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From growth to sustainable development in developing countries: a conceptual framework

Abstract

The term sustainability is linked with the nexus of economic development, environmental quality, and social equity. This term was evolved in 1972, when the world community first acknowledged the link between quality of life and environmental quality at the United Nations Conference on the Human Environment in Stockholm. However, in 1987 sustainable development was defined as “development that can meet the needs of the present generation without compromising the ability of future generations to meet their own needs”. This called for the need for integrated decision making which may be capable of balancing the economic and social needs of the people with the regenerative capacity of the natural environment. This paper examines the concept, measures, history and challenges of sustainable development in the context of the world economy and delineates the difference between economic growth and economic development. The study also investigates the core values of development. It also probes in to the major pillars on which sustainable development rests. The paper finds that the factors governing sustainable development includes saving and investment, poverty, population, pollution, participation, policy and market failures, and prevention and management of disasters. The paper concludes that consumption, production and distribution are the three major challenges and determinants of sustainable development.

Keywords: developing countries, economic development, growth, sustainability, sustainable development.

JEL Classification: Q50, Q56.

Introduction

Sustainable development can be thought of as a dynamic process in which changes in natural resource use, the investment direction, the technological development orientation, and institutional arrangements are made consistent with future as well as present needs. According to the Brundtland Commission, sustainable development, in the final analysis, must rest on political will of the governments as various important economic, environmental, and social decisions are made. This section delineates the difference among economic growth, economic development, development and sustainable development. It also explains the core values of development as well as goals and means of development. Section 2 highlights the concept of sustainable development. Section 3 addresses the question: Why sustainability? Sections 4 and 5 analyze the factors governing sustainable development and determinants of sustainable development, respectively. The final section concludes the paper and suggests policy recommendations.

1. Growth and development

1.1. Economic growth. Economic growth implies the steady process by which the productive capacity of the economy is increased over time to bring about rising levels of national output and income. It means more output or expansion of the economy. Economic growth is the increase in value of the goods and services produced by an economy. It is conventionally measured as the percent rate of increase in real gross domestic product, or GDP. Growth is usually

calculated in real terms, i.e., inflation-adjusted terms, in order to net out the effect of inflation on the price of the goods and services produced. In economics, “economic growth” or “economic growth theory” typically refers to growth of potential output, i.e., production at “full employment”, which is caused by growth in aggregate demand or observed output.

As economic growth is measured as the annual percent change of National Income it has all the advantages and drawbacks of that level variable. But people tend to attach a particular value to the annual percentage change, perhaps since it tells them what happens to their wage cheque.

1.2. Economic development. Economic development means much more. It includes economic growth plus change and is defined as the development of the economic wealth of countries or regions for the well-being of their inhabitants. The study of economic development is known as development economics. Economic development is a sustainable increase in living standards that implies increased per capita income, better education and health as well as environmental protection.

1.3. Distinction between economic growth and economic development. *Economic growth* takes place when there is a sustained (ongoing for at least 1-2 years) increase in a country's output (as measured by GDP or GNP) or in the per capita output (GDP or GNP per person). The growth of GDP per capita or GNP per capita is a better indicator of growth than GDP or GNP because if the population grows faster than output, output (GDP or GNP) could grow while output per person (GDP or GNP per capita) falls – in this case it is misleading to say “growth” is occurring.

Economic development occurs when the standard of living of a large majority of the population rises, including both income and other dimensions like health and literacy. The reason for this distinction between economic growth and economic development is because of the way income is distributed. It is possible for a nation's economic output per person to increase (growth), but a large number of people can have their income decrease at the same time if the increase in output is earned by a small percentage of the population. For example, if 80% of the population is in traditional agriculture and 20% are in the modern sector then the average income per person can increase due to large gains by the modern sector minority but the income of the 80% of the population in the traditional sector can simultaneously be falling over time. Thus an increase in GDP per capita is insufficient to say development is occurring.

Development occurs when income increases along with other standards of living (reduced mortality rates, lower illiteracy, increased in education, and increase in life expectancy). For example, in a hypothetical nation, where the majority of people are nomadic and rely on traditional agriculture. If a foreign firm exploits a discovery of oil in this nation and there is no accompanying increase in schooling, literacy, health, etc., then growth may occur but not development. It should be noted that "standard of living" is a somewhat a vague term that requires a more precise definition to be made operational. It is also unclear what percent of people in an economy must have a rising standard of living for "development" to be said to be occurring – there is judgment involved.

