Development (IFAD) has classified the rural poor into six groups, namely:

a) Smallholder families accounted (in 1998) for 52% of the total rural population and 73% of the rural population in sub-Saharan Africa. IFAD considers that smallholder farmers who have less than 3 ha of land are poor whereas other studies use the figure of 0.6 ha. (There is no single correct figure as the productivity of land and access to inputs and markets varies greatly between locations.)

b) Landless people without individual rights (*de jure* or *de facto*) to land of their own are concentrated in Latin America and the Caribbean, where they form approximately 30% of the rural population, and in Asia where the proportion is 26%.

c) Displaced people away from their normal place of residence overall represent 6% of the rural population but this percentage varies greatly between locations and countries. Displaced people can be split into two groups: refugees escaping persecution, war or conflict and those who are temporarily displaced for economic reasons.

d) Nomadic pastoralists are found mainly in sub-Saharan Africa where they account for 13% of the rural population. Nomadic pastoralism takes various forms (e.g. whether or not the livestock holder is a migrant or has a permanent base) but in all cases they are vulnerable to natural disasters such as droughts. Traditionally they have collectively managed large tracks of arid land as common property.

e) Artisanal fishermen are found in large numbers in many countries or regions with lengthy coastal, lacustrine or riverine margins, including small islands such as Antigua, Cape Verde and the Comoros. IFAD suggest that as high a proportion as 11–21% of people living in rural areas are primarily artisanal fishermen or work in related processing industries.

f) Indigenous populations or tribal people may belong to any of the above groups. Generally they tend to be relatively poorer than non-ethnic groups in the same population. In India, for example, an estimated 62% of the scheduled tribal population live below the poverty line compared with 42% of the total rural population.

Causes of Poverty

- Overpopulation
- Global Distribution of Resources
- High Standards of Living and Costs of Living
- Inadequate Education and Employment
- Environmental Degradation
- Economic and Demographic Trends
- Individual Responsibility and Welfare Dependency

Causes of poverty in Nigeria

Poverty has been viewed by the Central Bank of Nigeria (1999) " as a state where an individual is not able to cater adequately for his or her basic needs of food, clothing and shelter; is unable to meet social and economic obligations, lacks gainful employment, skills, assets and self-esteem; and has limited access to social and economic infrastructure such as education, health, portable water, and sanitation; and consequently, has limited chance of advancing his or her welfare to the limit of his or her capabilities". Factors, including macroeconomic distortions or inappropriate macroeconomic policies, negative economic growth, effects of globalisation, governance, corruption, debt burden, low productivity and low wages in the informal sector, unemployment or deficiencies in the labour market resulting in limited job growth, high population growth rate and poor human resources development and other factors like: increase in crime and violence, environmental degradation, retrenchment of workers, a fall in the real value of safety nets, and changes in family structures were found as some of the causes of poverty in Nigeria. These may however be different from other countries depending on their own levels of economic

development. Attempt to come out of this cycle has led many to further destruction of the natural resources such as cutting down of economic trees either to sell in log or dry and sell as fire wood in most part of the country.

Pattern of Poverty in Nigeria

Although Nigeria is blessed with many natural resources like bauxites, gold, tin, coal, petroleum, tin, forest, water land etc poverty level in the country still contradicts the country's immense wealth as over 70 percent of the people wallow in absolute poverty with no food, clothing or shelter (World Bank, 1996). The result of the Nigerian Living Standard survey 2004 actually showed decrease incidence of poverty of 57.8percent when compared with the figure of 1996, which was 65.6percent. Other measures of poverty had their incidences of poverty lower than the relative poverty. The incidence of poverty using absolute measure was 19.8percent for 2100 calories and 33.6percent for 2900 calories. The 2003/04 Nigeria Living Standard Survey also showed that the national incidence of Poverty was 57.8percent and more than 13 states were below 50.0percent. The majority of the country's poor live in rural areas or urban slums, without access to education, health care, clean drinking water or sanitation facilities. Poor health and malnutrition have knock-on effects on education and labour efficiency, as well as on the economy as a whole, because the capacity of low-income groups to secure gainful employment is undermined.

Effects of Poverty

Poverty has wide-ranging and often devastating effects. Many of its effects, such as poor nutrition and physical health problems, result directly from having too little income or too few resources. As a result of poor nutrition and health problems, infant mortality rates among the poor are higher than average, and life expectancies are lower than average. Other effects of poverty may include infectious disease, mental illness, and drug dependence. Some effects of poverty are not as easily understood. For example, studies link poverty to crime, but by no means are all poor people also criminals. In many cases, the primary effects of poverty lead to other problems. Extended hunger and lack of employment, for instance, may lead to depression, which may sometimes contribute to criminal behaviour. The relationship between poverty and personal or social problems is very complex. For example, studies of mothers on welfare reveal that those with multiple problems—such as depression, substance abuse, and being a victim of domestic violence—are much less likely to find work and escape poverty.

- Malnutrition and Starvation
- Infectious Disease and Exposure to the Elements
- Mental Illness and Drug Dependence
- Crime and Violence
- Long-Term Effects
- Child abuse
- Child Labour

Concepts of absolute and relative poverty

Absolute poverty

A measure of *absolute poverty* quantifies the number of people below a fixed real poverty threshold. It is a level of poverty as defined in terms of the minimal requirements necessary to afford minimal standards of food, clothing, health care and shelter. For the measure to be absolute, the line must be the same in different countries, cultures, and technological levels. Such an absolute measure should look only at the individual's power to consume and it should be independent of any changes in income distribution. Such a measure is possible only when all consumed goods and services are counted and when PPP-exchange rates are used. The intuition behind an absolute measure is that mere survival takes essentially the same amount of resources across the world and that everybody should be subject to the same standards if meaningful comparisons of policies and progress are to be made. Notice that if everyone's real income in an economy increases, and the income distribution does not change, absolute poverty will decline.

Measuring poverty by an absolute threshold has the advantage of applying the same standard across different locations and time periods, making comparisons easier. On the other hand, it suffers from the disadvantage that any absolute poverty threshold is to some extent arbitrary; the amount of wealth required for survival is not the same in all places and time periods. For example, a person living in far northern Scandinavia requires a source of heat during colder months, while a person living on a tropical island does not.

This type of measure is often contrasted with measures of relative poverty (see below), which classify individuals or families as "poor" not by comparing them to a fixed cut-off point, but by comparing them to others in the population under study. The term *absolute poverty* is also sometimes used as a synonym for extreme poverty. Absolute poverty is the absence of enough resources (such as money) to secure basic life necessities.

According to a UN declaration that resulted from the World Summit on Social Development in Copenhagen in 1995, absolute poverty is "a condition characterised by severe deprivation of basic human needs, including food, safe drinking water, sanitation facilities, health, shelter, education and information. It depends not only on income but also on access to services."

David Gordon's paper, "Indicators of Poverty & Hunger", for the United Nations, further defines absolute poverty as the absence of any two of the following eight basic needs:

- *Food:* Body Mass Index must be above 16.
- *Safe drinking water:* Water must not come from solely rivers and ponds, and must be available nearby (less than 15 minutes' walk each way).
- *Sanitation facilities:* Toilets or latrines must be accessible in or near the home.
- *Health:* Treatment must be received for serious illnesses and pregnancy.
- *Shelter:* Homes must have fewer than four people living in each room. Floors must not be made of dirt, mud, or clay.
- *Education:* Everyone must attend school or otherwise learn to read.
- *Information:* Everyone must have access to newspapers, radios, televisions, computers, or telephones at home.
- *Access to services:* This item is undefined by Gordon, but normally is used to indicate the complete panoply of education, health, legal, social, and financial (credit) services.

For example, a person who lives in a home with a mud floor is considered severely deprived of shelter. A person who never attended school and cannot read is considered severely deprived of education. A person who has no newspaper, radio, television, or telephone is considered severely deprived of information. All people who meet any two of these conditions — for example, they live in homes with mud floors *and* cannot read — are considered to be living in absolute poverty.

Relative poverty

A measure of *relative poverty* defines "poverty" as being below some relative poverty threshold. For example, the statement that "households with an accumulated income less than 60% of the median equalized household disposable income are living in poverty" uses a relative measure to define poverty. In this system, if everyone's real income in an economy increases, but the income distribution stays the same, then the rate of relative poverty will also stay the same.

Relative poverty measurements can sometimes produce odd results, especially in small populations. For example, if the median household in a wealthy neighbourhood earns US$1 million each year, then a family that earns US$100,000 would be considered poor on the relative poverty scale, even though such a family could meet all of its basic needs and much more. At the other end of the scale, if the median household in a very poor neighbourhood earned only 50% of what it needs to buy food, then a person who earned the median income would not be considered poor on a relative poverty scale, even though the person is clearly poor on an absolute poverty scale.

Measures of relative poverty are almost the same as measuring income inequality: If a society gets a more equal income distribution, relative poverty will fall. Following this, we argue that the term *relative poverty* is itself misleading and that *income inequality* should be used instead.] They point out that if society changed in a way that hurt high earners more than low ones, then relative poverty would decrease, but every citizen of the society would be worse off. Likewise in the reverse direction: it is possible to reduce absolute poverty while increasing relative poverty.

The term *relative poverty* can also be used in a different sense to mean "moderate poverty" –- for example, a standard of living or level of income that is high enough to satisfy basic needs (like water, food, clothing, shelter, and basic health care), but still significantly lower than that of the majority of the population under consideration.

Basic needs

Some measurements combine certain aspects of absolute and relative measures. For example, the Fraser Institute publishes a basic needs poverty measure for Canada. According to the Fraser Institute, "the basic-needs approach is partly absolute (the list [of necessities] is limited to items required for long-term physical well-being) and partly relative, reflecting the standards that apply in the individual's own society at the present time."[9] The Fraser Institute's list of necessities for living creditably in Canada includes not only food, shelter, clothing, and health care, but also personal care, furniture, transportation, communication, laundry, and home insurance. It is criticized for not including any entertainment items like cable television, daily newspapers, and tickets to movies or sporting events.

National estimates are based on population-weighted subgroup estimates from household surveys. Definitions of the poverty line may vary considerably among nations. For example, rich nations generally employ more generous standards of poverty than poor nations. Thus, the numbers are not comparable among countries.

In 2009, in the United States of America, the poverty threshold for a single person under 65 was US$11,161; the threshold for a family group of four, including two children, was US$21,756.

In the UK, "more than five million people – over a fifth (23 percent) of all employees – were paid less than £6.67 an hour in April 2006. This is based on a low pay rate of 60 percent of full-time median earnings, equivalent to a little over £12,000 a year for a 35-hour working week. In April 2006, a 35-hour week would have earned someone £9,191 a year – before tax or National Insurance".

India's official poverty level, on the other hand, is split according to rural vs. urban thresholds. For urban dwellers, the poverty line is defined as living on less than 538.60 rupees (approximately USD $12) per month, whereas for rural dwellers, it is defined as living on less than 356.35 rupees per month (approximately USD $7.50).[15] By this measure, only 27.5% of Indians live in poverty whereas by the World Bank standard of $1.25 per day, 42% of Indians live in poverty – this is the third highest rate in South Asia after Bangladesh and Bhutan.

Criticisms

Using a poverty threshold is problematic because having an income marginally above it is not substantially different from having an income marginally below it: the negative effects of poverty tend to be continuous rather than discrete, and the same low income affects different people in different ways. To overcome this problem, poverty indices are sometimes used instead; see income inequality metrics.

A poverty threshold relies on a quantitative, or purely numbers-based, measure of income. If other human development-indicators like health and education are used, they must be quantified, which is not a simple (if even achievable) task.

Overstating poverty

In-kind gifts, whether from public or private sources, are not counted when calculating a poverty threshold. For example, if a parent pays the rent on an apartment for an adult son directly to the apartment owner, instead of giving the money to the son to pay the rent, then that money does not count as income to the son. If a church or non-profit organization gives food to an elderly person, the value of the food is not counted as income to the elderly person. Rea Hederman, a senior policy analyst in the Centre for Data Analysis at the Heritage Foundation, said

The official poverty measure counts only monetary income. It considers antipoverty programs such as food stamps, housing assistance, the Earned Income Tax Credit, Medicaid and school lunches, among others, "in-kind benefits" – and hence not income. So, despite everything these programs do to relieve poverty, they aren't counted as income when Washington measures the *poverty rate*.

