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*MASTER'S DEGREE THESIS*

# ESTABLISHING AN INTERNATIONAL INSTITUTE FOR SUSTAINABLE DEVELOPMENT IN PAKISTAN

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**Author's Statement**

I Obaeda Jabeen hereby certify to be the author of this Master's thesis that was written under mentorship of Dr. Aleksander Zidanšek and in compliance with the Act of Author's and Related Rights – Para.1, Article 21. I herewith agree this thesis to be published on the website pages of ICPE and the Faculty of Economics of Ljubljana.

Ljubljana, Date..... Signature:.....

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# ABBREVIATIONS

| | |
|---|---|
| AJK | Azad Jammu and Kashmir |
| BAP | Biodiversity Action Plan |
| CCD | Convention to Combat Desertification |
| CBD | Convention on Biological Diversity |
| DAC | Development Assistance Committee |
| DESA | Department of Economic and Social Affairs |
| EM | Ecosystem Management |
| EPA | Environmental Protection Agencies |
| ERNP | Environmental Rehabilitation of Northern Pakistan |
| FPMU | Functional Project Management Unit |
| GEO | Global Environment Outlook |
| ICT | Information and Communication Technology |
| IDG | International Development Goals |
| IISDP | International Institute for Sustainable Development in Pakistan |
| IPCC | Intergovernmental Panel on Climate Change |
| IUCN | International Union for Conservation of Nature |
| MACP | Mountain Areas Conservancy Project |
| MTR | Mid Term Review |
| NCS | National Conservation Strategy |
| NGO | Non-Governmental Organization |
| NEAP | National Environmental Action Plan |
| NRMP | Natural Resource Management Project |
| NSDS | National Sustainable Development Strategies |
| NWFP | North West Frontier Province |
| OECD | Organization for Economic Co-operation and Development |
| PEPA | Pakistan Environment Protection Act |
| PEP | Pakistan Environment Programme |
| PERN | Pakistan Educational Research Network |
| PMU | Project Management Unit |
| R&D | Research and Development |
| RTD | Research and Technological Development |
| SDPI | Sustainable Development Policy Institute |
| SEE | Society, Environment and Economy |
| SMU | Social Mobilization Unit |
| SPCS | Sarhad Provincial Conservation Strategy |
| UN | United Nations |
| UNCED | United Nations Conference on Environment and Development |
| UNDESA | United Nation Department of Economic and Social Affairs |
| UNDP | United Nations Development Programme |
| UNEP | United Nations Environment Programme |
| UNESCO | United Nations Educational, Scientific and Cultural Organization |
| UNGA | United Nations General Assembly |
| WDR | World Development Report |
| WID | Women in Development |
| WSSD | World Summit for Sustainable Development |

# CHAPTER 1
# INTRODUCTION

## 1.1 DESCRIPTION OF THE PROBLEM

Pakistan is a developing country, which does not have much financial resources, but has many talented people. Economic development of the country imposes significant environmental challenges, which are magnified by the lack of research and awareness about sustainable development. These environmental challenges created a need to establish in Pakistan an institute for research and education about sustainable development. The rapid economic growth in the 20th century has often been made by neglecting the environmental, social, and cultural problems. However, these problems started to represent barriers to further development. In the last years, it became common to talk about global problems like pollution of atmosphere and oceans, air and fresh water pollution, increase in the world population, growing inequality between the world rich and poor and the need for economic sustainable development on a global scale (Rogic, 2003; Atkinson, 1997; Kennedy 1993; Pezzey, 1992; King, 1991; Ruckelshaus, 1989; Improving Environment and Economy, 1999).

Economic progress can be achieved only within a healthy ecosystem, sustainable development being a precondition for the survival of human civilization (Daly, 1997). If there is no transition to sustainable development soon, the environment will be destroyed by pollution and climate change caused by economic growth. In contemporary world, environmental and social threats to global development are greater than ever in human history, and human knowledge is greater than ever in our history. This poses a grave threat and a huge opportunity to match the carriers of knowledge with the decision makers in a creative manner that will steer our civilization safely towards sustainable development. In this work, analysis of a need for a new International Institute for Sustainable Development in Pakistan (IISDP) and a strategy for its establishment will be presented.

Sustainable development (Brundtland, 1987) is usually defined as such that the development that meets the needs of the present generations without compromising the ability of future generations to meet their needs. Necessary human needs are for livelihood, food, energy, housing, water supply, sanitation, and health care. How these needs can be satisfied, is

limited by the present state of technology and social organization as well as on the environmental ability to meet the present and future needs. Development is essential to satisfy human needs and improve the quality of human life. At the same time, development must be based on the efficient and environmentally responsible use of all of society's scarce resources – natural, human, and economic. The knowledge and the development of technology can enhance the carrying capacity of the resource base and thus significantly help in achieving sustainable development.

## 1.2 PURPOSE OF THE THESIS

The purpose of this thesis is to prepare a strategy for an International Institute for Sustainable Development in Pakistan as an organization to disseminate knowledge and experience needed for sustainable development. It is generally accepted that knowledge is the best way to sustainable development. Organizational values can make a difference between success and failure in the efforts to disseminate knowledge for sustainable development. Sustainable development has multiple objectives. In planning for development, there must be deliberate consideration of how to maintain the quality of the environment, human well-being and economic security. Pakistan as a developing country and needs to give more attention to sustainable development strategies concerning clean water and air, water supply, energy, land use, housing, waste treatment, transportation and health care.

## 1.3 GOALS OF THE THESIS

The goal of this thesis is to systematically evaluate a model for sustainable development knowledge and experience dissemination, design a set of values, and build vision and mission statement for an International Institute for Sustainable Development in Pakistan (IISDP) upon these core values.

Another goal of the thesis is to verify that the model of self-organized criticality can be used to help build an effective and efficient institute for dissemination of knowledge on sustainable development in a developing country like Pakistan.

## 1.4 METHOD

While preparing this thesis I rely on several books and research articles by recognized authors in sustainable development and related issues. Further, I refer to various sources such as government publications, publications by several agencies and journals. Dimensions

of sustainability including integrated responsibilities and actions are studied in order to evaluate current situation in global efforts for sustainable development. The words "sustainable development" has been widely used in the past decade and a vast literature has been dedicated to this topic. Even though, there is still a lot to be said and most important to be done in this respect, especially when talking about developing countries. The situation in Pakistan is reviewed based primarily on Government publications and strategies, in particular the Pakistan’s national conservation strategy and principles for the national sustainable development strategy.

A knowledge dissemination model for the developing country is developed based on the self-organized-criticality theory as a theoretical foundation for knowledge dissemination in IISDP and formulation of the IISDP strategy. Vision, mission and values of IISDP are developed according to the management by values model (Blanchard, 1997). Analysis of strengths, weaknesses, opportunities and threats (SWOT) is the starting point for formulation of the role of institute in knowledge dissemination, its organiztional structure and implementation plan. Financial requirements and sources for establishment of IISDP are also discussed.