1.4. What do we mean by development? Development, in strictly economic terms, has traditionally meant the capacity of a national economy to generate and sustain an annual increase in its gross national product (GDP) at rates of perhaps 5% to 7% or more. A common alternative economic index of development has been the use of rates of growth of per capita GNP to take into account the ability of a nation to expand its output at a rate faster than growth rate of its population. Levels and rates of growth of "real" per capita GNP (monetary growth of GNP per capita minus the rate of inflation) are normally used to measure the overall economic well-being of a population.

Prior to the 1970s, development was seen as an economic phenomenon in which rapid gains in overall and per capita GNP growth would either trickle down to the masses in the form of jobs and other economic opportunities or create the necessary conditions for the wider distribution of economic and

social benefits of growth. Problems of poverty, unemployment, and income distribution were of secondary importance to "getting the growth job done".

The experience of the 1950s and 1960s signaled that something was wrong with this narrow definition of development. Because many Third World nations did realize their economic growth targets but the levels of living of the masses of people remained for the most part unchanged. Many economists and policymakers clamored for the "dethronement of GNP". Thus, during the 1970s, economic development was redefined in terms of the reduction or elimination of poverty, inequality, and unemployment within the context of growing economy. "Redistribution from growth" became a common slogan (Soubbotina, 2004).

Even the World Bank, which during the 1980s championed economic growth as the goal of development, joined the chorus of observers taking a broader perspective when, in 1991 *World Development Report*, it wrote:

*"The challenge of development...is to improve the quality of life. Especially in the world's poor countries, a better quality of life generally calls for higher incomes – but it involves much more. It encompasses as ends in themselves better education, higher standards of health and nutrition, less poverty, a cleaner environment, more equality of opportunity, greater individual freedom, and a richer cultural life"*¹.

Development must, therefore, be conceived of as a multidimensional process involving major changes in social structures, popular attitudes, and national institutions, as well as the acceleration of economic growth, the reduction of inequality, and the eradication of poverty. Development in its essence, represents the whole gamut of change by which the entire level of living of masses of the people is improved (Todaro, 2008).

1.5. Three core values of development. Three equally important aspects of development are:

1. **Sustenance: The Ability to Meet Basic Needs.** The process of development must raise the people's living levels – their incomes and consumption levels of food, medical services, education, etc., through relevant levels of economic growth processes.
2. **Self-esteem: To Be a Person.** It must create conditions conducive to the growth of people's self-esteem through the establishment of social, political, and economic systems and institutions

¹ World Bank (1991). *World Development Report*, New York: Oxford University Press, p. 4.

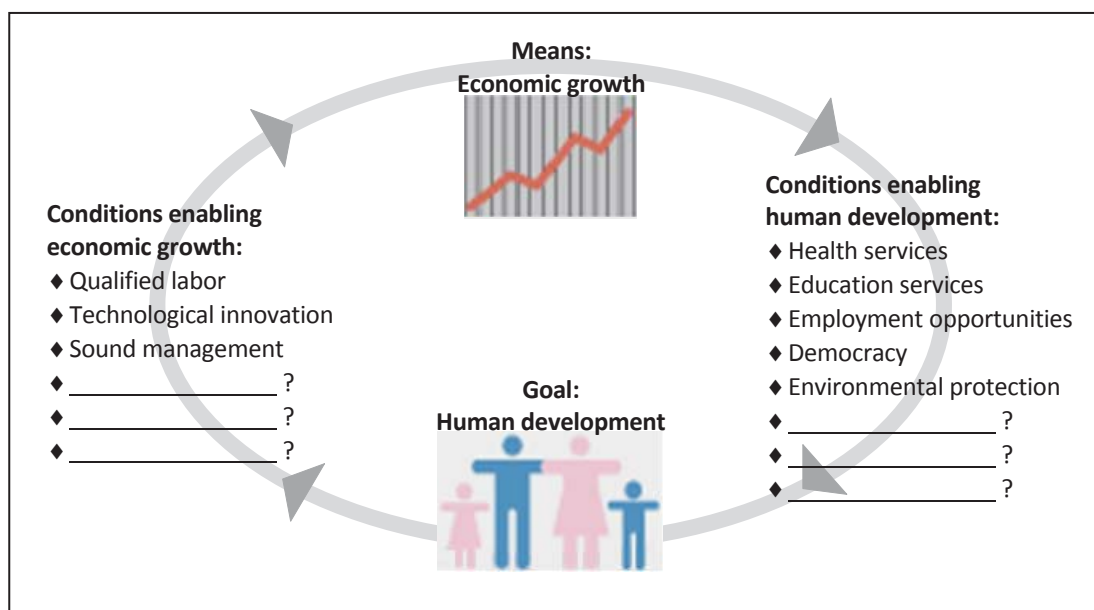
which promote human dignity and respect. It must reduce inequality and exclusion.