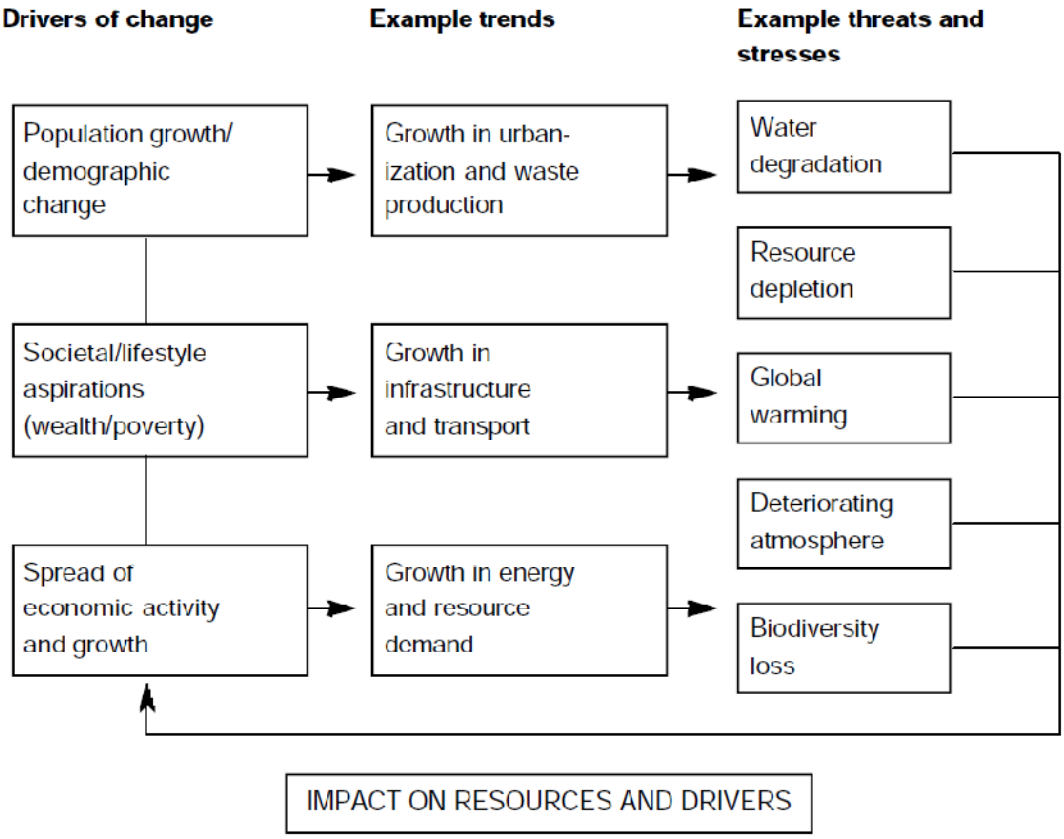
Studies measuring the difference between income before and after taxes and government transfers, however, have found that without these programs poverty would be roughly 30% to 40% higher than the official poverty line indicates, despite many of their benefits not being counted as income.

Poverty and Environment: The Linkages

The Natural Environment

Strictly speaking the term 'environment' relates to all that surrounds us and with which we interact. Economists say it has three essential roles: a supplier of material resources and energy; a sink and assimilator of waste products; and a supplier of amenities that contribute to the quality of life. In this sense the word reflects a vast array of largely global or northern challenges such as industrial emissions and air and atmospheric pollution, climatic change and global warming, huge quantities of waste production and disposal, deteriorating water resources and supplies on a global scale, irredeemable biodiversity loss, and the depletion of non-renewable energy and mineral sources. One way of considering these environmental threats and stresses and the drivers that give rise to them is shown in the Box below.

Box 4 Drivers, trends, threats and stresses of environmental change



Source: developed from Foresight (2000).

In the context of the above definition, the word 'environment' is taken to refer to the renewable natural resources of land, water and biological resources and the ecological functions they perform (e.g. hydrological and climatic regulation and nutrient cycling). In this sense the concept of environmental degradation concerns the long-term decline in the stock and productivity of renewable natural resources, while the concept of environmental sustainability (following Bruntland) concerns the need to leave for future generations a collection of resources and services at least as rich and healthy as we ourselves inherited. In many parts of the world, environmental degradation—the deterioration of the natural environment, including the

atmosphere, bodies of water, soil, and forests—is an important cause of poverty. Environmental problems have led to shortages of food, clean water, materials for shelter, and other essential resources. As forests, land, air, and water are degraded, people who live directly off these natural resources suffer most from the effects. People in developed countries, on the other hand, have technologies and conveniences such as air and water filters, refined fuels, and industrially produced and stored foods to buffer themselves from the effects of environmental degradation.

Poverty and Environment nexus

Two of the most important global issues today are pervasive poverty and problems related to environmental degradation. The causal factors are complex. Since the 1970s it has been almost universally agreed that poverty and environmental degradation are inextricably linked.

Holmberg (1991) pointed out that the relationship between the environment and poverty is not so straight forward. Insufficient attention had been paid to some intuitive and field experience and that there was even a possibility of conflict between the goals of poverty alleviation and environmental protection. A number of studies have been carried out on how both poverty and wealth have impacted on the environment, resulting in a number of environmental threats such as degradation of the soil, water and marine resources which are essential for life supporting systems, pollution which is becoming health threatening, loss of biodiversity and global climatic changes which jeopardize the very existence of life on the planet (WRI, 1992).

The World Commission on Environment and Development (Brundtland Commission) wrote (1987):

> *"Poverty is a major cause and effect of global environmental problems. It is therefore futile to attempt to deal with environmental problems without a broader perspective that encompasses the factors underlying world poverty and international inequality."*

The links between poverty and environment were also seen to be self-enforcing. The Commission also wrote:

> *"Many parts of the world are caught in a vicious downwards spiral: poor people are forced to overuse environmental resources to survive from day to day, and their impoverishment of their environment further impoverishes them, making their survival ever more difficult and uncertain."*

The environment-poverty nexus is a two-way relationship. Environment affects poverty situations in three distinct dimensions: by providing sources of *livelihoods* to poor people, by affecting their health and by influencing their vulnerability. On the other hand, poverty also affects environment in various ways: by forcing poor people to degrade environment, by encouraging countries to promote economic growth at the expense of environment, and by inducing societies to downgrade environmental concerns, including failing to channel resources to address such concerns.

Some of the environmental degradation reflects truly global concerns, such as global warming and the depletion of the ozone layer. Some is international, like acid rain, the state of the oceans, or the condition of rivers that run through several countries. Some is more localised, though it may often occur worldwide, like urban air pollution, water pollution, or soil degradation. Even though poor people also feel the impact of global environmental degradation, it is local environmental damage that affects the lives of poor people more. The impact of environmental degradation is unequal between the poor and the rich. Environmental damage almost always hits poor people the hardest. The overwhelming majority of those who die each year from air and water pollution are poor people. So are those most affected by desertification and by the floods,

storms and harvest failures brought about by global warming? All over the world, it is poor people who generally live nearest to dirty factories, busy roads and dangerous waste dumps. The loss of biodiversity is most severe for poor rural communities. Environmental degradation, by depleting the health and natural support systems of poor people, may make them even more vulnerable.

United Nations Fund for Population Activities (UNFP A) (1991) argues that current economic order does not promote reliable and sustainable development; and that the quality of life is inseparable from the quality of the environment. Both are also inseparable from the issue of human numbers and concentration. For example, employment is related to environmental concerns. Without employment many people face three choices: To further congest agricultural lands; to migrate to urban areas; or to migrate to marginal zones, i.e. areas which are too wet, too dry, or too hilly for conventional agriculture, and hence most susceptible to environmental damage.
Increase in poverty means increase in the numbers of the absolute poor who must find livelihood in marginal environments. Landlessness leads to increased numbers of marginal people. This is associated with inadequate socio-economic infrastructure and resource base. For example, most African cities are the foci for some of the worst forms of poverty known, with large numbers of people living at the margins of survival. Uncontrolled population growth is seen as a factor of poverty. High population is a pre-eminent factor in the deteriorating environmental situation. Population growth is faster among the poor. On the other hand, environmental decline is another determinant of poverty. The very poor are usually totally dependent on the environmental resource base such as soils, vegetation, and water as their main stock of economic capital. At the same time, they are compelled to over-exploit the resource base just to survive. This in turn, serves to entrench their poverty. Also the issue of feminization of poverty cannot be neglected. The impoverished are more likely to be females than males, heads of households, young and single parents.

The World Bank (1992) emphasises that the links between environmental degradation and poverty are as yet understood, and concludes that it is necessary that improved understanding between poverty and environment remains a priority. There is a general consensus among scholars of the need to examine the nature of the linkages between rural poverty and the environment in developing countries, with particular respect to the causes of degradation and approaches to its mitigation. It also considers gaps in knowledge, research needs and policy implications for environmental management and poverty reduction. It has long been known that poverty and the environment are closely linked. Many millions of poor rural people are closely dependent on natural resources for their livelihoods and the abundance and condition of these resources has a major bearing on livelihood quality. Until recently, the dominant thesis has been that rural poverty and population growth together comprise the major cause of degradation: in some circumstances poor people have no alternative but to over-exploit the natural resources and environment on which they depend. Where landscapes are fragile, overexploitation affects the land's carrying capacity and reduces the number of people it can support – hence a downward spiral. In recent years, this theory has been criticized by some as over-simplistic and alternatives have been put forward which emphasize the importance of local institutions and power relations.

That poverty and the environment are linked in some way has long been realized (e.g. United Nations Conference on the Human Environment in 1972), although until recently little research has specifically addressed the problem. In developing countries, the environment-poverty linkages are much less understood and even include myths such as the belief that natural resources alone determine the quality of life, that poverty is a rural phenomenon and is undifferentiated in such areas, that ecology plays an important part. Many millions of poor rural

people are closely dependent on natural resources for their livelihoods, and the abundance and condition of these resources undoubtedly have a major bearing on their livelihoods. Although in the last two decades there has been a decline in the proportion of people directly dependent on natural resources, in many countries absolute numbers are still increasing (UNDP, 2000, 2001).

Until recently the dominant thesis has been that rural poverty, allied with population growth, is a major cause of degradation of the natural environment, including soils, forests, vegetation, water and natural habitats. It supposes that there are limits to the numbers of people that the natural environment can support and beyond these limits exhaustion and degradation take place. In these circumstances poor people have no alternative but to over-exploit and degrade the natural resources and environment on which they depend. This may become a downward spiral (or vicious circle) in which the rural poor, dictated by population pressure and the needs of survival, are forced to over-exploit natural resources and move to ever-more fragile lands, leading to further environmental degradation and a reduction in the land's carrying capacity. Thus rural poverty and environmental degradation are inextricably linked through a two-way and self-enforcing chain of causation. The only way to break into this chain and avoid environmental degradation is through policies and programmes that alleviate rural poverty

While there are undoubted links between human activity and environmental quality, the nature of relationships is not clear-cut. Conventional wisdom views the link between poverty and the environment as a downward and self-perpetuating spiral. In the words of the Brundtland Report:

> *"Poverty is a major cause and effect of global environmental problems. It is, therefore, futile to attempt to deal with environmental problems without a broader perspective that encompasses the factors underlying world poverty and international inequality. Many parts of the world are caught in a vicious downward spiral: poor people are forced to use environmental resources to survive from day to day, and their impoverishment of their environment further impoverishes them, making their survival ever more difficult and uncertain" (World Commission on Environment and Development, 1987).*

Environmental resources vary greatly in their physical capacity to assimilate the effects of human exploitation and other activities. Poor people often live in marginal or fragile landscapes that are easily degraded, such as thin sandy soils on steeply sloping land and where rainfall is infrequent but heavy, and utilize water resources liable to depletion and contamination (e.g. aquifers with low safe yields and inadequate geological protection). Marginal lands in the developing world are often not privately owned and operate under open access or common property regimes. Traditional pastoral (often nomadic) and agricultural systems (including shifting agriculture) in these areas have come under increasing stress as population densities have grown, exploitation increased, and traditional cultural and institution systems broken down. In such circumstances, problems of environmental degradation are particularly acute.
Environmental fragility is of course not a consequence of poverty: fragile environments are susceptible to degradation irrespective of poverty or wealth. Unfortunately there does appear to be a tendency for the poor to live in marginal and environmentally vulnerable landscapes especially liable to soil, water and biodiversity degradation. Being less favourable for habitation and production, these lands are frequently colonized relatively late in the course of history, in which case settlers may be unfamiliar with hazards of local land management. For example, migrants to the Amazonian rainforest in the 1980s were unaware of the fragility of tropical forest soils, and the farming methods they employed were inappropriate to the conditions, so contributing to local land degradation.

However, a study by UNDP/EC has challenged a number of entrenched myths about poverty–environmental interactions (Ambler, 1999), which bear out the conclusions discussed here.