# CHAPTER 2
# SUSTAINABLE DEVELOPMENT

## 2.1 INTRODUCTION

Sustainable development is the ultimate goal of the human civilization agreed on at the United Nations Conference on Environment and Development in Rio de Janeiro in 1992 (Sitarz, 1994). In this chapter, we are going to overview the main threats that endanger the life on the planet Earth and the need of immediate, powerful actions. Thus we will get to the concept of sustainable development, which many consider as the only solution to the problems that our and upcoming generations' future. We will also examine the history of this concept.

Since the end of World War II, the world's economic output has increased substantially, allowing widespread improvements in the health, education (Coopey, 2003), and opportunity, but also creating growing disparities between rich and poor. Even within wealthy nations, the gap between rich and poor is widening.

Finding ways to bring people together to meet their needs without jeopardizing the future is a task that requires thinking about human needs, economic prosperity, human interactions with nature, the future and the consequences of the choices this generation makes on the lives of future generations.

No one can predict the future – how people will live or what exactly they will need- but it is possible to foresee the likely effects of some of today's decisions and to make choices that honor the interests of present and future generations. Despite wealth, power, and technological progress, people cannot assume that the future of their children's lives will be better than the present.

Communication technology has enhanced people's ability to receive information and influence events that affect them. This has sparked explosive growth in the number of organizations, associations, and networks formed by citizens, businesses, and communities seeking a greater voice for their interests. As a result, society outside of government-civil

society-is demanding a greater role in governmental decisions, while at the same time impatiently seeking solutions outside government's power to decide.

However, technological innovation is changing much more than communication. It is changing the ways in which people live, work, produce, and consume. Knowledge has become the economy's most important and dynamic resource. It has rapidly improved efficiency as those who create and sell goods and services substitute information and innovation for raw materials.

Prosperity, fairness, and a healthy environment are interrelated elements of the human dream of a better future. Sustainable development is a way to pursue that dream through choice and policy (Rogic, 2003). Work, wealth, community, and the environment are interwoven into the fabric of everyday life and the life of the nation. Sustainable development is the framework that integrates economic, environmental, and social goals (WDR, 1992) in discourse and policies that enhance the prospects of human aspirations.

## 2.2 DEFINITION

The term sustainable development first came to prominence at the United Nations Conference on the Human Environment in Stockholm in 1972. It achieved a new status with the publication of "Our Common Future" the Brundtland Report, in 1987 and has gained even greater attention since the United Nations Conference on Environment and Development (UNCED) held in Rio de Janeiro in June 1992 (Sitarz, 1994). Now the concept engages governments and non-governmental organizations (NGO's), civil servants and environmental activities, local government officials and community groups, development agencies, businesses, planners and commercial developers, industrialists and environmental agencies, established bureaucracies and adhoc networks, as well as a wide range of fields from atmospheric science through political economy to gender studies.

Through time various definitions were given to the concept of sustainability (Elliot, 1999; Reid, 1995) - the idea of sustainable development - or sustainable development - the process and its goals - and thus two interpretations of the concept have emerged: a wider concept and a more narrowly defined one. Examples of such definitions are given bellow:

1. **A wider concept concerned with sustainable economic, ecological and social development**

Sustainable development is development that meets the needs of the present generations without compromising the ability of the future generations to meet their own needs (Brundtland Report, 1987, p. 43).

Every generation should leave water, air and soil resources as pure and unpolluted as when it came on Earth. Each generation should leave undiminished all the species of animals it found on Earth (UNESCO Document www.unesco.org).

Preserving opportunities for future generations as a common sense minimal notion of intergenerational justice (Page, T. 1977, p.202).

2. **A more narrowly defined one largely concerned with environmentally sustainable development, with optimal resource and environmental management**

Sustainable activity is that level of economic activity, which leaves the environmental quality level intact, with the policy objective corresponding to this notion being the maximization of net benefits of economic development, subject to maintaining the services and quality of natural resources over time (Barbier and Markandya, 1990, p. 659).

Sustainability is defined as non-declining utility of a representative member of society for millennia into the future (Pezzey, 1992, p. 323).

A safe minimum standard of conservation as a matter of resources and economic policy. To be achieved by avoiding the critical zone – that is the physical conditions, brought about by human action, which will make it uneconomical to halt and reverse depletion

The alternative approach to sustainable development is to focus on natural capital assets and suggest that they should not decline through time (Pearce et al, 1989, p. 37).

Sustainable development is a fluid concept that will continue to evolve over time but common characteristics underlie the many streams of thought. Sustainable development emphasizes the need for:

1. Systems thinking - understanding the interconnections between the Environment, economy and society;
2. Long-term view - applying the precautionary principle; and
3. Concern for equity and fairness - ensuring the rights of the poor and of future generations.

1. Sustainable development recognizes that there are not just the traditional measures of economic welfare that matter. Quality of life and well-being are determined by many factors-income, the state of people's health, their level of education, cultural diversity, vibrant communities, environmental quality and the beauty of nature - that are all part of the sustainable development equation. Economic growth plays an important role in our quality of life because it provides the wealth to improve our well-being to maintain and enhance our education and health, and to protect the environment.

We are deeply convinced that economic development, social development, and environmental protection are interdependent and mutually reinforcing components of sustainable development, which is the framework for our efforts to achieve a higher quality of life for all people. Equitable social development recognizes that empowering the poor to utilize environmental resources sustainable is a necessary foundation for sustainable development. We also recognize that broad-based and sustained economic growth in the context of sustainable development is necessary to sustain social development and social justice (Declaration and Programme of Action World Summit for Social Development, March 1995).

2. An integrated approach to planning and decision-making is therefore needed to take into account these many factors. In the past, environmental policy was generally reactive, responding to problems after they had developed. Environmental protection was also viewed by some as a barrier to economic development. Increasingly, people have come to understand that their health and economic prospects are being influenced by the state of the environment. Similarly, a healthy economy provides jobs and incomes, and the wealth needed to develop the science and technology and make the investments that are necessary to ensure a healthy environment. An integrated approach to planning and decision-making will ensure progress on each and all of the dimensions-social, economic and environmental – of sustainable development.

Social sustainability is seen as the setting of a development process sustained by economic growth and reformed by social vision of any society. The aim is to build a civilization with greater equity in assets and income distribution, to reduce the gap in standards of living between the rich and those less fortunate.

Economical sustainability (Ecological Economics, 1991) involves a more efficient allocation and management of resources and a steady flow of public and private investments. A crucial condition is to overcome the negative external configurations that have resulted from the burden of the debts, net outflow of financial resources, the adverse terms of trade, the protectionist barriers and limited access to science and technology.