3. **Freedom from Servitude: To Be Able to Choose.** It must increase people's freedom by enlarging the range of their choice variables, as by increasing varieties of consumer goods and services.

1.6. Goals and means of development. Different countries have different priorities in their development policies. But to compare their development levels, you would first have to make up your mind about what development really means to you, what it is supposed to achieve. Indicators measuring this achievement could then be used to judge countries' relative progress in development. Is the goal merely to increase national wealth, or is it something more subtle, like improving the well-being of the majority of the population, ensuring people's freedom and increasing their economic security? Recent United Nations documents emphasize "human development," measured by life expectancy, adult literacy, access to all three levels of education, as well as people's average income which is a necessary condition of their freedom of choice. In a broader sense the notion of human development incorporates all aspects of individuals' well-being, from their health status to their economic and politi-

cal freedom. According to the *Human Development Report 1996*, published by the United Nations Development Program, "human development is the end – economic growth is a means". It is true that economic growth, by increasing a nation's total wealth, also enhances its potential for reducing poverty and solving other social problems. But history offers a number of examples where economic growth was not followed by similar progress in human development. Instead growth was achieved at the cost of greater inequity, higher unemployment, weakened democracy, loss of cultural identity, or overconsumption of resources needed by future generations. As the links between economic growth and social and environmental issues are better understood, experts including economists tend to agree that this kind of growth is inevitably unsustainable – that is, it cannot continue along the same line for long.

To be sustainable, economic growth must be constantly nourished by the fruits of human development such as improvements in workers' knowledge and skills along with opportunities for their efficient use: more and better jobs, better conditions for new businesses to grow, and greater democracy at all levels of decision making (Figure 1).



Notes: See the Glossary the difference between economic growth and economic development. One should distinguish between indicators that measure components of human development (such as health and...) and those that measure its conditions (such as health services and education).

Fig. 1. Economic growth and human development

Conversely, slow human development can put an end to fast economic growth. According to *Human Development Report 1996*, "during 1960-1992 not a single country succeeded in moving from lopsided development with slow human development and rapid growth to a virtuous circle in which human development and growth can become mutually rein-

forcing." Since slower human development has invariably been followed by slower economic growth, this growth pattern was labeled a "dead end."

2. Sustainable development

2.1. Meaning of sustainable development. Sustainable development is a term widely used by poli-

ticians all over the world even though the notion is still rather new and lacks a uniform interpretation. Important as it is, the concept of sustainable development is still being developed and the definition of the term is constantly being revised, extended, and refined. Using this book, you can try to improve the definition as you learn more about the relationships among its main components – the economic, social, and environmental factors of sustainable development – and as you decide on their relative significance based on your own system of values.

According to the classical definition, given by the United Nations World Commission on Environment and Development in 1987, development is sustainable if it “meets the needs of the present without compromising the ability of future generations to meet their own needs.” It is usually understood that this “intergenerational” justice would be impossible to achieve in the absence of present-day social justice, if the economic activities of some groups of

people continue to jeopardize the well-being of people belonging to other groups or living in other parts of the world. Imagine, for example, that continuing deforestation of the Amazon basin, known for its outstanding biodiversity, leads to the extinction of an unresearched plant species that could help cure acquired immune deficiency syndrome (AIDS), a lethal disease threatening people all over the world. Or consider emissions of greenhouse gases, generated mainly by industrial countries, which can lead to global warming and flooding of certain low-lying islands – resulting in the displacement and impoverishment of entire nations. Social justice defined as equality of opportunities for well-being, both within and among generations of people, can be seen as having at least three aspects: economic, social, and environmental. Only development that manages to balance these three groups of objectives can be sustained for long (Figure 2). Conversely, ignoring one of the aspects can threaten economic growth as well as the entire development process.