1. **Poverty necessarily leads to environmental degradation.** Studies have failed to show a common pattern in the relationship; in certain situations the poor are immediately responsible for degradation while in others they are seen to take great care in maintaining or improving the environment.
2. **It is necessary first to tackle poverty concerns before dealing with environmental improvement**. Some of the most extreme degradation takes place in boom periods rather than slumps; neither rural poverty nor environmental programmes should be conducted in isolation but rather as part of an integrated and well-analysed approach.
3. **Poor people are too poor to invest in the environment**. Where incentives are favourable, poor people mobilize resources, particularly labour, and invest in environmental improvement. This is not to suggest that external help cannot also be a valuable aid.
4. **Population growth necessarily leads to degradation**. Most agricultural landscapes can support higher populations in a sustainable way by adopting more intensive technologies and farming methods; in some situations population growth may provide economies of scale helpful to the economy.
5. **The poor lack the technical know-how for good resource management**. Although lacking in formal education, poor people have an enormous store of indigenous technical knowledge and develop sophisticated resource management systems. Supposedly primitive water and agricultural systems can be equitable, efficient and sustainable, especially under low population densities.
6. **Markets always lead to efficient allocation of resources**. While markets can be conducive to good management, they may also encourage over-exploitation of natural resources (e.g. timber and non-timber forest products). This is especially so where factor prices do not reflect wider social and environmental costs.

In addition, Selim and Umana (2003) debunked some other myth about the poverty environment linkages, that:

- "*Poor people are the principal creators of environmental damage*." Not true. Even though poor people bear the brunt of environmental damage, the irony is that they are not its principal creators. It is the rich who pollute and contribute most to global warming. They are the ones who degrade the global commons, making resources scarce for poor people. In many areas, the non-poor, commercial companies, and state agencies actually cause the majority of environmental damage through land cleaning, agro-chemical use, and water appropriation. The rich also generate more waste and create stress on nature's sink. Thus poor people become victims of the consumption levels and patterns of the rich. One of the environmental challenges that stem from growing poverty and environmental damage is that it pushes more and more people to the periphery – to the most ecologically fragile land where they become even more vulnerable. Yet there are many examples in which poor people take care of the environment and invest in improving it.

- "*The poverty-environment nexus basically stems from low incomes*." It's not that simple. Arguments that maintain that poor people degrade the environment basically explain the poverty-environment nexus in terms of income levels only. The poverty- environment nexus is more complex. Questions of ownership of natural resources, access to common resources, the strength or weakness of communities and local institutions, the way information about poor people's entitlements and rights to resources is shared with them, the way people cope with risk and uncertainty, the way people use scarce time – all these are important in explaining the environmental behaviour of poor people. Many of the natural resources that are degraded are communal property. Rights are ill-defined, often

because they were originally defined within a local social and political framework that is no longer there. Institutions for managing common property that reflect the consensus of owners and can control use are lacking. In ecologically fragile ecosystems, people tend to minimise risks, not maximise output, whether they are poor or rich. Over-exploitation of sources of fuel-wood is linked more to the time available to women than to their poverty status. There is a gender dimension, but not necessarily an income dimension. Many factors shape human behaviour towards the environment, some related to poverty or affluence, others independent of either income or poverty.

Approaches in poverty measurement

How we measure poverty can importantly influence how we come to understand it, how we analyze it, and how we create policies to influence it. For this reason, measurement methodologies can be of tremendous practical relevance. Main steps that poverty measurement must address:

(i) identifying the poor among the total population, and
(ii) constructing a numerical measure of poverty.

Sen's two-step procedure of identification and aggregation has become the standard conceptual framework for poverty measurement.

The notion of poverty can be understood in various ways and in absolute or relative terms but is commonly assessed by level of income or wealth. One measure of poverty is those living on less than US$2 per day, a level which includes nearly 3 billion people or half the world's population (or 2 billion living on less than US$1 per day, one quarter of the world's population). However, such measures take no account of what that income can buy and should be used with great care, especially for inter-country comparison.

Unidimensional Methods

Unidimensional methods can be applied when a well-defined single-dimensional resource variable, such as income, has been selected as the basis for poverty evaluation. This variable is typically assumed to be cardinal; however, in some cases the variable may only have ordinal significance (i.e., the direction of change is discernable, but not its magnitude). Identification in the unidimensional environment typically proceeds by setting a poverty line corresponding to a minimum level below which one is considered poor. Aggregation is usually achieved through the use of a numerical poverty measure that determines the overall level of poverty in a distribution given the poverty line.

Unidimensional methods require a single dimensional variable and a single cut-off, but place no a priori restrictions on how the resource variable has been constructed. It could be a single resource variable, such as income, added up across all sources. It could be total expenditure added up across different categories reported in an expenditure survey, or perhaps drawn from consumption surveys that require respondents to recall quantities and prices. Unidimensional tools might also be applied to other aggregate variables, such as those obtained by combining fundamentally distinct components that are not measured in the same units and may have no natural or observable means of conversion into a common variable. One method is to use a composite indicator, which aggregates across several component variables by multiplying each by a factor and adding up; another example might be a utility function that aggregates components in a nonlinear fashion.

Multidimensional Methods

Suppose, then, that we have data on achievements in several dimensions, distributed across a population. Following Sen (1976) we ask: Who is poor and how should overall poverty be measured in this setting? As noted above, if the underlying concept of poverty admits a natural way of aggregating the various dimensions into an overall variable, then a unidimensional methodology can be used. In this approach, the poor are identified on the basis of a single cut-off, and overall poverty is evaluated using a unidimensional measure such as a member of the FGT class. The many dimensions are merged into one and viewed through a unidimensional lens.

International Measurements

In international economics, such as in statistics kept by the United Nations (UN), the measure of a country's wealth is generally based on its gross domestic product (GDP). GDP measures the

aggregate yearly monetary income of all of a country's people and businesses. For the purposes of figuring poverty levels, GDP figures are usually calculated as GDP (sometimes referred to as income) per capita. If two countries have the same aggregate GDP, the one with a smaller population will have a higher GDP per capita. In other words, each person in the smaller country has a greater share of the total national income.

In the 1990s developed countries typically enjoyed average per capita yearly incomes in excess of $15,000 and often $20,000. At the other extreme, the poorest countries often had per capita yearly incomes substantially under $1,000. For example, according to one figure, the per capita income in Mozambique, a country in southeastern Africa and one of the world's poorest countries, was about $100 at the end of the 1990s. While people with such low incomes might be able to produce or obtain some food and other basic needs, they generally have difficulty providing for themselves. Levels of poverty also depend on how income and resources are distributed. Countries with high GDPs can have low levels of poverty if people have relatively equal amounts of income and resources, such as in Scandinavia. On the other hand, countries with equally high GDPs will have higher poverty rates if a few people have far more income and resources than the rest. The United States is such a country.

U.S. Poverty Measurements

Each year the Bureau of the Census publishes the official poverty figures of the United States. People are said to be poor if their incomes fall below a certain level called a *threshold,* also known as the *poverty line.* In this definition, the poor do not have enough income to purchase or have easy access to basic goods and services, such as food, clothing, housing, transportation, and education. The official U.S. poverty rate equals the number of people whose incomes fall below the poverty threshold divided by the number of people counted in the census. Rates are also determined for various groupings within the population, such as sex, age, and race.

A staff economist in the Social Security Administration (SSA), Mollie Orshansky, established the first U.S. poverty thresholds in the early 1960s. They were calculated as the cost of a minimum adequate diet (the least expensive of four nutritionally adequate food plans developed by the U.S Department of Agriculture) multiplied by three to account for other expenses, such as clothing, housing, and medical costs. Since then, the thresholds have only been updated to account for inflation in the prices of basic goods and services (*see* Inflation and Deflation).

The poverty line does not, however, change in *real dollars* (value in terms of what the dollar can purchase). In principle, the 2001 threshold of $17,960 for a family of four (two adults and two children) represents the same purchasing power as the 1963 threshold value of about $3,100 for the same type of family. Also, in contrast with the governments of most developed countries, the U.S. government does not adjust poverty thresholds up or down with changes in overall average income.

The government determines poverty status by comparing an individual's or family's income to a threshold limit. This calculation defines income as money earned before taxes, plus *transfers* (grants to the poor) of cash from the government. Welfare payments, therefore, can put people above the poverty level. The thresholds vary according to family size, people's age, and family composition. They do not change, however, across geographic regions, even though the costs of living in different parts of the country can vary widely.

The government uses Census Bureau figures to determine how many people qualify for public assistance programs for the poor. Different poverty thresholds apply to people in different living situations. For example, the U.S. poverty threshold in 2001 was $8,494 for a single individual

under the age of 65 with no dependents, rising to $39,223 for a nine-person household. The official poverty threshold for a typical struggling family of a single mother with two children was $14,269 in 2001.

In 1995 an expert panel organized by the National Academy of Sciences proposed many changes in the way the U.S. government measures poverty. Foremost among these changes was a plan to gauge poverty each year according to how much the average person or family spends on goods and services. The existing measurement relies on government definitions of basic goods and services developed in 1967. A new measurement would be a step toward defining U.S. poverty based on standards of living rather than only on costs of living. No changes have yet been implemented.

Other Concepts of Poverty

Several other options exist in addition to definitions of poverty based on GDP per capita or on threshold income. Some developed countries, such as most nations of the European Union, define poverty as having significantly fewer resources than average, generally less than half of typical earnings or income. This definition bases the poverty figure on *mean* (average) or *median* (the middle) income. These types of measurements contrast with the U.S. poverty line, which is derived from the value of basic consumption rather than from average incomes. For example, the U.S. poverty line for an individual amounted to only about 36 percent of typical earnings in 1996.

Another measure of poverty defines it in terms of *human capital*—that is, a person's earning potential (generally related to work skills). From this perspective, people with relatively high earning potentials are not poor because they should be able to easily find work. People can increase their skill levels and earning potentials in a variety of ways, such as by attending college, entering an apprenticeship program, or participating in an on-the-job or workplace-sponsored training program. If the job market changes, new skills may become valuable and old ones less in demand, as has happened with the introduction of computers to the workplace. Some governments have considered human capital problems in their attempts to reduce poverty. Changes in the U.S. welfare system in 1996, for example, included a mandate to take money that had previously been budgeted for welfare transfers and channel it to job-training programs.

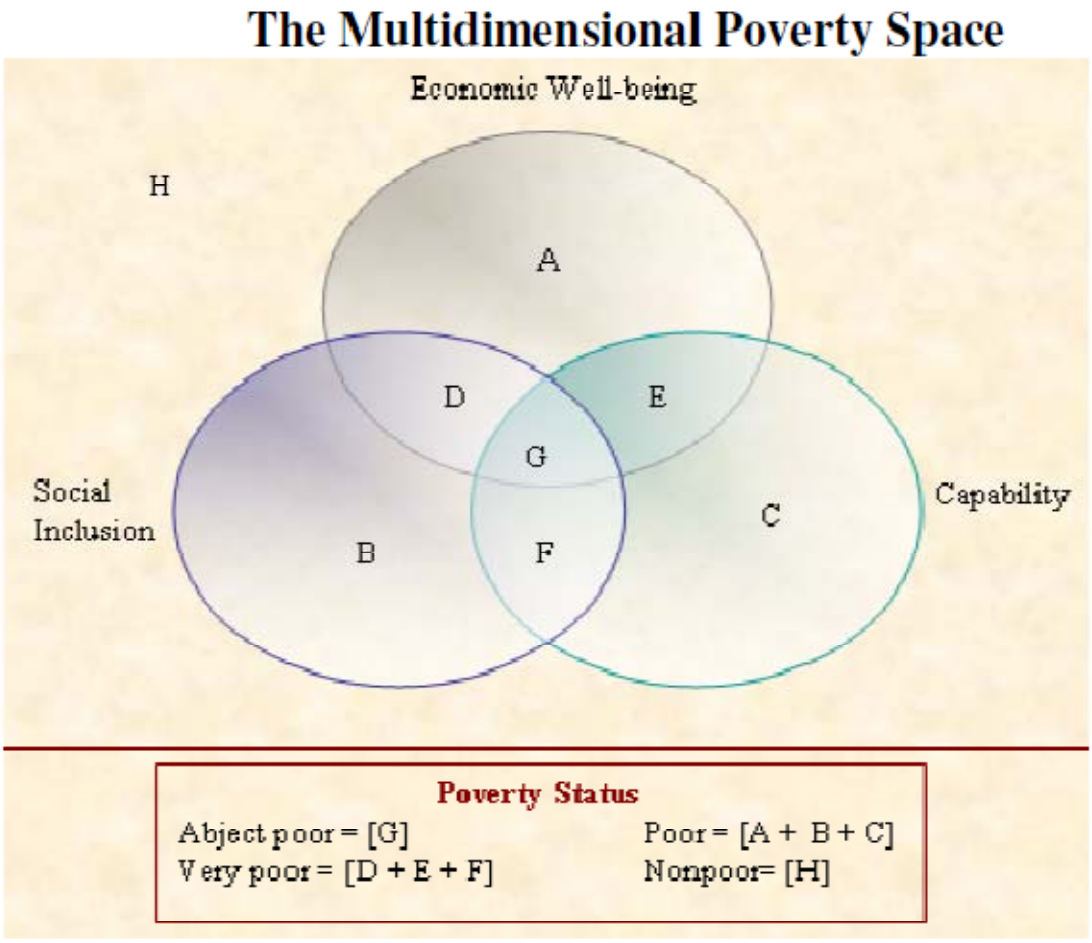
While income and skills can be measured fairly easily, other definitions of poverty are based on more subjective concepts. A basic subjective definition of poverty is that people are poor if they believe they do not have enough resources. Studies have shown, for example, that when people say they are poor, they tend to spend more on basic goods, such as food, and less on discretionary items, such as televisions or cars. Other subjective definitions of poverty focus on people's quality of life. Quality-of-life measures might include the opportunity to freely choose professions and lifestyles, the right to receive a full and free education, and freedom from political oppression. The United Nations Development Program (UNDP) annually publishes The *Human Development Report,* which ranks the degree of poverty in different countries using quality-of-life measures such as these.