Ecological sustainability aims at expanding the carrying of ecosystems through resourcefulness, i.e. by optimizing the use of the resource potential of diverse ecosystems with minimum damage to the life supporting systems. This is the most important dimension of sustainable development, which is under threat and requires in-depth analysis and understanding to support development on sustainable basis.

3. This integrated approach must embody a commitment to equity. Sustainable development carries with it the need to not only create wealth and conserve the environment, but also to ensure their fair distribution. A fairer distribution of the costs and benefits of development must be achieved among nations, between generations and between the poor and the affluent. We live in an interdependent world so we should not ignore the effects that our decisions and actions have on others. Future generations have no ability to speak on their own behalf or to protect their interests in decision-making process. If development is to be sustainable, it must consider their interests.

Since a dangerous disparity in access to resources has been established through our economic and public policy systems, those systems must change. Fairness implies that each nation should have the opportunity to develop itself according to its own cultural and social values without denying other nations the same right to development (Friends of the Earth, 1996).

## 2.3 THE NEED FOR SUSTAINABLE DEVELOPMENT

There exists strong evidence that the carrying capacity of our planet is showing signs of distress (Atkinson, 1997; Kennedy 1993; Pezzey, 1992; King, 1991). The most important threats to the live on Earth are: global warming; enlargement of the ozone hole; acid rain; increasing loss of forests and biodiversity; diminishing availability of cultivable land; threatened water resources; air pollution; perceptive reduction of global food reserves; progressive depletion of non-renewable sources of energy; large scale population problems; unacceptable levels of unemployment in most countries in the world; increasing inadequacy of wealth distribution, resulting in social strife, criminality, wars; emergence and large numbers of infectious diseases

During the next century, much more people will require food, housing, education, and employment. The world's human population has reached 6 billion and by 2050 it is expected to reach nearly 9 billion. Now population is growing by 10,000 people per hour – 93 % of it in the south. How much world population will grow will depend on choices about family size and training and the ability of new generations to implement these choices. About 80 percent of this population will live in areas now part of the developing world and approximately two-thirds of them will be living in cities. The challenges of providing for the needs of these new urban and older populations are manifold and complex.

High fertility rates have historically been strongly correlated with poverty, high childhood mortality rates, and low educational levels of women, deficiencies in reproductive health services and inadequate availability and acceptance of contraceptives (Population Summit, 1993). Every day more than 1,600 women die in developing countries of causes related to childbirth and more than 31,000 children under age five die, many from low birth weight.

Today nearly one billion individuals are suffering from hunger and malnutrition with little or no employment. Even the most optimistic forecasts show that there might be not enough food produced to feed the increased world population. More than a billion do not have access to drinking water, basic education and health care (Ruskin, 1998).

Worldwide disparities in incomes are also widening. Poverty and extreme inequity are incompatible with the sound development. The challenge is to reduce disparities by capacity building and to provide everyone with basic human requirements and with access to the

knowledge and resources needed for a meaningful life. In this information age, where the future development is supposed to be based on knowledge, two billion are not connected to electric supply and more than four billion are deprived of basic telecommunication technology (Kornhauser, 1999).

Emergence and reemergence of large numbers of infectious diseases has become a global threat to human development. Together with unacceptably low life conditions, poverty and hunger, lack of access to medical care and clean water, these factors cause millions of dead every year. In future health challenges will include controlling infectious diseases and containing behavior-related health problems such as illegal drug use, tobacco, alcohol abuse, and obesity, which are already the causes of two - thirds of premature deaths worldwide.

The problems of health cannot be addressed without mentioning the scarcity of water. For the past half century the amounts of freshwater used had roughly quadrupled, as the worlds population has doubled. Today an estimated 1.2 billion people in developing countries lack access to safe drinking water and 2.9 billion do not have adequate sanitation.

From all threats the climatic change is the most dangerous and intractable environmental problem. It profoundly influences all environmental conditions and processes and all aspects of human well-being. Climate change is deeply rotted in characteristics of the world energy supply system that can be changed only slowly and with great difficulty.

The earth's linked physical and biological systems – the atmosphere, oceans, soil, minerals, fresh water, and living organisms-keep the planet fit for life and able to provide for most human needs. The world's ecosystems and the species in them, in addition to their intrinsic value, provide many of the goods and services needed to sustain human life, including food, timber, forage, fuels, pharmaceuticals, and industrial precursors. They also recycle and purify water, mitigate floods, pollinate crops, and clean the atmosphere. Humanity now can change the environment on a global scale, as it has with the composition of Earth's atmosphere and may be doing with its climate.

Patterns of development of society nowadays are extremely unsustainable and would not endure and nourish human nation's prolongation in long-term future. Wars, ill health, poverty, malnutrition, unemployment, illiteracy, pollution, resource limitations are the

problems, which characterize our community's development. This is unsustainable development and if it continues, it will be at the cost of great human suffering worldwide.

These problems have worldwide dimensions and the only path towards their solution is simultaneous effort all over the world (Reid, 1995). Therefore, the events at the global level are important. However, then the appropriate actions on the national/ local level have to be implemented and these actions have to be performed by enterprises as well as by population in their daily operations. These actions are captured by "sustainability"; a concept that has emerged from a number of international conferences concerned with regional and global trends in population, development, and the environment and may be is the answer to the controversial problems of development.

## 2.4 HISTORY OF THE CONCEPT OF SUSTAINABLE DEVELOPMENT

The term "sustainable development" surfaced at the United Nations Conference on the Human Environment in Stockholm in 1972. However, it was not until 1987 that a working definition emerged. That year, the World Commission on Environment and Development (Brundtland Commission) issued **Our Common Future (**Brundtland, 1987), which defined sustainable development. Brundtland Commission definition was: "Sustainable development is development that meets the needs of the present generations without compromising the ability of the future generations to meet their own needs". The concept "sustainable development" is not new. The names of Thomas Robert Malthus and Justus von Liebig have to appear in the upper part of the history of this concept. Earlier in this century social scientists and economists had drawn attention to external costs of economic activities; and in 1950, Karl William Kapp published a comprehensive analysis of all-important issues, which today are staging a comeback under the name of "sustainable development"? Barbara Ward, the founder of the International Institute, probably coined the term for Environment and Development, who made the point that development and environmental protection, must be linked. In early 1970's, the Club of Rome predicted that limitations of growth of the world would constraint development of our society. The World Conversation Strategy promoted sustainable development concept in 1980. The concept eventually came to worldwide fame, when "The Brundtland Report" was published, giving rise to an international consultation process that peaked in the 1992 "UN Conference on Environment and Development" (UNCED) in Rio de Janeiro.