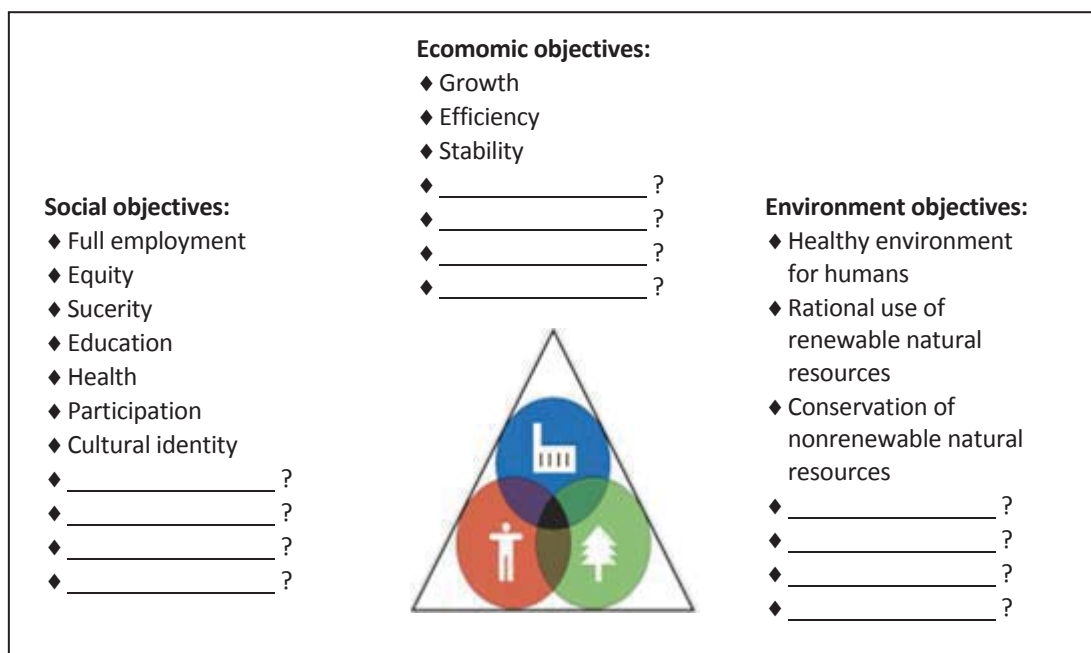


Fig. 2. Objectives of sustainable development

2.2 History of sustainable development. In 1983, G.H. Brundtland was appointed the head of the WCED. The commission presented a report “*Our Common Future*” to the General Assembly of the United Nations in 1987. This report is also known as the *Brundtland Report*. The report introduced a paradigm shift in the global discourse on development and environment. It identified eight pressing issues related to development and environment: (1) population and human resources; (2) industry; (3) food security; (4) species and ecosystems; (5) the urban challenge; (6) managing the commons; (7) energy; and (8) conflict and environmental degradation.

In 1992, a follow-up conference was organized in Rio de Janeiro, Brazil. It was labeled as the “Earth Summit”. It was principally organized as a call to action in response to the ideas presented in the *Brundtland Report*. Participants grappled with the question, “how do we implement the ideas expressed in the *Brundtland Report* and actually achieve sustainable development?” Five major agreements were put into place at this time: Convention on Climate Change, Convention on Biological Diversity, Rio Declaration, Forest Principles, and Agenda 21. Additionally, the *Commission on Sustainable Development* (CSD) was created.

Agenda 21 is, arguably, the most important legacy of the Earth Summit and is still often cited as the guide to sustainable development. The document is a road-map telling policymakers how they can achieve sustainable development in the next century. It continues to promote the belief that economic growth will lead to decreased poverty, which will in turn save the environment, and that “sound economic policies,” such as the promotion of free trade, are of the utmost importance to sustainable development.

In 2002, the World Summit on Sustainable Development was held in Johannesburg, South Africa. This summit was organized largely in response to the unfulfilled hopes and expectations set forth at the 1992 Earth Summit. Levels of poverty and inequality had continued to grow, and environmental problems were not improving in spite of a perceived economic boom in the United States and elsewhere. Over 22,000 people participated in the summit, not including thousands of people who attended parallel events organized by NGOs elsewhere around the city. Participants in the summit sought to identify specific actions to be taken by different sectors of society – the government, NGOs, and private institutions – and there was a push toward the establishment of partnerships to achieve sustainable development goals.