The Multidimensional Approach

Rather than viewing poverty as a result of a lack or lowness of single resource variable or trait, the multidimensional approach weighs in a more comprehensive set of information. Whereas economic well-being, capability, and social inclusion are treated as poverty indicating proxy concepts, this approach incorporates all three as separate dimensions of poverty. Although these dimensions are highly interrelated, a lack of perfect predictability indicates the urgency for using

all three. The measurement outcomes from this approach would more comprehensive and accurate than those from any unidimensional approach. While the notion of 'poverty gap' used in the literature indicates the difference between the poverty threshold and one's poverty score using income as the indicator, it fails to account for any potentially relevant information from other dimensions of poverty. Although the necessity of collecting comprehensive data as well as the complexity of aggregating them, thus causing potential loss of information, renders the multidimensional approach less practical for immediate application, further conceptual and methodological refinements would mitigate these issues.

Operationally, poverty status represents one's locus on a three-dimensional space, with those falling on different elements of the space experiencing different degrees of poverty. As shown in Figure 1, people are 'poor' when they fall in any of the three oval spaces. As such they may be economic well-being poor, capability poor, or social inclusion poor depending on the element in which they fall. They would be considered 'very poor' if fallen in a combination of any two elements. Because they experience poverty on two dimensions, the likelihood of escaping it would be very slim. The story of those falling at the core would be even more serious with virtually no respect for escaping it, hence their status identified as the 'abject poor.'



Objective and Subjective Perspectives

Poverty can be approached from objective or subjective perspectives. The objective perspective (sometimes referred to as the welfare approach) involves normative judgements as to what constitutes poverty and what is required to move people out of their impoverished state. The subjective approach places a premium on people's preferences, on how much they value goods and services (hence the emphasis on individual utility). Economists have traditionally based their work on the objective approach, mainly because of the obstacles encountered when trying to

aggregate multiple individual utilities across a population. Advocates of this approach use the argument that individuals are not always the best judge of what is best for them. For example, most poverty measurement systems focus on nutritional attainments. Although all individuals value food consumption, some may place higher value on certain food types or food quantities that are not best for their physiological well being. It is conceivable that the subjective approach could both undervalue and overvalue food consumption when compared to the welfare approach, leading to conflicting assessments as to who are the poor.

Poverty measurement has traditionally been dominated by the objective approach. Only relatively recently has the international community as a whole taken a serious interest in measuring subjective poverty. This is mainly because of mounting recognition of the limitations associated with so-called objective indicators and the value of understanding the perspectives of the poor in shaping policies and programmes. As a result, participatory poverty assessment methodologies have been gaining ground.

Physiological and Sociological Deprivations

Several poverty concepts are derived from perceived causes of poverty. They can be divided into two types of deprivations—physiological and sociological. Regarding the former, the line of thinking is as follows: people are poor because they lack income, food, clothing and shelter. Both the income and basic needs concepts of poverty stem from physiological deprivations (although some advocates of the basic needs concept set the parameters beyond physiological needs). Strategies to reduce poverty emerging from these approaches focus on increasing the income/consumption of the poor and their attainment of "satisfiers" of basic needs, such as health and education. The concepts of poverty emerging from the perspective of sociological deprivations are rooted in underlying structural inequities and inherent disadvantages. They are based on observations that even when resources are flowing into sectors dominated by the poor, the latter may not be able to take full advantage of them because of structural impediments. These constraints hamper access by the poor to "external" assets, such as credit, land, infrastructure and common property (i.e., the natural environment), and "internal" assets, such as health, nutrition and education. The fundamental causal factors lie in power structures and governance issues, as well as in the inequities imbedded in macro-policy frameworks and distributional systems.

The human capability concept of poverty focuses on expanding people's opportunities and spans both the physiological and sociological realms of deprivation. Accordingly, poverty is "not merely in the impoverished state in which the person actually lives, but also in the lack of real opportunity—due to social constraints as well as personal circumstances—to lead valuable and valued lives."

Relate Concepts

Poverty and Inequity

Whereas poverty refers to different forms of deprivation that can be expressed in a variety of terms (i.e., income, basic needs, human capabilities), equity is concerned with distribution within a population group. Despite the clear distinction between the two concepts, analysis of poverty often employs indicators of equity because of inherent linkages between the two.

The association of poverty and equity indicators is done in a number of ways: disaggregation (i.e., many indicators can be disaggregated by gender, race or region); associating distributional measures with other poverty indicators (i.e., such as per capita personal income and the Lorenz curve); and mathematical formulae (such as the Atkinson method). As the international development community develops indicators for its broadened understanding of poverty, measures of equity will likely be increasingly used alongside poverty indicators in order to capture a more complete picture of the situation.

Poverty and Vulnerability

Although poverty and vulnerability are often related, they are not synonymous. Some groups may be at risk of becoming poor because of inherent vulnerabilities (i.e., different types of discrimination based on class, gender, ethnicity, or factors such as disability, region of residence and family configuration). Furthermore, certain combinations of vulnerability may be strongly correlated with poverty, such as female-headed households or families living in remote and isolated mountainous regions. But not all members of a particular vulnerable group are invariably poor—hence the need to distinguish between the two when dealing with indicators. In short, poverty relates to deprivation, while vulnerability is a function of external risks, shocks, stresses and internal defencelessness. The high degree of correlation between certain combinations of vulnerabilities and poverty is increasingly leading development practitioners toward using the former as proxies for poverty. This can prove useful when trying to ascertain a general estimation of the extent of poverty.

Poverty and Exclusion

There is no broad consensus on the definition of social exclusion, or its relationship to poverty. At one end of the spectrum, there are those who define social exclusion within the concept of poverty, focusing on those aspects of social deprivation that impede people from participating fully in their society and its development. At the other end of the spectrum, there those whose notion of social exclusion encompasses a much broader range of issues, including poverty itself. Needless to say, between these two extremes lies a range of different approaches to the concept. Clearly, the definition of social exclusion depends to a great extent on how one defines poverty. If one's definition of poverty were narrow, expressed in terms of material deprivation (such as lack of income), then it would not be surprising that the definition of social exclusion would be considered in broad terms, including material deprivation. If, however, one's definition of poverty is multidimensional, then it is likely that social exclusion would refer more specifically to issues of participation, empowerment and social rights.

Poverty and Underdevelopment

The distinction between poverty and underdevelopment also depends on how each is defined. When defined in broad human deprivation terms, poverty is often viewed as a form of underdevelopment. The *Human Development Report 1997* distinguishes between the two concepts by associating the former with individuals and the latter with an aggregate perspective. "The contrast between human development and human poverty reflects two different ways of evaluating development. One way, the 'conglomerative perspective,' focuses on the advances made by all groups in each community, from the rich to the poor. This contrasts with an alternative viewpoint, the 'deprivational perspective,' in which development is judged by the way the poor and the deprived fare in each community. Lack of progress in reducing the disadvantages of the deprived cannot be 'washed away' by large advances—no matter how large—made by the better-off people."

Given the close relationship between these two concepts, it is not surprising that many poverty indicators are the same as those used to measure underdevelopment. From a policy and programme perspective, the necessity of recognizing a distinction between poverty and underdevelopment depends a great deal on two factors: the degree of equity within a society, and the prevalence of poverty. Effective anti-poverty policies and programmes in relatively inegalitarian societies with small pockets of poverty would look very different from those in relatively egalitarian societies with extensive poverty.

Environmental indicators of poverty

Indicators are an important tool for designing and evaluating poverty reduction strategies, projects, and outcomes. They are useful for monitoring changes and trends over time; they provide a means for comparing progress across different countries and are needed for evaluating the results of projects. Without indicators, well-developed strategies and programs can be rendered meaningless. Indicators can be used to monitor change at different scales, for different purposes and in a number of different ways. At the national (or sub-national) level, poverty-environment trends can be monitored over time and across geo-political categories. An example of a relatively simple but important *individual* indicator at the national level is "population with access to safe water." Data for this indicator is collected globally and can be used to compare different countries or provinces over several different years.

Environment and Poverty: Interconnections

In current development discourses it's rather odd to find any discussion about poverty minus the environment or about nature without people. This is one consequence of the 1992 Rio Earth Summit, which officially blessed the concept of sustainable development. Yet even prior to 1992, poverty and environment, and how they feed on each other to produce both commonly desired or unwanted development outcomes, have figured prominently in honest-to-goodness policy debates and development action **(Serrano, 2001)** According to the World Development Report 2000/2001, referring to Nobel laureate Amartya Sen, "poor people live without fundamental freedoms of action and choice that the better-off take for granted. They often lack adequate food and shelter, education and health, deprivations that keep them from leading the kind of life that everyone values. They also face extreme vulnerability to ill-health, economic dislocation, and natural disasters. And they are often exposed to ill treatment by institutions of the state and society and are powerless to influence key decisions affecting their lives."

We are talking here of millions upon millions of underfed, poorly sheltered, poorly educated, ignored, humiliated, excluded, and extremely vulnerable souls who will probably die without visiting places other than where they were born. There's also a gender dimension to this poverty condition. Majority of the poorest are women and girls who suffer much more than their male counterparts. These women manage cash-strapped households, rear children, gather water and firewood. Much of what they do are unpaid, unrecognized, discounted. They are usually the last to be hired into what usually is an unfairly paid job and first to get thrown out come economic crunch. They often have to put up with different forms of harassment and humiliation at home, at work, in the neighbourhood.
It is now widely accepted that the majority of Sub-Saharan Africans, especially those who live in rural areas, experience extreme forms of poverty. Several (million people live in poverty, with over 70% of these living in rural areas. Studies from various fields have constantly suggested that poverty is the root cause of many undesirable factors challenging people and government, including violence corruption and environmental degradation to mention a few.

Poverty-Environment (P-E) Indicators

A World Bank's 2002 study, attempted to develop a set of Poverty-Environment (P-E) Indicators. The goal of the study is to "identify indicators that can be used to assess poverty environment interactions." From the Bank's perspective, it seeks to develop indicators that can be applied "from local to global levels" and that can also be used to monitor changes "globally,"

that is, through cross-country comparison. The proposed indicators covered two distinct, albeit complementary, fields. The first category it addresses is the relationship between environmental conditions (such as quality of water supply and levels of pollution and wastes) and human health. The indicators suggest a direct causal relationship between surrounding environmental conditions and the health of sectors of society determined by income level. The second category of P-E indicators monitors the impact of resource loss as a determinant of poverty, measuring how the loss of access to resources "affects the well being of the poor." While recognizing the complexity of poverty-environment dynamics, the World Bank study examines only "how resource loss can act as a determinant of poverty." In this perspective, the proposed indicators monitor how issues of deforestation, water scarcity, overfishing, and land degradation affect the well-being of the poor.

Natural systems are extremely complex, and it would not be cost effective to monitor all the different ways in which the poor are affected by their natural environment. The local diversity of natural resource problems may also render any list of all global poverty-natural resource indicators irrelevant. The sometimes circular connection between poverty and natural resource degradation also makes the monitoring of poverty-environmental indicators and their interpretation very challenging. In the figure below is a set of indicators that are most commonly used in the literature on natural resources. These indicators are considered a sample of indicators with broad utility for monitoring the natural resource related factors that affect the income, security and vulnerability of poor households in developing countries. In order to be clear about what is meant by a poverty-natural resource indicator, a working definition of such an indicator is developed. Thus, a poverty-natural resource indicator is one which changes when "better management of a natural resource leads to decline in poverty (broadly defined)."