Summarizing, we can point out main events that significantly improved the conceptual understanding of sustainability and provided strong evidence for the urgent requirement of a global ecological reorientation:

**The Stockholm conference on human environment**

About 33 years ago, the United Nations devoted a whole conference to the environment. The greatest concern at this 1972 Conference on "The Human Environment" in Stockholm was the containment and prevention of industrial pollution. All facts, which were available at that time, were compiled and evaluated. The conference, which brought together industrialized and developing nations to delineate the "rights of the human family to a healthy and productive environment", culminated in an impressive declaration and action plan against international threats to the environment. The United Nations Environmental Program (UNEP) was established to deal exclusively with environmental assessment and management measures.

**The Brundtland's report**

The Brundtland Commission's analysis of the world's environment concluded that global warming due to the "greenhouse effect", depletion of the ozone layer, and environmental degradation on a global scale have become a serious problem. Some conclusions of the Brundtland Commission, however, brought a new dimension into the environmental debate. Whereas until 1987 environmental degradation has been seen as a problem of rich nations only and as a side effect of industrial development, it was now recognized that, in addition, "it is part of the downward spiral of linked ecological and economic decline in which many of the poorest nations are trapped (Brundtland, 1987). Since then, it is almost conventional wisdom that there exists a vicious circle whereby poverty leads to environmental degradation, which in turn leads to greater poverty.

Thus, environmental challenges arise both from the unintended effects of some forms of economic growth and from the lack of development. Earlier calls for a halt to economic zero-growth gave way to a dynamic concept of "sustainable development", a form of progress that ensures human development and that "meets the needs of the present without compromising the ability of future generations to meet their own needs." However, "perceived needs are culturally determined, and sustainable development requires the

promotion of the values that encourage consumption standards that are within the bounds of the ecological possible and to which all can reasonably aspire" (Brundtland, 1987, p. 43).

Regardless of whether an institution is a governing agency, a small firm, or a transnational corporation, the Brundtland's Commission's message applies: all institutions that affect the environmental base of the economy must respect the needs of the future generations. This automatically assumes some notion of fairness of access to basic resource needs for all populations, both in the present days and in the future. This means transferring the opportunity of sustainable life hoods to the very poor, through appropriate transfer of technologies, capacity building in science and management, and correct prices for resource use. It also means ensuring that the additional cost for doing this in comparison with "normal growth" should be borne by the wealthy nations, and that resources should be safeguarded as "compensation" for future generations to use.

**The Rio conference on environment and development**

The United Nations Conference on Environment and Development which was attended by more than a hundred heads of state and thousands of political, technological, scientific and private sector delegates also discussed themes touching on the complex, reciprocal relationships between the environment and the economy. Key areas of concern again included massive deforestation, acid rain, and the damaged ozone layer of the atmosphere. Also discussed were the endemic poverty of the Third World and the excessive consumption of advanced nations. While the Earth Summit represented a remarkable achievement in that it agreed on the Agenda 21, a document outlining a programme of actions into the 21st century, adopted the Rio Declaration on Environment and Development outlining the rights and obligations of nations in the pursuit of sustainable development, as well as two conventions (on Climate Change and on Biodiversity) and a Non-Legally Binding Authoritative Statement of Principles for a Global Consensus on the Management, Conservation and Sustainable Development of all types of Forests, it did not meet all hopes and expectations in all areas: The international community was not able to fix a binding time frame and determine quantified targets with regard to environmental indicators and resources for their achievement.

Analyzing what has been accomplished over the past years and particularly in the years "after Rio"; we found little evidence of a massive shift in attitudes and actions on the part of

all major players upon which the realization of a sustainable development process depends. Individual, political and entrepreneurial inertia as well as tactical behavior continue to delay a halt of environmental destruction and resource mismanagement (A Guide to the Global Environment, 1995). Old traditions die hard - the necessary changes in individual lifestyles and values, in technology, products, consumption and waste disposal, as well as in political framework either do not materialize at all or at such a slow pace that a further global ecological deterioration becomes unavoidable, hence making solutions even more difficult, expensive and socially less compatible.

**The Tokyo 2000 – conference of the world's scientific academies**

The Tokyo conference addressed importance of accessing and using knowledge. The participants identified a great need for mechanisms that can find and modify what one person, group, firm, or nation knows into something that can be used. The path towards sustainable development goes through allowing people to access and assess the scientific and technical knowledge that they need in order to solve local problems and enhance the quality of their lives, as well as to communicate their own knowledge, insights, and needs to others.

**The Johannesburg conference on sustainable development**

The United Nations World Summit on Sustainable Development was organized 10 years after the Rio conference to reaffirm the global commitment to sustainable development. It was focused on fight against poverty as one of the most important instruments for sustainable development. Johannesburg Summit 2002 is an opportunity to rejuvenate the quest to build a more sustainable future. Johannesburg Summit 2002 – the World Summit on Sustainable Development brought together tens of thousands of participants to focus the world's attention and direct action toward meeting difficult challenges, including improving people's lives and conserving our natural resources in a world that is growing in population, with ever-increasing demands for food, water, shelter, sanitation, energy, health services and economic security.

## 2.5 DIMENSIONS OF SUSTAINABILITY

There is growing realization all over the world that development must meet the needs of the present generation without compromising the ability of future generations to meet their own needs. However, beyond a consensus, born more out of fear than hope, there is little understanding or consensus yet about either the concept of sustainable development or

dimension of sustainability. In real terms, sustainable development is not simply a call for environmental protection. Instead, it implies a new concept of economic growth-one that provides fairness and opportunity to all without further affecting the world's finite natural resources and carrying capacity. To understand sustainable development, we have to see it as a global way of thinking and acting. It is a conception for achieving and upholding growth in all its aspects economical, environmental, social, scientific, technological, etc. without sacrificing any of them for the sake of the others and without endangering our lives and lives of generations after us. For better understanding of the concept, the following dimensions / principles of sustainable development can be formulated.

**Environment**

Environmental principles are very important part of sustainable development concept, but it is far from exhausting the subject. Often sustainability is connected too tightly with environment protection but this is a narrow view on the question and actually represents only part of it. Otherwise saving environmental quality and ensuring long-term viability of biodiversity is unconditionally a predicament for sustaining live on the Earth. For this purpose, we have to study, analyze and understand ecological concepts, systems and issues. Another important step will be to direct our efforts on preventing pollution and environmental crisis, and not to deal with them postpartum.

**Economy**

Sustainable development comprises in itself an economic growth concept. It is not as many would maybe argue a deprivation, minimization of production and consumption. If consumers minimize their consumption, this would not save the environment, it will not only decrease the expenditures and will cause in long-term economic crises. If the producers stop manufacturing in order not to pollute and to save resources, this will be again not possible and consequently not a solution to the problem. Therefore, sustainable development means more with less, and of a better quality. The word growth is associated with development, expansion, increase, producing more and better, profiting. For achieving growth and upholding it we have to understand economic principles, systems and issues, how the market is working, how demand and supply are determined and how the participants (sellers and buyers) are acting and what motivates them. Any other artificial system, which is not based on real economic principles and is not economically viable, contains in itself the gene for it's sooner or later destruction as history has proven so many times by now. We should act for

achieving sustainability only based on the economic principles. Sustainable development should have affordable cost, for the nation and for the consumers. This principle recognizes that sustainable development is a fundamental aspect of sound business management and that the pursuit of economic growth and a healthy environment are inextricably linked.