3. Why sustainability?

Sustainability is the term that bridges the gulf between the development and environment. It originated from fisheries, forests and groundwater which dealt with quantities such as “maximum sustainable yield”, “maximum sustainable cut” and “maximum sustainable pumping rate”. How many fish can we take and still have a forestry functioning at the end of the time period? How many trees we can cut and still have forest growth? How much ground water can we draw and still have a viable aquifer at the end of the pumping period? Even when these maximums are observed the ecosystem itself may not be sustainable, as these are just the components of the overall ecosystem. Furthermore, sustainability can often be achieved in the short run, but not in the long run.

How is sustainable development to be achieved? This question harkens back to sustainable fishery concept. According to Munasinghe, there are three approaches to sustainable development:

- ◆ Economic – maximizing income while maintaining a constant or increasing stock of capital;
- ◆ Ecological – maintaining resilience and robustness of biological and physical systems; and
- ◆ Socio-cultural – maintaining stability of social and cultural systems.

4. Factors governing sustainable development

Economists have used the concept of sustainable social net product (SSNP) as a measure of a sustainable national income which is based on Sir John Hick’s definition of income (i.e., maximum value that a person can consume in a period of time and still expect to be as well off at the end of the period as he was at the beginning) as net national product (NNP) minus defensive expenditures minus the depreciation of natural capital (Daly, 1996):

$$SSNP = NNP - DE - DNC. \quad (1)$$

This is a good line of thinking, but a great deal of current behavior does not conform to this line of thinking. When the NNP is measured without taking into account defensive expenditures (DE) and depreciation of natural capital (DNC), we tend to overestimate our growth and development.

Saving is the most important factor of sustainability and one can claim that a simple rule for sustainability would be that savings, as a percentage of GDP, should be greater or equal to the sum of the depreciation of human knowledge plus the depreciation of human-made capital plus the depreciation of natural capital. This can be written as follows (Rogers et al., 1997):

$$\frac{S}{Y} \geq \frac{\delta_h K_h}{Y} + \frac{\delta_m K_m}{Y} + \frac{\delta_n K_n}{Y}, \quad (2)$$

where the subscripts h , m , and n indicate human capital, man-made capital and natural capital, respectively. Weak sustainability requires that the sum of all forms of capital be constant or increasing over time. In other words, it implies that substitution among physical capital, human capital and natural capital is possible. Strong sustainability requires that each form of the capital be increasing over time.

Other factors which govern sustainable development are poverty, population, pollution, participation, policy and market failures, and prevention and management of disasters. These can be thought of as the major pillars of sustainable development. Khan (2008), Khan et al. (2009) and Zaman et al. (2011) have discussed interlinkages among population, poverty, growth and environment in greater detail.

According to estimates made by the United Nations Development programme (UNDP), the wealthiest 20% of the global population earns 82.7% of the total global income. This bracket also accounts for 81.2% of world trade, 94.6% of commercial lending, 80.6% of domestic savings, and 80.5% of domestic investment. By contrast, the share of total global income of the poorest 20% is a mere 1.4%. Their contribution to world trade (1.0%) and commercial lending (0.2%) is statistically negligible.

Clearly, most of the investments, income, trade, and lending are attributed to the first 20% of the global population.

Population planning is another significant factor in sustainable development. Between 1820 and 1920, the world population doubled from one billion to two billion. However, in the subsequent 100 years, 1920 to 2020, it will climb up to eight billion, a fourfold increase. Throughout the history of humankind the rate of population growth has never been higher than it is now; nor is the rate likely to get any higher. It is significant that, while the overall world population is rapidly increasing, it is actually decreasing in many of the developed countries. In 1950, 40% of the world's population lived in developed countries and 60% in developing countries. By 2025, 80% will be living in developing countries and only 20% in developed countries. By 2050, India will surpass the PRC to become the most populous country in the world and will continue to remain so for a long time, if not forever. In terms of population planning, therefore, managing population increases in the developing countries between now and 2020 is the biggest challenge.