A sample of poverty-natural resource indicators that affect income, security, and vulnerability of poor people in poor countries

	Poverty issue	*Poverty-environment indicator*	*Natural resource problems that could influence this indicator*
1	Income and opportunity	Percentage of rural population below poverty line	Deforestation Water scarcity Overfishing Land degradation
		Rural per capita cereal production	
2		Time spent by household members to collect water and fuel wood	
3		Distance walked by household members to collect water and fuel wood	
4		Quantity of annual household consumption derived from common lands[1]	
5		Quantity of annual household consumption that is derived from forest products and fisheries[1]	
6		Percentage of irrigated area in total cultivated area by wealth/income categories[2]	
7		Percentage of rural households with adequate water for livestock by wealth/income categories[2]	
8	Food security	Rural per capita cereal production	Land degradation Water scarcity Pest outbreak Natural disasters
9		Percentage of farmers who grow drought resistant crops by income/wealth quintiles	
10		Quantity of household consumption that is derived from forest products and fisheries[1]	Deforestation Overfishing
11		Percentage of rural children under five who are underweight	Land degradation Water scarcity Water quality
12		Percentage of rural children under five who are stunted	
13		Percentage of rural children under five who are wasted	
14	Vulnerability to natural disasters	Households rendered homeless from floods/hurricanes/cyclones/landslides per year by income / wealth quintiles	Natural disaster Deforestation
15		Number of deaths from natural disasters by income / wealth quintiles	
16		Percentage of farmers with land on slopes/wetlands by income / wealth quintiles	
17		Percentage of rural children under five who are wasted	

Notes:
1. Among households that are largely dependent on natural resources with few alternative income/employment opportunities.
2. Field tested by a DFID research group (DFID 2001).

We can also identify three distinct categories of P-E indicators that grow directly from field experiences in many countries around the world: (1) status indicators, (2) enabling conditions indicators, and (3) social capital indicators.

Status indicators

Status indicators are the most widely accepted and used type of indicator for poverty, for the environment, and for poverty-environment dynamics. Status indicators provide a quantitative

snapshot of the status of critical issues in the poverty-environment nexus. They tell what is happening on the ground-at the local level-where users of resources interact with the diverse natural resources. Status indicators include, for example, hectares of forested land, per capita availability of freshwater, the number of households without access to land titles, and so on. Below are just a few of the potential status indicators designed to reflect the current state of the environment and poverty-environment relations:

Environment

- Resource quantity and quality-indicators that reflect the physical extent, condition, and productivity of resources (for example, size of fish stocks, soil organic matter levels, biochemical oxygen demand of rivers).
- Rate of resource degradation or improvement-indicators relating to rate of loss or gain or lowering or improvement of quality (for example, rate of forest land conversion, topsoil erosion rates).

Poverty-environment

- Access to resources-per capita availability of resources (for example, fresh water, fuel wood), distance and time to collect forest products, percentage of income derived from non-timber forest products.
- Level of vulnerability-exposure to and impact of natural disasters and declining or improving environmental quality (for example, number of individuals affected by flood and drought, incidence of acute respiratory illnesses).

Enabling conditions indicators

The improved understanding of poverty-environment dynamics over the past years has allowed concerned parties, including WWF, to identify enabling conditions that encourage more direct and comprehensive strategies for addressing the P-E nexus in specific localities. Enabling conditions indicators reflect societal responses to environmental problems, to conditions of poverty, and to poverty-environment dynamics. Among those enabling conditions are: development of national sustainability strategies that integrate the environment into economic growth plans; strategic environmental analysis instruments that anticipate changes and impacts on vulnerable populations and the environment; a host of regulatory mechanisms that establish performance standards; and new financing mechanisms that offer incentives for sustainable environmental management and compensation to providers of environmental services.

Indicators of enabling conditions can be grouped into three basic categories: institutional arrangements, economic policies, and ecological management capacity. While generalized to a certain degree, these indicators do need to be tailored to the specific conditions in each locality.

Institutional arrangements

Institutional indicators measure the scope, characteristics and capabilities of institutions that influence P-E dynamics

- Institutional reforms-existence of reforms that encourage resource management institutions to be responsive and adaptable; degree of transfer of power to appropriate entities; degree of accountability and transparency in decision-making.
- Legal-regulatory framework-availability of incentives that protect the environment; steps taken to enhance access to resources among the poor; ease of adjudicating disputes related to environmental issues; enforcement mechanisms.
- Participatory processes and empowerment-existence of policies or regulations that encourage the poor, particularly women and minorities, to participate; training and

capacity-building programs; extent of accountability and transparency in environmental planning and policymaking.

Economic policies and incentives

Economic indicators measure the magnitude of financial resources, the impact of specific market dynamics and the influence of policy reforms that shape the P-E nexus.

- Budgetary allocation and investment trends-share of spending on P-E projects relative to other sectors; investment programs for infrastructure, extractive industries, and energy generation that have environmental and social impacts; investments focused on repairing and restoring damaged natural resources.
- Addressing market failures-existence of efforts to value and monetize externalities; relative importance given to financial versus economic criteria in planning; availability of incentives and schemes to make payments to the poor by the rest of society for their environmental stewardship role.
- Addressing impacts of recent economic change level of effort to measure and respond to the dislocations associated with economic reforms, including availability of safety nets, retraining programs, and compensation plans; attempts to predict and mitigate impacts of global trade agreements, shocks in global market trends, and exogenous interests on the national P-E nexus.

Ecological management capacity

Ecological management indicators measure the ability of institutions to prepare for and respond to anticipated trends and unexpected environmental shocks.

- Monitoring ecological dynamics-existence of plans and projects to track long-term changes in the biophysical environment; efforts to examine impacts of current and emerging technologies on the P-E nexus (for example, genetically modified crops, aquaculture).
- Environmental risk mitigation-existence of management systems to support adjustments to external environmental shocks; existence of planning procedures to adjust to impacts of anticipated environmental changes (for example, Environmental Impact Assessments or Strategic Environmental Analysis for major projects and structural reform programs, respectively); application of safe minimum environmental standards; steps to protect the poor from any unintended consequences.

Social capital indicators

Social capital includes the organizations, networks, norms, relationships, and other mechanisms that enable communities to undertake collective action. Social capital is the capacity of local populations to influence basic decisions and institutional arrangements that shape their livelihoods and natural resource use. As we implemented strategic interventions over the past four years with local partners in five developing countries to change P-E dynamics, we found that the main determinant of the success of the interventions was the ability of local communities, supported by other partners, to influence institutions and policies at local, meso, and national levels. The depth and breadth of changes generated through interventions were directly related to the organizational and political capacity of local communities and partners acting effectively in their own interests. In the absence of their ability to drive change, no fundamental and enduring change seemed possible.

We give particular emphasis to social capital because privately held capital, in its many forms, is often scarce in rural areas of the developing world. In the absence of diverse and widely available private capital, improving the living conditions of the rural poor depends heavily on building institutions and embarking on collective actions to improve the welfare of broad groups of inhabitants. This point is central to WWF-MPO's concerns because our objective is to help

remove the obstacles that prevent the rural poor from improving their livelihoods and natural resource management. Unless social capital and the ability of local communities to shape their lives and livelihoods are placed at the centre of the development of indicators, we believe that attention will be diverted from the most central problem in rural areas.

Theories of development and underdevelopment in relation to poverty

Dependency Theory

Theory of economic development that emerged in the 1960s. Dependency theory addresses the problems of poverty and economic underdevelopment throughout the world. Dependency theorists argue that dependence upon foreign capital, technology, and expertise impedes economic development in developing countries. Dependency theory rejects the central assumptions of modernization theory. In the 1960s advocates of dependency theory—mostly social scientists from the developing world, particularly Latin America—argued that former colonial nations were underdeveloped because of their dependence on Western industrialized nations in the areas of foreign trade and investment. Rather than benefiting developing nations, these relationships stunted their development. Drawing upon various Marxist ideas, dependency theorists observed that economic development and underdevelopment were not simply different stages in the same linear march toward progress. They argued that colonial domination had produced relationships between the developed and the developing world that were inherently unequal. Dependency theorists believed that without a major restructuring of the international economy, the former colonial countries would find it virtually impossible to escape from their subordinate position and experience true growth and development.

Dependency theorists have also focused on how foreign direct investments of multinational corporations distort developing nation economies. In the view of these scholars, distortions include the crowding out of national firms, rising unemployment related to the use of capital-intensive technology, and a marked loss of political sovereignty. From the perspective of dependency theory, the relationship between developing nations and foreign lending institutions, such as the World Bank and the International Monetary Fund (IMF), also undermines the sovereignty of developing nations. These countries must often agree to harsh conditions—such as budget cuts and interest rate increases—to obtain loans from international agencies. During the 1980s, for example, the foreign debt of many Latin American countries soared. In response to pressure from multilateral lending agencies such as the World Bank and the IMF, these nations enacted financial austerity measures in order to qualify for new loans. In the short term, these economic policies led to higher levels of unemployment and slower economic growth.

Background

Dependency Theory developed in the late 1950s under the guidance of the Director of the United Nations Economic Commission for Latin America, Raul Prebisch. Prebisch and his colleagues were troubled by the fact that economic growth in the advanced industrialized countries did not necessarily lead to growth in the poorer countries. Indeed, their studies suggested that economic activity in the richer countries often led to serious economic problems in the poorer countries. Such a possibility was not predicted by neoclassical theory, which had assumed that economic growth was beneficial to all (Pareto optimal) even if the benefits were not always equally shared. Prebisch's initial explanation for the phenomenon was very straightforward: poor countries exported primary commodities to the rich countries who then manufactured products out of those commodities and sold them back to the poorer countries. The "Value Added" by manufacturing a usable product always cost more than the primary products used to create those products.

Therefore, poorer countries would never be earning enough from their export earnings to pay for

their imports. Prebisch's solution was similarly straightforward: poorer countries should embark on programs of import substitution so that they need not purchase the manufactured products from the richer countries. The poorer countries would still sell their primary products on the world market, but their foreign exchange reserves would not be used to purchase their manufactures from abroad. Three issues made this policy difficult to follow. The first is that the internal markets of the poorer countries were not large enough to support the economies of scale used by the richer countries to keep their prices low.
The second issue concerned the political will of the poorer countries as to whether a transformation from being primary products producers was possible or desirable. The final issue revolved around the extent to which the poorer countries actually had control of their primary products, particularly in the area of selling those products abroad. These obstacles to the import substitution policy led others to think a little more creatively and historically at the relationship between rich and poor countries.

At this point dependency theory was viewed as a possible way of explaining the persistent poverty of the poorer countries. The traditional neoclassical approach said virtually nothing on this question except to assert that the poorer countries were late in coming to solid economic practices and that as soon as they learned the techniques of modern economics, then the poverty would begin to subside. However, Marxists theorists viewed the persistent poverty as a consequence of capitalist exploitation. And a new body of thought, called the *world systems approach*, argued that the poverty was a direct consequence of the evolution of the international political economy into a fairly rigid division of labor which favoured the rich and penalized the poor.

Dependency Theory: Definition

The debates among the liberal reformers (Prebisch), the Marxists (Andre Gunder Frank), and the world systems theorists (Wallerstein) was vigorous and intellectually quite challenging. There are still points of serious disagreements among the various strains of dependency theorists and it is a mistake to think that there is only one unified theory of dependency. Nonetheless, there are some core propositions which seem to underlie the analyses of most dependency theorists.

Dependency can be defined as an explanation of the economic development of a state in terms of the external influences--political, economic, and cultural--on national development policies (Osvaldo Sunkel, 1969) . In 1971, Theotonio Dos Santos emphasizes the historical dimension of the dependency relationships in his definition:

> [Dependency is]...an historical condition which shapes a certain structure of the world economy such that it favours some countries to the detriment of others and limits the development possibilities of the subordinate economics...a situation in which the economy of a certain group of countries is conditioned by the development and expansion of another economy, to which their own is subjected.

There are three common features to these definitions which most dependency theorists share.
First, dependency characterizes the international system as comprised of two sets of states, variously described as dominant/dependent, centre/periphery or metropolitan/satellite. The dominant states are the advanced industrial nations in the Organization of Economic Cooperation and Development (OECD). The dependent states are those states of Latin America, Asia, and Africa which have low *per capita* GNPs and which rely heavily on the export of a single commodity for foreign exchange earnings. Second, both definitions have in common the assumption that external forces are of singular importance to the economic activities within the dependent states. These external forces include multinational corporations, international

commodity markets, foreign assistance, communications, and any other means by which the advanced industrialized countries can represent their economic interests abroad. Third, the definitions of dependency all indicate that the relations between dominant and dependent states are dynamic because the interactions between the two sets of states tend to not only reinforce but also intensify the unequal patterns. Moreover, dependency is a very deep-seated historical process, rooted in the internationalization of capitalism.