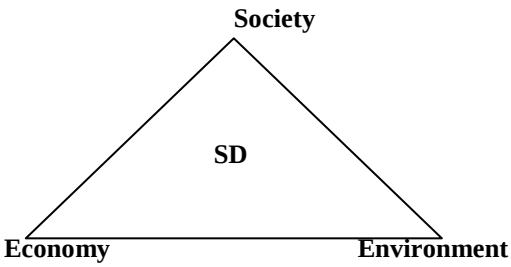
**Society**

Understanding social principles, systems and issues is also a key factor for success. The path for sustainable development should be suited to cultural and social conditions. First of all the society should be informed about the absolute impasse of the present situation and about upcoming problems if nothing will be done right now. This means building awareness in society about problems, possible solution and ways of achieving them. Public should be prepared to understand sustainable development as demanding but only possible solution for upholding growth without compromising with the ability of this or next generations to satisfy their needs. Sustainable development is an empty idea, useless concept, if there is no understanding and support from society. It is meant to be implemented by the people for the people. This can be achieved through education, information spreading, knowledge exchange, developing strategies for responsible behavior, including health. Attaining intra-generational and inter generational equity would be another important social dimension of sustainability.

**Systematic approach**

Understanding the interdependence between human well-being, a sound economy and a healthy environment is the key for achieving sustainable development. These concepts and their integration are the core of sustainable development. In addressing them, a systemic approach should be demonstrated. They can be represented as three angles and balance between them is sustainable development.

**Figure 1 Systematic approach to sustainable development**



**Science and technology**

Possession of knowledge, ability to generate knowledge and implementation of knowledge are the strongest guarantees for success. Without them sustainable development concept is impossible. How otherwise to dream of development and improvement the conditions of life for everybody, without compromising the abilities of the future generations to meet their needs, without sacrificing nature, without total abuse of resources and without minimizing consumption now. This is possible only through generation of appropriate knowledge, developing and implementing new technologies. Understanding technology's role as a mean for achieving sustainability is very important step. The only way we can progress, achieving more and better results with less resource is by applying the necessary technology. On first sight, it seems easy to be done, but in practice, this often means inventing revolutionizing technologies. The innovating process could be very long and with varying success. Therefore, in order to foster it, we should combine creation, support and promotion of higher thinking skills to process information, inquire synthesis, generalize, and analyze with information exchange, technology transfer, research co-ordination, promotion of co-operation.

In this relation, we should mention possession and control of appropriate technologies to implement the knowledge. Knowledge is of a great importance for the progress of a society. The technology possession should be protected and authors rights should be guaranteed in order to ease and support technology transfer, because it is one of the paths for propagating and disseminating of environmentally sound techniques and thus achieving economic growth without jeopardizing health of the environment and social stability.

**Physical dimension**

We have to understand the nature and properties of resources, in order to utilize them in the best possible way. Long-term integrity of the resource quantity and quality should be safeguarded with the support of appropriate technologies and new energy sources and new materials inventions. We have to know that our activities are confronting with spatial and temporal variability and with certain extremes and we have to know how to deal with them. All this we can achieve with developing our understanding for the nature around us, its resources and possibilities.

**Co-operation**

Next important principle for achieving sustainable development, which was already mentioned above is co-operation. It is significant to set a co-operative context for learning and evaluation. This way, results harvesting can be fostered and the benefits will be bigger and will be distributed to more successors. The plan of action should also include developing of strategies for local and global action and their inter- and intra- co-ordination. In addition providing cross-curricular connections in the application of knowledge and skills can ensure coherence.

**Connections**

We should not forget that for the successful implementation of the theoretical concept into practice linking knowledge to personal experiences and actual contemporary public situations are essential. This should be extended both in local and global community aspects.

**Diversity of perspectives**

Following the principle of connecting knowledge and actual situations there comes the principle for diversity of perspectives. Variability of alternative solutions, strategies and perspectives in addressing concepts, problems or issues should be recognized and taken into consideration. The appropriate solution / strategy should be applied to the particular problem/goal. For this purpose, we have to define well the problem/determine the goal itself, to identify possible solutions/alternatives for dealing /achieving it, to analyze them and to choose the most appropriate one.

**Temporal perspectives**

Promoting an understanding of the past, a sense of the present, and a commitment to the future are fundamental elements of the temporal perspectives principle. Here we should sum up the past experience and knowledge, in order to avoid similar mistakes and take into consideration the best lessons, the best practices learned. Meanwhile we should examine the state of things now and determine clearly the present situation. And at the end before acting anyhow we should take into account that we carry responsibility for the future.

**Institutional-legal-political framework**

- Institutional: capability for developing and executing policies;
- Legal: a framework that supports the ability to manage processes; and

- Political: a structure that enables policy making and execution.

## 2.6 INTEGRATED RESPONSIBILITIES AND ACTIONS

The principles explained above have to be implemented in the practice for achieving sustainable development. Economy has to be progress in an environmentally friendly pattern, at the same time creating all demanded products and services for supporting well-being of society. This has to be accomplished by taking into account the temporal perspectives and physical limitations, as well as providing co-operation and connections for successful creation and exchange of knowledge. Therefore implementation of sustainable development in practice is a tremendous task. It comprises changes in all areas of human activities and which is more difficult; it requires change in the way people think. To accomplish transition to sustainability a line of responsibilities and actions has to be determined as well as levels of responsibilities and actions to be assigned.

Elaborating concept of sustainable development, directing the tendencies and agreeing on strategic decisions on international/global level are aspects characterizing the first level of responsibilities and actions. Further, the agreements have to be kept, concepts have to be adjusted for the national level and trends have to be implemented. This level requires also elaboration of national programmes for sustainable development and assisting the lower level (micro level) in understanding and applying them. At micro-level, sustainable development measures have to be implemented in the daily activities of population and operations of the business.

All these levels have to be connected on horizontal and vertical direction in order to stimulate co-operation and dissemination of the good and proven practices. If the sustainable development is to be followed, it is important that we have the ability to monitor the extent to which such a goal is being attained. This requires that levels and measures for sustainable development are available.