While population growth may cause some environmental degradation, it is not as significant as that caused by other types of activities. Also, the poor may cause limited environmental degradation, but they do so out of necessity of survival and have little choice. It has also been demonstrated that, if the poor experience a slight improvement in their income, they will probably do something else to earn their livelihood rather than take as much as they can from the land and the sea. There are many reasons why population growth is not such a significant factor in environmental degradation. A good example is the PRC, where the burgeoning population is matched by rapid industrialization and growing affluence; and as we have seen, increasing economic activities strain the environment far more than increasing population does. It should also be borne in mind that environmentally unsound technology can be, and probably is, a far more important governing factor in determining sustainability of development than population growth.

Another major factor that affects the sustainability of development is participation. Participation is a process through which stakeholders can influence and share control over development initiatives and the resources used to fund them through engagement in decision making. Stakeholders include the citizens who benefit from the development, including the poor, disadvantaged groups of people such as women, children, indigenous minorities, and other ethnic groups, and the complex communities in

which they live. They are also the government, private sector, and civil society (including academies and research institutes, labor unions, religious organizations, political parties, the media, foundations, and especially social service or advocacy oriented nongovernment organizations or NGOs) at local, district, provincial, and national levels. International donor governments, NGOs, and financing institutions like the World Bank and ADB are also stakeholders. Participation may take a range of forms or levels, from shallow to deep. Participatory planners must decide which forms to employ with which stakeholders at different times depending upon skills required to make particular decisions.

Policy and market failures constitute another key factor in determining sustainable development. Policy failure can be the result of a sin of omission – not intervening when it is necessary and beneficial – or of commission – stepping in when intervention is unnecessary or even detrimental. An example of policy failure is the coexistence of overuse, waste, and inefficiency with growing resource scarcity. Take the case of the large-scale irrigation projects in Pakistan, where water from the Indus River is being used to irrigate grain farms. A side effect is causing parts of the river basin to become increasingly waterlogged and saline, taking almost million hectares of land out of production. The problem stems from a multitude of sources, most notably operational inefficiencies, including overirrigation and lack of land leveling. As a consequence, many farms become flooded, while others do not receive sufficient water. In both cases, crops are damaged. Market failure occurs when freely functioning markets produce prices that do not reflect the social and economic value of an action. In the developing countries it is assumed that air, water, and unclaimed land are free resources. As such, they have become dumping grounds for wastes and emissions. It is also assumed that raw materials generally demand the lowest market prices; intermediate goods are priced a little higher, and finished products command the highest prices. These price differentials are primarily technology driven. There are numerous examples. Jute, Bangladesh's chief export is considered a raw material and is accordingly sold to the UK at the bottom of the pricing scale. The jute is then processed in the UK into finished products and resold to Bangladesh at a higher price. A further example is coffee. It is incumbent, therefore, on developing countries to pursue policies that add more value to their raw materials locally in accordance with their comparative advantage. Policy and market failures often go together. They occur most often when a primary resource that could otherwise be managed

as a renewable resource is not. The rate of deforestation is a classic example. The rate of logging is almost always higher than the rate of deforestation. Because of poor policy facilitation, local communities are deprived of their customary rights of access, even though they may be the most effective resource managers. Those who dwell near the forest and depend on it for survival also, by necessity, possess very specialized knowledge as to how to protect it. Unfortunately, governments sometimes leave forest management to the loggers and not to the people who have a major stake in it and whose survival depends upon the regeneration of the trees.

5. Determinants of sustainable development

The three determinants of sustainable development are consumption, production, and distribution. In examining these determinants, one should turn the question around and ask what makes development unsustainable. Obviously, in the case of consumption, the issue is the use of resources beyond the reasonable limits set by nature through regeneration. For example, the forest has a regenerating capacity through both natural and artificial methods. So its limit is the sum of the two. Any logging beyond that limit is unsustainable. Unsustainable production is characterized by gross inefficiencies and mismanagement in the use of water, energy, and minerals. Examples include large-scale irrigation projects along the Indus River in Pakistan. These were designed to increase production, but because of failed operating procedures and policies, vast tracts of land passed out of production due to flooding and salinity. Finally, inequitable distribution is unsustainable. A prime example is the distribution of global income, where the gap between the richest 20% and the poorest 20% is enormous and is growing wider with the passage of time.