Dependency theory posits that the cause of the low levels of development in less economically developed countries (LEDC's) is caused by their reliance and dependence on more economically developed countries (MEDC's) - i.e. the LEDC's are undeveloped because they rely on the MEDC's. Some proponents of dependency theory assert that LEDC's will remain less developed because the surplus that they produce will be siphoned off by MEDC's - under the guise of multinational corporations. There is, as such, no profit left for reinvestment and development.
As a corollary of this theory, LEDC's should cut off ties with MEDC's, retain their surplus production, and follow economically independent and socialistic ideas in order to further develop their economies, as the Soviet Union had done to great effect. Additionally, it also emphasizes the virtuous circle of self-perpetuating benefits that the MEDC's gain from their existing prosperity.

The Central Propositions of Dependency Theory

There are a number of propositions, all of which are contestable, which form the core of dependency theory. These propositions include:

1. *Underdevelopment* is a condition fundamentally different from *undevelopment*. The latter term simply refers to a condition in which resources are not being used. For example, the European colonists viewed the North American continent as an undeveloped area: the land was not actively cultivated on a scale consistent with its potential. Underdevelopment refers to a situation in which resources are being actively used, but used in a way which benefits dominant states and not the poorer states in which the resources are found.

2. The distinction between underdevelopment and undevelopment places the poorer countries of the world is a profoundly different historical context. These countries are not "behind" or "catching up" to the richer countries of the world. They are not poor because they lagged behind the scientific transformations or the Enlightenment values of the European states. They are poor because they were coercively integrated into the European economic system only as producers of raw materials or to serve as repositories of cheap labor, and were denied the opportunity to market their resources in any way that competed with dominant states.

3. Dependency theory suggests that alternative uses of resources are preferable to the resource usage patterns imposed by dominant states. There is no clear definition of what these preferred patterns might be, but some criteria are invoked. For example, one of the dominant state practices most often criticized by dependency theorists is export agriculture. The criticism is that many poor economies experience rather high rates of malnutrition even though they produce great amounts of food for export. Many dependency theorists would argue that those agricultural lands should be used for domestic food production in order to reduce the rates of malnutrition.

4. The preceding proposition can be amplified: dependency theorists rely upon a belief that there exists a clear "national" economic interest which can and should be articulated for each country. In this respect, dependency theory actually shares a similar theoretical

concern with realism. What distinguishes the dependency perspective is that its proponents believe that this national interest can only be satisfied by addressing the needs of the poor within a society, rather than through the satisfaction of corporate or governmental needs. Trying to determine what is "best" for the poor is a difficult analytical problem over the long run. Dependency theorists have not yet articulated an operational definition of the national economic interest.

5. The diversion of resources over time (and one must remember that dependent relationships have persisted since the European expansion beginning in the fifteenth century) is maintained not only by the power of dominant states, but also through the power of elites in the dependent states. Dependency theorists argue that these elites maintain a dependent relationship because their own private interests coincide with the interests of the dominant states. These elites are typically trained in the dominant states and share similar values and culture with the elites in dominant states. Thus, in a very real sense, a dependency relationship is a "voluntary" relationship. One need not argue that the elites in a dependent state are consciously betraying the interests of their poor; the elites sincerely believe that the key to economic development lies in following the prescriptions of liberal economic doctrine.

Many dependency theorists advocate social revolution as an effective means to reduce economic disparities in the world system. The basic premises of dependency theory are:

a) Poor nations provide natural resources and cheap labor. They are export destinations for obsolete technology and for markets for the wealthy nations, without which, the latter could not have the standard of living they enjoy. Poor nations, are at a disadvantage in their market interactions with wealthy nations.

b) Wealthy nations actively perpetuate a state of dependence by various means. This influence may be multifaceted, involving economics, media control, politics, banking and finance, education, culture, sport, and all aspects of human resource development, including the recruitment and training of workers.

c) Wealthy nations actively counter all attempts made by dependent nations to resist their influences by means of economic sanctions, and, possibly, by the use of military force. The poverty of the countries in the periphery is not because they are not integrated into the world system, or not fully integrated as is often argued by free market economists, but because of how they are integrated into the system.

The Characteristics of Dependent Economy

Dependency is said to have been created with the industrial revolution, with the expansion of European empires around the world, and due to the superior military power and accumulated wealth of these empires. Some argued that before this expansion, the exploitation was internal, with the major economic centres dominating the rest of the country. The establishment of global trade patterns in the nineteenth century, allowed capitalism to spread globally. The wealthy became more isolated from the poor, because they gained disproportionately from imperialistic practices. This control ensures that all profits in less developed countries are remitted to the developed nations. It prevents domestic reinvestment, causing capital flight and, thus, it hinders economic growth.

The underlying conditions for dependency of any country are as follow:

i. exporting firms are primarily owned by foreigners
ii. exports are dominated by one, or a few commodities
iii. the export sector dominates the economy, and imports are larger in relation to GDP
iv. mineral and petroleum products are produced under conditions of vertical integration.

The characteristics of a dependent economy are as follows

a) economic growth is not self activating
b) profits are normally repatriated, but not reinvested
c) the production of export industries is dependent on imported inputs
d) income, employment, and growth are determined by:
    - the prices and the demand conditions of international market
    - the willingness of transnational corporation to invest

e) income, employment and growth are conditioned by:
    - changes in the prices and types of imports
    - economic fluctuation abroad
    - changes in taste and fashion
    - changes in technologically created substitutes
f) backward and forward linkages of export activities are very rare
g) foreign capital, foreign technology, and management are dominant economic actors.

Criticisms of dependency theory

The arguments of dependency theorists are criticized as follows

i. The countries on the periphery of development are not destined to stagnation. So, dependency theory is an incomplete and inaccurate description of the socioeconomic conditions of LDCs.
ii. There are many dependent countries on the periphery. They do change their economic structure. According to Prof Warren, they have achieved very rapid economic growth.
iii. This theory does not highlight how the countries that follow a dependent development pattern suffer from a variety of economic ills, such as regressive income distribution, an emphasis on luxury goods, underutilization and exploitation of human resources, over reliance of foreign f m s for capital intensive technology, and the perennial problems of poverty and unemployment.
iv. This theory has no relevance to many nations which are neither in the periphery, nor in the centre. They are called semi periphery countries.
v. One need not accept dependency as a necessarily zero sum game in which the periphery loses, and the centre gains. The dependency condition provides opportunities for a win-win game, in which both developed countries and LDCs gain from each other.
vi. With the economic growth of India and East Asian economies, dependency theory has lost its validity. It is more widely accepted in disciplines such as history and anthropology.

Poverty and environmental resources utilization and management

Environment degradation

Degraded soils, rapidly declining forest cover, and rising levels of air and water pollution are just some of the environmental issues that many developing countries like Nigeria confronts. Agriculture and livelihoods are threatened by depleted soil fertility, degraded rangelands and encroaching deserts, while coastal wetlands are rapidly losing their productive potential. Other environmental threats come from indiscriminate urbanisation, unregulated industrial development, increasing levels of air and water pollution, and the over-exploitation of natural resources in general. The impact of environmental damage is undeniable: illness and premature mortality as a result of indoor and outdoor air pollution, diseases caused by contaminated water and inadequate sanitation, and reduced agricultural productivity owing to soil degradation. Food security is also affected, since a fragile and depleted resource base results in poor agricultural yields and lowered productivity.

Environmental degradation costs have been noted as well that these costs fall disproportionately on the poor. And the effects are not felt in rural areas alone. For example, water and air pollution cause illness and premature mortality in urban and rural areas alike. This increases pressure on overburdened health care systems, reduces labour efficiency and exacerbates poverty. Strengthening environmental management can support economic growth, while improving health and productivity. Financing pro-poor environmental management in conjunction with other development activities is of the utmost importance.

Rural Poverty and Environmental Degradation

The thin layer of soil that covers most of the earth's land surface is the key to human well-being and survival. Without it, there would be no plants, no crops, no animals, no forests and no people. However, about 40% of the earth's land surface and more than one billion people are affected by land degradation. Degraded lands are home to the poorest segments of the rural population. In these areas, the poor are often locked into patterns of natural resource degradation by their lack of access to productive resources, institutional services, credit and technology. Without these resources, they are compelled to overstrain already eroding lands in order to survive. The increased pressure on the land – through deforestation, overgrazing and over cultivation – causes a decline in soil fertility and production, and thus aggravates poverty. Unless degradation is addressed directly, the sustainability of rural development projects will be undermined – and attempt to alleviate rural poverty will be jeopardized.

In West and Central Africa, the major concern is land and water degradation, caused largely by the spread of desertification and the growing scarcity of arable land surface, groundwater and rangeland. As the growing population turns to wooded lands for its cooking fuel, timber and expanding agriculture, the resulting depletion of forest is compounding the problem (International Fund for Agricultural Development (IFAD, 2001).

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Many lessons have been learned from IFAD's evolving experience in addressing the environment and NRM. At the same time, a number of challenges have been identified. Some of the most important ones are described below.

- **Participation and community organization.** NRM is more sustainable when beneficiaries engage in managing resources and maintaining structures. Strong local institutions are a prerequisite for equitable NRM, and in many cases the most successful interventions involve community organizations such as water users' associations. In

building on existing formal or informal community groups, it is crucial to ensure that the poorest and most vulnerable, particularly women, are included and have an opportunity to participate in community decision-making processes.

- **Focused and flexible technologies.** Conservation technologies do not always lead to quick increases in yield and cash returns. This is a disincentive for the poor to adopt and maintain them. Where technologies do exist, adoption is constrained by low short-term returns, lack of labour, food-security needs, poor marketing opportunities and poor communication and extension services. The success of technology packages depends on detailed knowledge of local, integrated farming systems and the livelihood strategies of local populations.
- **Traditional knowledge.** Indigenous knowledge is directly tied to the sustainable use and maintenance of a healthy and vibrant ecosystem. Many successful examples of regenerating ecosystems and supporting local livelihoods are found in areas where users themselves have established a management structure, or management is based upon an indigenous system. Further efforts are needed to document traditional, sustainable farming systems and best practices and to design projects that blend traditional and new technologies.
- **Gender issues.** Rural women have specific knowledge of local resources and processes. They also have gender-specific NRM responsibilities and are experienced natural resource managers. NRM activities need to consider this knowledge and experience and build upon it. The development of sustainable livelihood systems depends on improving women's access to productive natural resources, including land, forest and water resources, and their participation in decision-making processes. Enhancement of women's roles, including participation in public and community affairs, is critical to NRM.
- **Land issues and common-property resources.** Land rights are of utmost importance in relation to NRM. Secure land rights are an incentive for farmers to invest and engage in sustainable land- and water-management practices. Common-property resources are also crucial to the livelihoods of many poor people, supplying them with fuelwood and fodder. In many countries, however, the poor continue to be systematically excluded from these resources. IFAD has found that institutional strengthening of common-property resources can greatly reduce poverty. Continued care must be taken to ensure that poor people, particularly women, are not excluded from community NRM, and that continued consideration is given to conflicting rights to common-property resources by different groups.
- • **Holistic approach to NRM.** IFAD carries out the vast majority of its interventions at the micro level. NRM issues are, however, affected by economic, social and political situations at macro levels as well. The main beneficiaries of projects are usually smallholder farmers, but in some regions within a given ecosystem, more land is under the management of large-scale owners and commercial farms. The ecological fate of the entire ecosystem thus depends mostly on the decisions of the large landowners and commercial enterprises, regardless of the support provided to small farmers for sustainable NRM. A comprehensive approach to improving land management requires consideration of environmental decision-making at the regional, national and international level as well as at the local level. It is expected that this will lead to a more integral vision during project design as well as to more attention to conflict resolution with large-scale farmers.
- • **Environmental assessment.** Greater use of strategic environmental assessment is needed at the country and regional level, and more attention must be given to building in-country and regional capacity to carry it out. Assessments themselves need to be used more effectively to grapple with complex NRM issues, as well as to increase stakeholder involvement in their preparation and in acting upon recommendations.

- • **Measuring progress and impact.** Reliable indicators are needed in order to measure the state of natural resources in a given area and evaluate the environmental effect and impact of projects. Emphasis needs to be put on developing indicators that are project-specific and that create a participatory monitoring process.
- • **Integration.** NRM approaches must shift from inputs and processes alone to achieving tangible benefits that contribute to IFAD's mission to fight poverty. A five-prong strategy has been adopted comprising policy-level activities, operational activities, capacity-building, partnerships
- and knowledge management. In addition, a more proactive role is being pursued towards building synergies with such crosscutting issues as gender, participation, civil-society organizations and institutional strengthening.

Poverty factor in the resolution of local and global environmental issues

Global Environmental Problems

At the dawn of the third millennium, a powerful and complex web of interactions is contributing to unprecedented global trends in environmental degradation. These forces include rapid globalization and urbanization, pervasive poverty, unsustainable consumption patterns and population growth. Often serving to compound the effects and intensity of the environmental problems described in the previous section, global environmental challenges require concerted responses on the part of the international community. Global climate change, the depletion of the ozone layer, desertification, deforestation, the loss of the planet's biological diversity and the trans-boundary movements of hazardous wastes and chemicals are all environmental problems that touch every nation and adversely affect the lives and health of their populations. As with other environment-related challenges, children are disproportionately vulnerable to and suffer most from the effects of these global trends. Moreover, all of these global environmental trends have long-term effects on people and societies and are either difficult or impossible to reverse over the period of one generation.