## 2.7 CURRENT SITUATION IN GLOBAL EFFORTS FOR SUSTAINABLE DEVELOPMENT

There has been no systematic study of present and future needs for sustainable development, and the role of knowledge and values in the pursuit of sustainable development. Although the theoretical concepts of sustainable development are well known and systematically

studied in many books (e.g. Atkinson, 1997; Daly, 1997) and many people believe that sustainability can mean also bigger profits, studies demonstrate that practical applications are not as successful as they should be. A recent study indicates no significant differences in how extensively sustainability principles are supported between the plans that state an intention to integrate sustainable development and those that do not (Berk and Conroy, 2000). There is a need to study how knowledge and values can contribute to sustainable development.

**Role of science in sustainable development**

2000 Conference on the Transition to sustainability in the 21st Century: The contribution of Science and Technology, which was held in Tokyo, May 15-18, 2000, established guidelines for the role of science for sustainable development (http://interacademies.net/intracad/tokyo2000).

The Conference noted that scientific knowledge has led to remarkable advances that have been of great benefit to humankind. At the same time, however, applications of scientific advances have led to environmental degradation, contributed to social imbalance, and made possible sophisticated weapons. Hunger and poverty still exist in significant parts of the world. There exist significant concerns regarding global trends in climate change, environmental deterioration, and economic disparities. The Conference concluded that there are three main avenues for the scientific efforts:

**A. Achieve a more equitable access to and use of knowledge**

Science should be taught in an exciting, effective way that gives students the ability to think analytically, with the tools and desire to continue their learning throughout their lives. Education in science can be a basis for productive and innovative economic activity. Use of scientific knowledge and best-available technologies will be essential elements of a transition to sustainable development. Therefore local capacities in science must be developed, also in developing countries, so that educated people can all contribute to definition of needs, and to the ability to use and generate knowledge. A global electronic network (Clark, 1998) should connect scientists, engineers, and health professionals to people in all countries, allowing them to access and assess the scientific and technical knowledge that they need to solve local problems and enhance the quality of their lives, as well as to communicate their own knowledge, insights, and needs to others. Scientists should

use these initial connections in order to spread their knowledge, skills, and values throughout their own nations, including their local communities. The scientific community has an unprecedented opportunity to help close the existing knowledge gap.

**B. Actively generate new knowledge**

Knowledge is the generator of progress in the modern economy. Here it is important to make a science of education, so that we better understand the learning process and how to provide more successful teaching and learning throughout life. Fundamental research particularly in environmental and earth sciences can contribute to sustainable development by improving the carrying capacity of the environment. The Conference suggested to significantly strengthening the worldwide research in the following areas:

- Linking long-term basic research to social goals;
- Coupling global, national, and local institutions;
- Linking academia and private sector in research partnerships; and
- Integrating disciplinary knowledge into interdisciplinary, locally focused, problem-driven research and application efforts.

It is also important to develop indicators about the progress towards sustainable development.

**C. Apply the values of the R & D community to build sustainability**

The Conference concluded that the values of the scientific enterprise-truth, openness, community, quality, and respect for evidence – are of great importance and application to the search for sustainability.

**Conclusion**

The present Global Crisis and its upcoming irreversible consequences endanger the carrying capacity of our planet. Sustainable development despite some different opinions for its scope is undoubtedly the only possible solution to the Global Crisis. It is a development, which can sustain and prolong without jeopardizing the future life on the planet. Implementation of such a global and complex concept in practice presents the biggest challenge in front of the humankind in the beginning of 21st century.

The necessary activities have to be designed, approved and performed at global, national and micro level of responsibility and actions. At micro level, the key, which will balance the controversy of social well-being, sound economy and healthy environment, is knowledge, its development, dissemination and implementation. One of the paths for achieving it is through practices of technology transfer and counseling for the implementation of the environmentally friendly technologies, raw materials and cost reducing techniques, energy efficient and renewable technologies.

# CHAPTER 3
# REVIEW OF SITUATION IN PAKISTAN

## 3.1 THE OPPORTUNITY FOR A STRATEGIC APPROACH TO NATIONAL DEVELOPMENT

There has been unprecedented progress in development over the past 30 years. Life expectancy in developing countries has risen by more than 20 years, infant mortality rates have been halved and primary school enrolment rates have doubled. Food production and consumption have increased around 20 percent faster than population growth. Improvements in income levels, health and educational attainment have sometimes closed the gap with industrialized countries. Advances have been made in the spread of democratic, participatory governance, and there have been forward leaps in technology and communications. New means of communication support opportunities for mutual learning about national development processes and for joint action over global challenges.

Not with standing this remarkable progress, there are also pressing constraints on development, and entrenched negative trends. These include: economic disparity and poverty; the impact of disease such as HIV-AIDS and malaria; over-consumption of resources in the industrialized countries, contributing to climate change; and environmental deterioration and pollution of many kinds, including the impacts of intensive farming, depletion of natural resources and loss of forests, other habitats and biodiversity.

Negative trends – and the complex, dynamic and, therefore, difficult-to-grasp interactions between them – represent a vast range of challenges to efforts at national development in all countries, whatever their current level of economic development. Nations have agreed, through processes such as the 1992 Earth Summit, that development should be sustainable. This means, in a straightforward definition, that nations are able to achieve positive economic and social development, without excess environmental degradation, in a way that both protects the rights and opportunities of coming generations and contributes to compatible approaches elsewhere.

The achievement of sustainability in national development requires a strategic approach, which are both long-term in its perspective and integrated or 'joined-up' in linking various

development processes so that they are as sophisticated as the challenges are complex. A strategic approach at the national level implies:

- Linking long-term vision to medium-term targets and short-term action;
- Horizontal linkages across sectors, so that there is a coordinated approach to development;
- Vertical spatial linkages, so that local, national and global policy;
  Development efforts and governance are all mutually supportive; and
- Genuine partnership between government, business, and community and voluntary organizations, since the problems are too complex to be resolved by any group acting alone.

Over the last decade, governments, the private sector and civil society in countries across the world have struggled to meet the challenges of sustainable development through a wide array of approaches to develop such visions, linkages and partnerships at national and local levels.

The World Summit for Sustainable Development (WSSD), to be held in Johannesburg in August/September 2002, is focusing minds and attention once again on the challenges of sustainable development. It seeks ways in which to make progress through real behavior change – and not merely in aspirations and exhortations. NSDS offer a key set of processes and mechanisms to help achieve this goal.

The WSSD, its preparatory process and associated events and activities provide an unprecedented opportunity to recognize the difficulties and grasp the chance to make a serious commitment to sustainable development through National Sustainable Development Strategies (NSDS). However, just negotiating agreed accords and communiqués – as in the past – would be insufficient. There is an urgent need for genuine political commitment for taking action: to establish in each country the environment in which stakeholders can engage effectively in debate and action; to develop real partnerships between government, the private sector and civil society; to agree roles and responsibilities for sustainable development; to establish effective coordination mechanisms; and to work together on agreed priorities. Now is the time to commit to a new systematic and strategic approach to sustainable development.