5.1. Consumption. When talking about consumption, it is important to examine not only the amount of resources consumed but also the patterns in which they are consumed. There are five reasons to examine these patterns:

1. Economic efficiency alone cannot meet the natural resource appetite following current consumption patterns. Many people strive for eco-efficiency, believing that if we can achieve it, we will have reached a sustainable plateau. This is not true. No matter how efficient we become ecologically, the natural resources appetite of the present generation can never be met by eco-efficiency alone. Consumption must be reduced. This can be achieved only by developing strong normative policies on regulating the environment and enhancing policy mechanisms to reflect the

degree of environmental damage that current consumption patterns impose on the world.

2. Consumption is the key to understanding policy challenges, as they focus on the demand side. If we study the consumption patterns of water and energy, we will soon realize that many subsidies meant to help the poor usually end up not helping them, since subsidies reduce costs, inducing an increase in demand by both the poor and the wealthy. Finally, we will realize that, because demand has increased in response to low prices, precious resources like water and energy are being wasted. This creates a vicious cycle of inefficiency and pollution.
3. Examining consumption patterns reveals what is being consumed and whether it is meeting the basic needs of the people. Considering what is being consumed, whether basic goods or luxury items, is very important, as it will tell us whether the consumption pattern meets the basic needs of people and whether development will be sustainable.
4. The pattern will illustrate vividly that the poor not only consume less, but also pollute less, and they are directly affected if the environment is degraded. Polluted water affects the health of the poor directly. Exposed to dirty air 24 hours a day, seven days a week, the health of the poor in urban slums and squatter settlements, where as much as 40% of the total population of a developing country may live, is endangered. Likewise, water and land polluted by agrochemicals and solid wastes can adversely affect the health of farmers.
5. Consumption patterns tell a great deal about problematic relationships among economic growth, the satisfaction of basic needs, and human aspirations. In one country, GDP growth may be low, and a large number of people may live below the poverty line. In another country, GDP growth may be the same, but few people are below the poverty line. In the first instance, the production and consumption patterns may be more geared toward luxury goods, and toward increasing economic benefits at the cost of environmental and social benefits. In the second case, GDP growth is likely to be utilized toward satisfying the basic needs of the people. Therefore, with the same GDP, consumption patterns and the incidence of poverty may vary widely, with countries in the former category presenting greater challenges to sustainable development.

5.2. Production. The second determinant of sustainable development is production. It is possible that the twenty-first century needs a new production revolution through a process that will take into account not only the economic benefit of production but also its ecological and social benefits. This is

also referred to as the triple “p” or the triple bottom-line to sustainability: profits, people, and planet (Brian Nattrass and Mary Altomare, 1999). We have to develop a production pattern that will satisfy the needs of most of the consumers who are in the middle-income to low income to poor category. What is wrong with production patterns? There are five basic problems with our current production patterns:

1. Use of materials and processes that cause environmental degradation and health hazards. Materials and processes employed in the industrial production of many developing countries result in large quantities of toxic emissions – gaseous, liquid, and solid. These pollutants endanger the health of not only the industrial workers and their immediate family members, but also many people living downstream. The concept of cleaner production (as against the concept of cleaner technology) has brought about some positive changes; but it still has a long way to go.
2. Inefficiency of production, which causes system losses and environmental degradation. Again, as an example, one can look at the irrigation systems in Pakistan. One can also look at the aluminum cola can, which is more complicated and costlier to produce than the cola itself. This is a striking case study of the complexity of industrial production, revealed in describing the origins and pathways of an English cola can.
3. Failure to reflect negative externalities in product costs is the third important problem that has already been discussed under the challenges of market failure. When a product is manufactured, particularly in developing countries, air, water, and land are considered free goods. This is especially true when there are no regulations or no one follows the regulations. Accordingly, a tree standing deep inside a forest does not have a dollar value. Only when the tree is felled and brought to the mill it assigned a monetary value. This is a grossly erroneous concept when pricing a product. The failure to reflect negative externalities in the product cost must be corrected if the production revolution is to succeed. To remedy the situation, a natural resources accounting procedure has to be introduced.
4. Energy, water, and fertilizer subsidies, which benefit mostly the nonpoor. In a study on subsidies in the energy and water sectors, the World Bank found that just withdrawing the subsidies would release \$125 billion a year worldwide. What is more, these subsidies, established in the name of helping the poor, actually go to the nonpoor. There are just too many examples, supported by data, showing that in developing countries poor people pay 5-10 times more for water

than many of those who are wealthy and who have access to urban piped water. Due to failure of the local government to supply water to all its citizens, the poor buy their water from vendors at a much higher price.