Climate Change

It is now widely recognized that global warming over the past 50 years is largely due to human activities that have released greenhouse gases into the atmosphere. The most recent assessment report by the Intergovernmental Panel on Climate Change (IPCC) concludes that the global average surface temperature has increased by about 0.6°C during the 20th century. The seemingly small rise of mean temperature is already showing adverse effects. One of the consequences has been a rise in the global average sea level1. Another effect has been more frequent and intensified droughts in recent decades in parts of Asia and Africa. Additionally, in most mid and high latitudes of the Northern Hemisphere continents, precipitation has increased by 0.5 to 1.0 per cent per decade in the 20th century. The repercussions of climate change will disproportionately affect those who are least able to adapt – the poor and the most vulnerable sections of society, including children. For example, scientists project that this level of warming could, among other things:

- Greatly exacerbate the range, frequency and intensity of natural disasters, from flooding, to droughts, to torrential rains, ice-storms, tornadoes and hurricanes;
- Cause sea levels to rise by between nine and 80 centimetres by 2100[4], due to the expansion of warming waters and the melting of polar icecaps and other glaciers, which in turn may produce deadly flooding in many low-lying areas and small island States, displacing millions from their homes;
- Increase the number of environmental refugees resulting from weather-related disasters;
- Augment the risk of disease migration and disease outbreaks; and
- Render large areas of the world "uninsurable" due to the magnitude of property damage from disasters.

It is widely recognized that climate change, by altering local weather patterns and by disturbing life-supporting natural systems and processes, has significant implications for human health. While the range of health effects is diverse, often unpredictable in magnitude, and sometimes

slow to emerge, children remain among the most vulnerable to these threats. Higher temperatures, heavier rainfall, and changes in climate variability would encourage vectors of some infectious diseases (such as malaria, schistosomiasis, dengue fever, yellow fever and encephalitis) to multiply and expand into new geographical regions, intensifying the already overwhelming threats to children from such diseases. There is also evidence that El Niño – a vast natural climatic phenomenon that can bring intense floods and droughts in many parts of the globe – is becoming more frequent as a result of global warming and could further aggravate health problems in many parts of the world. Excessive flooding is, for example, a prime cause of cholera and other water-borne and food-borne infections to which children are particularly susceptible.

Ozone Layer Depletion

Ozone in the atmosphere's upper layer, the stratosphere, protects humans, animals and plants from the damaging effects of UV-B radiation from the sun. Without it, all life on earth would cease to exist. However, the use of chlorofluorocarbons (CFCs) and other ozone-depleting substances (ODS) are slowly eating away at the stratospheric ozone layer, creating a major potential health hazard. While the concentrations of ODS in the lower atmosphere peaked in about 1994 and is now slowly declining due to worldwide efforts to phase out the use of CFCs and other damaging substances, significant health threats relating to ozone depletion persist.
Past (and current) emissions of ODS result in increases of ultraviolet radiation reaching the Earth's surface which can pose several health effects:

- Increase of melanoma and non-melanoma skin cancers;
- Cause or acceleration of eye cataracts development;
- Reduce effectiveness of the immune system;
- Impact on nutrition (e.g. reduced plant yield);
- Damage to ocean ecosystems and reduced fish yield (by killing microbial organisms in the ocean).

Skin cancer is the most worrisome health impact of ozone depletion. Overexposure to the sun's harmful ultraviolet (UV) light may damage children's skin.

Desertification

Desertification, resulting in part from deforestation, is a significant threat to the arid, semi-arid and dry sub-humid regions of the world – which account for 40 per cent of the Earth's land surface. Throughout the world, drylands still provide much of the world's food in the form of grain and livestock, yet close to 70 per cent of the world's drylands are degraded, thus diminishing the productive land per capita and decreasing food security. The most common forms of unsustainable land use are over-cultivation, overgrazing, deforestation and poor irrigation practices. These susceptible soils – mainly located in the savannahs of Africa, the Great Plains and the Pampas of the Americas, the Steppes of southeast Europe and Asia, the outback of Australia and the margins of the Mediterranean – are particularly vulnerable due to the fact that they recover very slowly from disturbances and further deteriorate due to rain and wind erosion and chemical and physical deterioration of the soil structure. More than 250 million people are directly affected by desertification and 1 billion people in more than 100 countries are at risk. These people include many of the world's poorest and most marginalized citizens. In Africa, land degradation is threatening economic and physical survival. Recurrent droughts increase soil degradation problems, which, in turn, magnify the effect of drought, both of which

enhance the conditions that can cause widespread famines. The consequences of desertification include:

- Reduction of the land's natural resilience to recover from climatic disturbances;
- Reduction of soil productivity;
- Damaged vegetation cover, such that edible plants can be replaced by non-edible ones;
- Increased downstream flooding, reduced water quality, sedimentation in rivers and lakes and siltation of reservoirs and navigation channels;
- Aggravated health problems due to wind-blown dust, including eye infections, respiratory illnesses, allergies and mental stress;
- Undermined food production; and
- Loss of livelihoods compelling affected people to migrate.

Deforestation

More than 110 million hectares of forest, about 11 million hectares a year, disappeared during the 1990s. Most of this loss was in developing countries. About 45 per cent of the world's original forests are gone10. Major causes of deforestation and forest degradation lie outside the forest sector and include the need to create agricultural land and to harvest fuel wood for food and energy. Approximately half of the wood harvested in the world is used as fuel wood and charcoal, mostly in developing countries. In developed countries the main uses are for industrial products. The alarming rates of deforestation and the associated loss of environmental resources, social and cultural traditions – alongside the loss of the economic and productive capacity of forestland – account for the fact that forest preservation is now a major priority on the national, regional and global policy and political agendas.

The removal of trees decreases the ability of the soils to absorb and retain water; thus contributing to the depletion of the groundwater aquifers, which supply about one-third of the world's population. Aquifers are the sole source of water for many rural communities worldwide. Cleared lands stripped of their tree cover also are more susceptible to:

- Erosion, which degrades fertile lands and silts waterways, lakes, rivers and coastal waters, thereby degrades water quality for human consumption and disrupts ecosystem processes by choking fish hatcheries, coral reefs, etc.;
- Decreased groundwater recharge because the barren soils do not infiltrate water as effectively;
- Increased malaria transmission, bearing in mind that 90 per cent of the malaria disease burden is linked with underlying environmental factors, and claims some 750,000 children under five annually; and
- Desertification and drought

Deforestation is also intrinsically linked to the loss of biodiversity as original rain forests host numerous species of precious fauna and flora (see next section). The significance of protecting rain forests for children cannot be overemphasized. Food security and sustainability of livelihoods as provided by forests are critical to child development. Forests also offer climatic and water resource conservation benefits that directly impact child health. The rich medicinal resources stored in forests are another link to children's welfare.

Loss of Biodiversity

One hundred and fifty years ago, the Native American leader, Chief Seattle, is reported to have said we humans are but a thread in the web of life. He added, whatever we do to the web, "We do to ourselves." The web is unravelling at an increasing rate. Both plant and animal species have been disappearing at 50 to 100 times the natural rate, due to such factors as the large-scale clearing and burning of forests, over-harvesting of plants and animals, indiscriminate use of pesticides, draining and filling of wetlands, destructive fishing practices, air pollution and the conversion of wild lands to agricultural and urban uses. Recent studies suggest that this high rate of extinction will accelerate even faster, taking an increasing number of living plants and animals away from us forever. This species loss and ecosystem disruption is causing a complex range of circumstances with consequences to human health. In response, governments and communities worldwide are now concerned with the purification of air and water, maintenance of soil fertility, mitigation of floods and droughts, detoxification and decomposition of wastes, maintaining concentrations of vital gases and water vapour in the atmosphere, and controlling infectious agents in the environment. In addition, the loss of biodiversity obstructs the discovery of new medicines to treat various diseases.

Another emerging modern health concern is biosafety and the effects of advances in and increased use of biotechnology to genetically modify foods. Public concern about the health and ecological risks of foods made with biotechnology has intensified in Europe and has spread rapidly to other parts of the world, including the United States. Proponents contend that biotechnology could help feed the developing world, cut costs, and reduce the need for pesticides. Detractors say the health risks of the emerging technology are unclear and the environmental hazards potentially alarming. Research is proceeding in order to respond to the many health and environmental questions raised and to guide eventual biotechnology regulations.

Measures for poverty alleviation for environmental conservation

Environmental sustainability is the foundation on which strategies for achieving all the other MDGs must be built, because environmental degradation is causally linked to problems of poverty, hunger, gender inequality and health .UN Millennium Project, 2005

Poverty Alleviation and Environmental Conservation

Despite the unprecedented creation of wealth world-wide in the past two decades, the number of people living in absolute poverty is growing steadily. Poverty remains the number one killer, with the poor bearing a disproportionate share of the global burden of ill-health. The poor live in unsafe and overcrowded housing, often in underserved rural areas or peri-urban slums which lack access to safe water or to sewerage. They are also more likely than the wealthy to be excessively exposed to pollution, traffic and industrial and other risks at home, at work or in their communities. They are more likely to consume insufficient food or food of poor quality. Even in rich countries, the poor suffer worse health than do the better-off. Poor children are particularly affected – in the poorest regions of the world, one in five children dies before his or her first birthday, mostly from environment-related diseases such as acute respiratory infections, diarrhoea and malaria. Not only are children more heavily and frequently exposed to threats to their health in the environment, but they are also more vulnerable to the ill-effects on health.

Poverty increasingly is caused by environmental scarcities of arable land and water, resulting in loss of livelihoods. A common denominator for causes of conflict in many recent internal wars is the loss of livelihoods resulting in young men being unable to reach the positions in life earlier generations of men could expect. Policy attempts to break the vicious path to conflict need to address both poverty and environmental issues. Reconstruction of exhausted environmental resources will work towards both these ends (Ohlsson, 2000).

Successful, sustainable poverty reduction requires expanding the asset base of the poor and increasing the efficiency with which these assets can generate income and well-being. However, the environmental assets that make up a disproportionately large share of the wealth of the poor are vulnerable to rapid depreciation, even more so than other kinds of assets, unless cared for and regenerated. With few assets, low quality assets and lack of access to technology to make their assets more productive, poor households and communities may have incomes that are too low to generate re-investable surpluses for maintaining, much less expanding, their asset base. Insecure property and resource rights and other disincentives to wise management and use of resources also contribute to degradation of environmental assets.

Poverty Reduction

In the midst of the poverty reduction goal is a concern that the environment may be a victim.
"It is widely accepted that biodiversity loss and poverty are linked problems and that conservation and poverty reduction should be tackled together. However, success with integrated strategies is elusive. There is sharp debate about the social impacts of conservation programs and the success of community-based approaches to conservation‖" (Adams et al, 2004:1146).
Environmental degradation is a global phenomena having disproportionate impact and hugely damaging poor people's livelihoods and the economy as a whole. The developing countries such those of the Sub-Sahara Africa, Latin America and South-East Asia suffers from severe deforestation, declining fish production and overflowing solid waste. In urban areas, the poor suffers disproportionately more from exposure to indoor and outdoor pollution and water pollution. The poor in both the rural and urban areas continues to suffer from environmental

hazards, such as floods, typhoons, and climate change, which affect poor groups disproportionately.

All the various experiences at poverty reduction point to the fact that "people must be the centre of any strategy, as both the means and the ends of poverty reduction" (Sandstrom, 1994:31); and - that poverty alleviation must be the core of all development objectives and should determine policies and investments. Poverty reduction, in the context of sustainable development, therefore, requires economic growth and investment in people, two processes which are mutually reinforcing (Sandstrom, 1994). For example, good education, health, nutrition and family planning are necessary for the poor to contribute to, and participate in growth. However, for poverty reduction programmes to be effective, they must be environmentally sustainable. The poor always suffer the most from common and persistent problems such as dirty water, inadequate sanitation and soil erosion. Unfortunately, the poor cannot invest in natural resources that would yield positive returns in the future. In this respect, they have little choice but to over exploit available natural resources. Experience with poverty alleviation programmes point to the fundamental role of women in the process since they play the major role of food producers and protectors of the environment. Investment in women, especially with respect to access to education and other institutions, is a major anti-poverty strategy (Sandstrom, 1994).