## 3.2 THE CHALLENGES OF ENVIRONMENT AND DEVELOPMENT

### Trends and major challenges

The many urgent challenges and negative trends, which remain to be overcome, are well reviewed by regular, global assessment initiatives. Although these initiatives focus on environmental, social or economic concerns, they increasingly adopt a more holistic approach.

### Economic disparity and political instability

The economic fortunes of most nations have risen steadily in the past 20 years, but still too many nations have experienced economic decline and falling per capita incomes. The recent downturn in Asian economies demonstrates how growth may be fragile. Disparity in incomes between the rich and poor within nations, between wealthy and poorer nations, and between many multinational companies and the countries in which they operate (or avoid), continues to widen. This means that a relatively small percentage of the world's people, nations and corporations control much of the world's economic and natural resources. This, as well as the marginalization of ethnic and other minorities from processes of governance and economic opportunity, contributes to instability. Political instability, sometimes leading to violent conflict, further hinders socio-economic progress in many countries and regions.

Table 1 The Global Environment Outlook project

| The Global Environment Outlook (GEO) project was launched in 1995 by UNEP with two main components: |
|---|
| 1. A participatory and cross-sectoral global assessment process, incorporating regional views and perceptions and involving studies by a coordinated network of collaborating centers (multidisciplinary institutes with a regional outlook, which work at the interface of science and policy) around the world, and associated centers. Advice and support is provided by expert working groups on modeling, scenarios, policy and data. |
| 2. GEO outputs imprinted and electronic formats.<br><br>Global Environment Outlook 2000 reports on a comprehensive integrated assessment of the global environment at the turn of the millennium (UNEP 1999). GEO-2000 draws from a participatory process involving the work of experts from more than 100 countries. It also provides a vision for the 21st century and documents many policy successes in the recent past, and stresses the need for more comprehensive, integrated policy-making, especially given the increasingly cross-cutting nature of environmental issues<br>(UNEP 2002). |

Asia and Pacific Region. The highest proportion of the poor and the fastest growth in poverty are both in sub-Saharan Africa where half the population was poor in 2000. The social ills associated with poverty are on the rise in many countries with high rates of

poverty. These include disease, family breakdown, endemic crime and the use of narcotic drugs.

**Under-nourishment**

Currently, global food production is adequate to meet overall human nutritional needs, but problems with the distribution of economic resources and foodstuffs mean that some 800 million people remain under-nourished. Although world food production is still rising, several trends will make it more challenging to feed a growing world population. The rate of increase in the yields of major grain crops is slowing down, and post-harvest losses remain high. Soil degradation from erosion and poor irrigation practices continues to harm agricultural lands, jeopardizing production in some regions. In general, without a transition to more resource-efficient and less polluting farming methods, it will be difficult to meet world food needs in the future without increasing the environmental burden that stems from intensive agriculture.

**Disease**

HIV-AIDS and malaria are serious diseases that erode both the productive capacity and the social fabric of hard-hit nations. In the worst affected countries, HIV has already had a profound negative impact on infant, child and maternal mortality. In addition, nearly 500 million people suffer from acute malaria every year, of who 1 million die.

**Marginalization**

Many countries are struggling under the combined pressures of slow economic growth, a heavy external debt burden, corruption, violent conflict and food insecurity. These problems can be exacerbated by actions taken in the North, such as trade protectionism. Many of the residents of these countries suffer from a lack of access to social services, energy supplies and infrastructure. Their ability to develop their potential economic assets is also hampered by lack of access to resources, to credit or to the means for influencing national policy. At best, some become refugees or economic migrants. Because of these processes, poor countries and poor people are continually marginalized from the opportunities presented by the global economy.

**Population growth**

Population growth is expected to exacerbate these pressures, although it is usually people's localized concentration or their resource consumption levels that matter more than their mere numbers. World population now stands at nearly 6 billion and, while it is growing more slowly than predicted a few years ago, it is still expected to increase substantially before stabilizing. Ninety-seven percent of the estimated increase of 2 billion people over the next 20 years will live in the developing world.

**Consumption**

The demands of people in high-consumption, developed economies can have a more dramatic environmental impact than in countries with low levels of per capita resource consumption. Consumption of natural resources by modern industrial economies remains very high – in the range of 45- 85 metric tons per person annually when all materials (including soil erosion, mining wastes and other ancillary materials) are counted. It currently requires about 300 kilograms of natural resources to generate an income of US$100 in the world's most advanced economies. Given the size of these economies, this volume of materials represents environmental alteration on a massive scale. Consequently, if the emerging economies of developing countries were also to be based on such an intensive use of resources, this would put extreme environmental pressure on the world's resource base.

**Global energy use**

Since 1971, global energy use has increased by nearly 70 percent and is projected to continue to increase by over 2 percent per year over the next 15 years – despite the fact that 2 billion people are still largely unconnected to the fossil fuel-based economy. While this increase will mean that more people will have access to energy services, it will raise greenhouse gas emissions by 50 percent over current levels, unless there are serious efforts to increase energy efficiency and reduce reliance on fossil fuels. Although there has been considerable growth and technical progress in the use of renewable energy sources such as wind, solar, geothermal, hydro-electricity and others, public infrastructure and the convenience of fossil fuels and their low prices seriously inhibit any large-scale switch to the use of such clean energy sources in the foreseeable future.

**Climate change**

In the late 1990s, annual emissions of CO2 were almost four times the 1950 level with atmospheric concentrations of CO2 reaching their highest level in 160,000 years (UNEP 1999). According to the Intergovernmental Plan on Climate Change, the balance of evidence suggests that there is a discernible human influence on global climate change' (IPCC 2001). This is expected to result in shifts of climatic zones, changes in the productivity of ecosystems and species composition, and an increase in extreme weather events. This will be substantial impacts on human health and the viability of natural resource management in agriculture, forestry and fisheries – with serious implications for all countries. Developing countries, and notably the least developed, are expected to be the most vulnerable to the impacts of global climate change, although their current contribution to the problem is minimal.

**Nitrogen loading**

Intensive agriculture, dependent on high levels of fossil fuel combustion and the widespread cultivation of leguminous crops, is releasing huge quantities of nitrogen to the environment, exacerbating acidification, causing changes in the species composition of ecosystems, raising nitrate levels in freshwater supplies above acceptable limits for human consumption, and causing eutrophication in freshwater and marine habitats. Nitrogen oxide emissions to the atmosphere also contribute to global warming. There is growing concern among scientists that the scale of disruption to the nitrogen cycle may have global implications comparable with those caused by disruptions of the carbon cycle.