5. Transaction costs, which are significantly higher for the poor because large farmers or affluent urban dwellers have the advantage of scale, they can access water and other resources much more easily than poor farmers and poor citizens. A new production revolution is imperative to ensure sustainable development in the world to overcome the five problems mentioned above. Whereas resolution of the first three problems pertains more to a new industrial revolution, the remaining two problems are more relevant to a new agricultural revolution. This is also termed in this book as the “Green 2 Revolution” for reasons explained later.

According to Paul Hawken et al. (1999), such a New Industrial Revolution has been triggered in the industrialized countries. Hawken describes “natural capitalism” as the future of industrialization in which business and environmental interests overlap and business can make increasing profit and at the same time help environmental problems. Industrialization through the natural capitalist approach suggests four major inter-linked changes in business practices:

- ◆ Dramatically increase the productivity of natural resources by reducing the wasteful and destructive flow of resources. Such an increase will be affected through concurrent changes in process design, technology, and good housekeeping. Shift to biologically inspired production models so that waste will be eliminated, rather than minimized.
- ◆ Move to a solution-based business model that, for example, will provide illumination instead of selling light bulbs.
- ◆ Reinvest in natural capital so that the ecosystems can yield services and resources more abundantly.

5.3. Distribution. The third determinant of sustainable development is the distribution of resources. It is a complex issue. We have already examined poverty and its linkage with sustainable development. We have also seen how the income gap between the rich and the poor is widening over time. What can be done about it? Definitions of poverty fall into two categories: (1) the “objective,” based on per capita annual income, expenditure, and assets; and (2) the “subjective,” meaning people’s perception of poverty. An objective definition is people who earn less than \$1 per day. But how do the poor define poverty in a subjective way? And how do they see their role in sustainable development?

To answer this question, the World Bank surveyed 60,000 people worldwide who subsisted at the poverty

level. The results of the survey were published in the World Development Report 2000. According to the report, people who are not well off materially consider themselves poor. People who are not well off physically also consider themselves poor, regardless of their income level. Security and the ability to cope with emergencies also lead to the perception of poverty. In addition, the poor feel that they are denied choices, that they are rarely given the opportunity to be part of decision-making processes, and that they lack the freedom to take action. That food was far down on their list of responses was another revelation. The general feeling was, "Okay, I'm eating less and earning less, but if I feel well and secure I can endure". Basically, what the survey revealed was that people interviewed would not feel poor if they did not have to worry about feeling threatened, if they had the wherewithal to cope with emergencies, if they could participate in those choices that control their lives, and if they had affordable access to basic health care.

How can we help the poor help themselves? Providing community health care, ensuring security, and propagating emergency disaster planning are some obvious solutions. Another is offering the poor the financial resources to broaden their choices in the form of microcredit. The poor have been routinely excluded from the commercial banking system. Many have never stepped inside a bank. Ordinary commercial loans for the poor are completely out of the question. Yet a poor person, like any entrepreneur, often needs funds to start a new business, to expand an existing business, or just to stay in business.

Conclusions and recommendations

The paper concludes that sustainable development is a better concept than mere economic growth and

development, because sustainable development has three parts including economic prosperity, social equity and justice and environmental sustainability. Sustainable development, therefore, must be kept in mind while designing projects. These projects may meet the needs of the current generation without jeopardizing the abilities of the future generations. Saving and investment can play a key role in sustainable development. So, local, national and international sources may be mobilized into productive investments that could ensure useful productions. Poverty is widespread phenomenon in developing countries. Serious efforts could be made to eliminate and reduce poverty. Keeping in mind the successful experience of Grameen Bank in Bangladesh, provision of micro-finance can play a pivotal role in reducing poverty. High population and high population growth rates are major challenges for developing countries. Serious efforts need to be taken to reduce population growth rates. Population planning can be of greater importance in this regard. Environmental degradation and pollution of air and water are also crying problems of the day. Therefore, environmental health and conservation planning must be part of development planning. In developing countries, poor are excluded from the benefits of development. Therefore, community participation needs to be ensured so that the say of the poor could be heard. There are various policy and market failures in developing countries. Transparency and good governance can play a better role in this regard. Recently, there have been various types of natural and man-made disasters in various parts of the world. The developing countries may have sound disaster preparedness, prevention and management planning and programs.

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