Poverty alleviation policies must also take into account environmental constraintsin the same way that policies to better manage resources and protect the environment must also appreciate poverty-related constraints such as widespread health problems and lower productivity. Thus, polices must seek to reduce risks faced by the poor as well as land tenure insecurity; address factors that cause maldistribution; and effectively strengthen education, nutrition and public health programmes, as well as opportunities for political participation and control. Policies, therefore, must promote an enabling environment that provides adequate infrastructure, services and incentives to boost production; and promote capacities for healthier, better educated and trained people as well as an institutional framework for development.

Seventy-five percent of the world's poor people live in rural areas and make their living largely through the land on which they live. Their enterprises and households collectively account for much of the land, water and labour engaged in agricultural production. They have a wealth of traditional technical and organizational knowledge. The rural poor contribute greatly to the economic growth of their countries. They play a critical role in managing and conserving the world's natural resources. At the same time, they are often constrained to farm degraded land that is increasingly unable to meet their needs, or to mismanage productive land because of lack of appropriate tools or knowledge. Thus the cycle of poverty/environmental degradation/poverty remains unbroken. rural poor people are ready to seize opportunities to improve their lives and secure a better future for their children. The challenge is to enable them to overcome the obstacles to their doing so.

The challenge is to reverse the persistent poverty situation and turn the environment and natural resources as capital for poverty reduction through equitable benefit sharing from sustainable management of environment and natural resources. Governance factors largely explain the continuing persistence of both poverty and environmental problems. From the perspective of poor people, governance deficits mean that – irrespective of the quality of environmental assets to sustain livelihoods, or of the particular threat posed by environmental hazards – the poor usually lose out on a proportionate share of benefits from natural resource wealth. This is exacerbated by the 'capture' of these resources (and associated claims and markets) by local elites as well as by corporate entities.
For instance, in Nigeria oil exploration and mining have proven to be quite detrimental to local areas and communities, leaving behind only a degraded environment and no positive

development impacts. Lack of transparency and corruption are concerns in managing the major financial flows that oil exploration generate. Several governance issues hinder the distribution of these benefits.

Biodiversity and Poverty

The term "biological diversity", or short "biodiversity", encompasses the diversity of life on earth, ranging from genetic diversity and diversity of species to the diversity of ecosystems. The Convention on Biodiversity adopted in Rio de Janeiro in 1992 comprises three elements: the conservation of biological diversity, its sustainable use and the equitable distribution of benefits arising from its use. In the meantime, 187 countries and the European Union have joined the Convention. By signing the Convention, Germany has agreed not only to conserve biodiversity on its own territory but also to support developing countries in implementing necessary measures. The conservation of biological diversity not only means the protection of natural resources. Above all, it secures the livelihood base of people in developing countries. The poor depend upon biodiversity, particularly in rural regions. A broad diversity of cultivated varieties and species not only makes a key contribution to food security, but also safeguards the productivity and adaptability of crops. It also reduces the risks posed by pest infestation and changes in environmental conditions, such as floods and periods of drought. Intact ecosystems are the very basis of human survival, far beyond their defined boundaries – for instance as the most important "producers" of clean water, fertile soil and oxygen.
Species diversity in the shape of animals and plants living in the wild also contributes to improving the nutritional situation of people, especially when harvests are poor. Moreover, the natural environment provides fuels and construction material as well as medicinal plants – usually the only form of medicine available. A vicious circle often results: Poverty forces local people to overexploit natural resources and thus accelerates the loss of biological diversity. When people's livelihood base narrows, their poverty deepens further

Action Required to:

i. implement the Convention on Biological Diversity (CBD) with its three objectives: conservation, sustainable use of biological diversity, and equitable sharing of benefits and profits arising from the utilization of genetic resources (benefit sharing)
ii. elaborate and implement a statutory framework binding in international law to regulate access to genetic resources and benefit-sharing
iii. implement and further develop the Cartagena Protocol on Biosafety
iv. mainstream CBD objectives within national-level development plans and strategies
v. foster biodiversity conservation through protected areas whose future viability is safeguarded
vi. support indigenous and local communities embodying traditional lifestyles
vii. ensure that local people have a greater share in the value derived from biological diversity and in the sustainable use of biodiversity
viii. identify and utilise synergies with other environmental conventions, for instance in the field of adaptation to climate change

Poverty Alleviation through Forest Resource Management

The need for integrating environment into Poverty reduction process A number of factors explain the need to integrate the environment in the poverty reduction programmes. Majority of the population of any country depends on the environment and natural resources for its livelihood,

with use of the environment and natural resources accounting for 66% of gross domestic product in most countries. Conversely poor environmental conditions are a major cause of ill health. A proper supply of water is needed, for drinking, irrigation and hydroelectric power. Much as elsewhere, the poor in Nigeria are at the greatest risk from environmental disasters, and most part of the country especially the Northern part has suffered from the increasing frequency of droughts and floods. With respect to governance, access, rights and control over the environment and natural resources are key factors in the development of sustainable livelihoods. Lastly the abundance and, more commonly, scarcity of natural resources has previously triggered conflicts in the mining and water sectors. The first step in the integration process is a better understanding of the links between poverty and the environment.

Natural resources are the key assets on which the poor build their livelihoods. In the absence of appropriate institutional mechanism poverty and natural resource become interlinked in a manner with one exacerbating the other. In this regards, appropriate property right regimes are considered vital both for addressing the problem of resource degradation and alleviation of absolute poverty.

Policies and programmes on poverty alleviation and environment in Nigeria

In the past few years in Nigeria studies have been conducted on poverty (FOS, 1996, Ijaiya, 2001, Ajakaiye and Adeyeye 2001, World Bank 1996, 1997, Obadan, 2001) but most of these studies only examined the concept, dimension, perceptions and poverty profile of the country, with little studies or policy linking poverty and environment. The Federal Government of Nigeria has not fully put to use the important of poverty alleviation as a major weapon for combating environmental and natural resources destruction .A number of poverty alleviation programmes that have been put in place to tackle poverty and related issues at local, State and national levels seems to lack consideration of environmental issues. According to Ajakaiye and Adeyeye (2001) between 1980 and 1996 alone, Nigeria had about 16 poverty alleviation institutions. Some of these institutions were sectoral and others were multi-sectoral in nature.

The first known poverty program in Nigeria was the National Accelerated Food Production Programme and the Nigerian Agricultural and Co-operative Bank in 1972.

In 1976, came the Operation Feed the Nation. The program delegated university students to the rural areas to teach the rural farmers how to use modern farming tools. In 1979, Green Revolution Programme was formed. The objectives of the program were to reduce food importation while boosting local food production. This program however ended up with the administration that formed it in 1983. After that, was the introduction of the Go Back to Land Programme. This program was assessed to be as bad as the previous ones.

When government another took over power in 1986, there were the establishments of the Directorate of Food, Roads and rural Infrastructure (DFRRI), National Directorate of Employment (NDE). The Peoples Bank of Nigeria and the Community Bank of Nigeria to give out small loans to the rural poor. At the same time came up other poverty reduction program, such as the Better Life Programme to improve the lives of rural women. But this latter program was seen making richer the well-connected and powerful women entrusted with the administration of the program.

By 1993, there was the formation of the Family Support Programme and the Family Economic Advancement Programme. After spending several billions of Naira to reduce poverty, poverty instead blossomed.

In 1998, there was the upward review of salary, while 1999 to 2005 witnesses series of poverty reduction programmes in Nigeria. Some of these were: the introduction of Poverty Alleviation Programme (PAP), as an interim measure. The programme was however stopped because of criticisms that the ruling party hijacked it and the money rarely got to those who actually needed it. Government then revisited the matter of poverty alleviation and came up with the National Poverty Eradication Programme (NAPEP). With this perggo tricycles were given to beneficiaries to enable then become players in the informal transportation sector. However, the cumulative impact of all

these programmes is still low mostly because they have been undertaken in an isolated and piecemeal manner. The gravity of the problem demands a more integrated and comprehensive approach with the environment because faster poverty reduction requires accelerated growth that generates employment and incomes.

Complementary well-articulated international, regional and national strategies for poverty reduction are also essential. Notable amongst the programmes initiated in Nigeria are the Northeast Arid Zone Development Programme (NEAZDP), the Federal Ministry of Environment / University of Maiduguri(FMENV/UNIMAID) Linkage model village project, the Katsina State Agricultural and Community Development Project(KSACDP), and the Sokoto Environmental Protection Programme (SEPP).The North East Arid Zone Development Programme (NEAZDP), funded by the Federal Government of Nigeria with European Union assistance, commenced in February 1990 with the main objective of motivating and assisting the rural population to improve their standard of living through proper resource use and management.

Poverty Reductions Programmes by the Nigerian Government 1986 to 2005

Programme	Year Established	Target Group	Nature of Intervention
Directorate for Food, Roads and Rural Infrastructures (DFRRI)	1986	Rural Areas	Feeder Roads, rural water supply and rural electrification.
National Directorate of Employment (NDE)	1986	Unemployed youths	Training, finance and guidance.
Better Life Programme (BLP)	1987	Rural women	Self – help and rural Development programmes, skill acquisition and health care.
People's Bank of Nigeria (PBN)	1989	Underprivileged in rural and urban areas	Encouraging savings and credit facilities
Community Banks (CB)	1990	Rural residents, micro enterprises in urban areas	Banking facilities
Family Support Programme (FSP)	1994	Families in rural areas	Health care delivery, child welfare, youth development, etc.
Family Economic Advancement Programme (FEAP)	1997	Rural areas	Credit facilities to support the establishment of cottage industries
Niger- Delta Development Commission(NDDC)	1999 that replaced OMPADEC	Oil producing states	Development of oil producing states and provision of employment for their youths
Upward review of salary	1998, 1999	Salary earners	Increase in salary
Poverty Alleviation Programme (PAP),	1999	Poor people	Job creation.
National Poverty Eradication Programme (NAPEP)	2001	Poor people and unemployed in rural and urban areas	Job creation and credit facilities to the poor
Presidential Initiatives on Rice, Cassava, Vegetable Oil and Tree Crops Development Programmes, among others.	2002	All stakeholders (the producers, Researchers of the concerned products, processors as well as the marketers	To eliminate hunger, Reduce poverty and enhance food security.
Women and Youth Employment Scheme (W-YES)	2005	Women and unemployed youths	To create sustainable employment.
Micro Credit Scheme	2005	Cooperative banks and small and medium enterprises	To give loans

Source: (i) Oladeji and Abiola, (1998), "Poverty Alleviation with Economic Growth Strategy: Prospects and Challenges in Contemporary Nigeria" In Nigerian Journal of Economic and Social Studies (NJESS), Vol. 40, N0. 1.;
(ii) CBN (2003): Annual report and statement of Accounts

Poverty threshold

The **poverty threshold**, or **poverty line**, is the minimum level of income deemed necessary to achieve an adequate standard of living in a given country. In practice, like the definition of poverty, the official or common understanding of the poverty line is significantly higher in developed countries than in developing countries.

The common **international poverty line** has in the past been roughly $1 a day. In 2008, the World Bank came out with a revised figure of $1.25 at 2005 purchasing-power parity (PPP).

Determining the poverty line is usually done by finding the total cost of all the essential resources that an average human adult consumes in one year. This approach is needs-based in that an assessment is made of the minimum expenditure needed to maintain a tolerable life. This was the original basis of the poverty line in the United States, whose calculation was simplified to be based solely on the cost of food and is updated each year.[*citation needed*] The largest of these expenses is typically the rent required to live in an apartment, so historically, economists have paid particular attention to the real estate market and housing prices as a strong poverty line affector.

Individual factors are often used to account for various circumstances, such as whether one is a parent, elderly, a child, married, etc. The poverty threshold may be adjusted each year.

The poverty threshold is useful as an economic tool with which to measure such people and consider socioeconomic reforms such as welfare and unemployment insurance] to reduce poverty.

To answer such seemingly simple questions, analysts must choose (1) a criterion for deciding whether an individual is poor (such as whether his or her income is below the poverty line) and (2) an index which summarizes the amount of poverty in a society. This paper concerns the second issue, building on the contribution of Sen (1976). Some indices of poverty (such as the poverty rate) are easy to understand but often misleading. Some others have desirable ethical properties but are rarely used in policy debates because of their complexity. When proposing an index of poverty, researchers should therefore avoid both the danger that the proposed measure will be theoretically unsound and the hazard that the measure will be so complex as to be not understandable by policy makers, and hence never used. The advantage of the Sen family of poverty indices is that they can be justified at both the theoretical level of ethical soundness and the practical level of easy communicability to the general public.
In 1976, Sen proposed both an axiomatic approach to poverty research and a specific index. Since then, poverty measurement has become an active research agenda and a vast theoretical literature has developed
Rural P-E dynamics do not happen in a vacuum. They unfold in a context of competition for resources and opportunities. The rural poor, with few exceptions around the world, have been pushed to the margins of national decision-making and have been deprived of the means and mechanisms for influencing the policies and institutions that shape their lives.