**Natural resource deterioration**

Environmental deterioration continues to increase with serious depletion of natural resources, including soil erosion, and loss of forests and fish stocks. Deforestation, most often due to conversion to farms, pastures, human settlements (Barton, 1995) or for logging, continues to reduce the extent and condition of world forests. Some 65 million hectares of forest were lost between 1990 and 1995 (UNEP 1999). In the Amazon and Indonesia, recent forest fires have caused extensive forest loss and damage. Fragile aquatic environments such as coral reefs and freshwater wetlands are under considerable threat from land-based pollution, destructive fishing techniques and dam construction, as well as climate change. It is estimated that almost 60 percent of the world's reefs and 34 percent of all fish species may be at risk from human activities.

Current patterns of production and consumption, and global climate change, raise questions about the continued capacity of the Earth's natural resource base to feed and sustain a growing and increasingly urbanized population, and to provide sinks for wastes. Because of environmental degradation, the biodiversity of the Earth's ecosystems and the availability of renewable natural resources have declined by 33 percent over the last 30 years while demands on these resources have doubled.

**Loss of diversity**

Biologically derived products and processes account for an estimated 40 percent of the global economy. Much of this production is based on the cultivation of an increasingly narrow range of species and genes, with many large-scale production processes in agriculture and forestry dependent on eradicating local biodiversity and replacing it with mono-cultural production. However, there is also growing realization of the value of biodiversity, both for providing insurance in case of failure of given species and genes (due to disease, climate or economic change), and for providing 'intellectual property' to develop new uses. Yet that same pool of biodiversity is increasingly coming under the control of the powerful companies that have been reducing its extent. At the livelihood level, many poor groups may be very dependent on a diversity of habitats, species and genes, especially for dealing with changed circumstances – and they may be good managers of biodiversity. However, there are often few institutions to integrate livelihood and biodiversity needs, and to look after local rights.

At the same time, cultural diversity (which has evolved alongside biodiversity) is reducing. The globalization of production, communication, knowledge generation, and work and leisure patterns brings with it a loss of tradition that could have been a valuable resource for resilience.

**Pollution**

Most countries now experience anything from moderate to severe levels of pollution, which places a growing strain on the quality of water, soil and air. Despite clean-ups in some countries and sectors, a massive expansion in the availability and use of chemicals throughout the world, exposure to pesticides, heavy metals, small particulates and other substances all pose an increasing threat to human health and the environment.

**Growing water scarcity**

Global water consumption is rising rapidly, and availability of water is predicted to become one of the most pressing and contentious issues in the 21st century. One-third of the world's population lives in countries already experiencing moderate to high levels of water shortage. That number could rise to two-thirds in the next 30 years, unless serious efforts are made to conserve water and coordinate watershed planning among water uses. Some 30 – 60 percent of the urban population in low-income countries still lacks adequate housing with sanitary facilities, drainage systems and piping for clean water.

**Other urban problems**

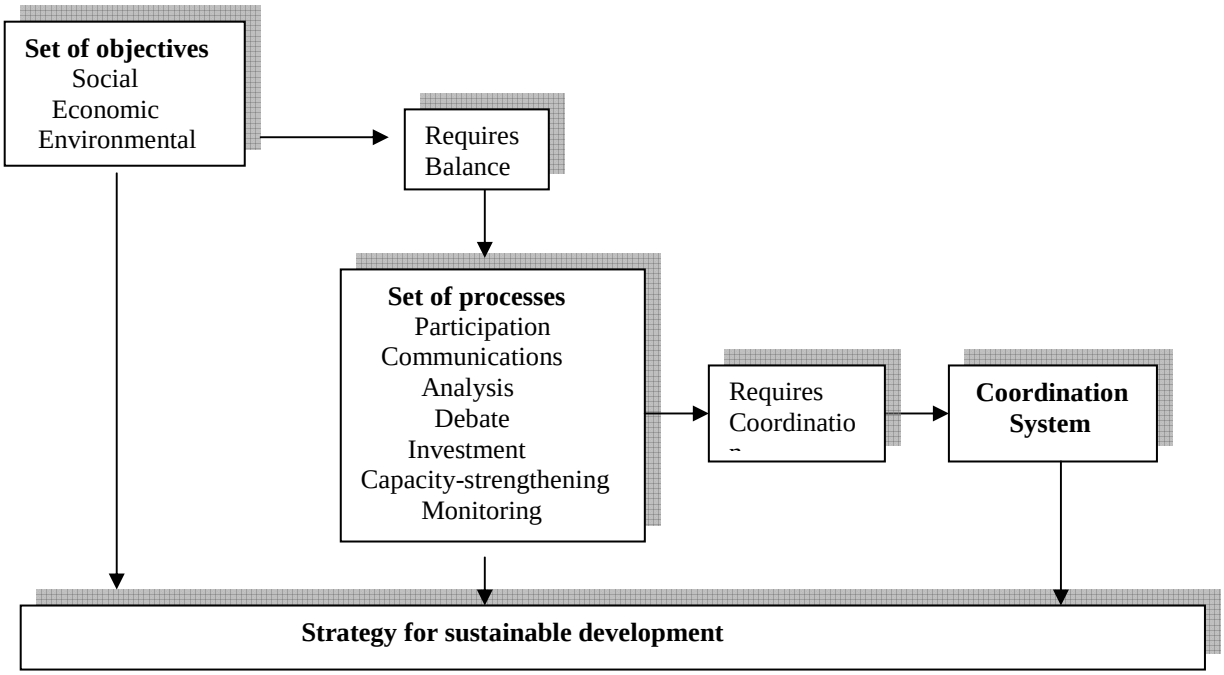
Continuing urbanization and industrialization, combined with a lack of resources and expertise, and weak governance, are increasing the severity of environmental and social problems, which reinforce one another in densely populated areas. Air pollution, poor solid-waste management, hazardous and toxic wastes, noise pollution and water contamination combine to turn these urban areas into environmental crisis zones. Children of poor households are most vulnerable to the inevitable health risks.

## 3.3 NATIONAL SUSTAINABLE DEVELOPMENT STRATEGY

To meet the challenges of sustainable development, we have discussed, strategic policy and planning mechanisms need to become more participatory, integrated and flexible. They also need to be recognized as learning processes, in which information about progress towards sustainability, or lack of progress, is used constructively to revise the mechanism and the means of realizing objectives. Rigid, standardized approaches are best avoided, usually being at best irrelevant and, at worst, counter-productive. So also is the production of an 'encyclopedia' or a long 'wish list' of unrealistic possible actions, which have little chance of being implemented. Instead, there is a pressing need to structure a strategic approach to national sustainable development according to each individual country's own needs, priorities and resources. In light of this, this DAC policy guidance on strategies for sustainable development (OECD DAC 2001) defines a strategy as comprising.

A coordinated set of participatory and continuously improving processes of analysis, debate, capacity-strengthening, planning and investment, which integrates the economic, social and environmental objectives of society, seeking trade-offs where this is not possible.

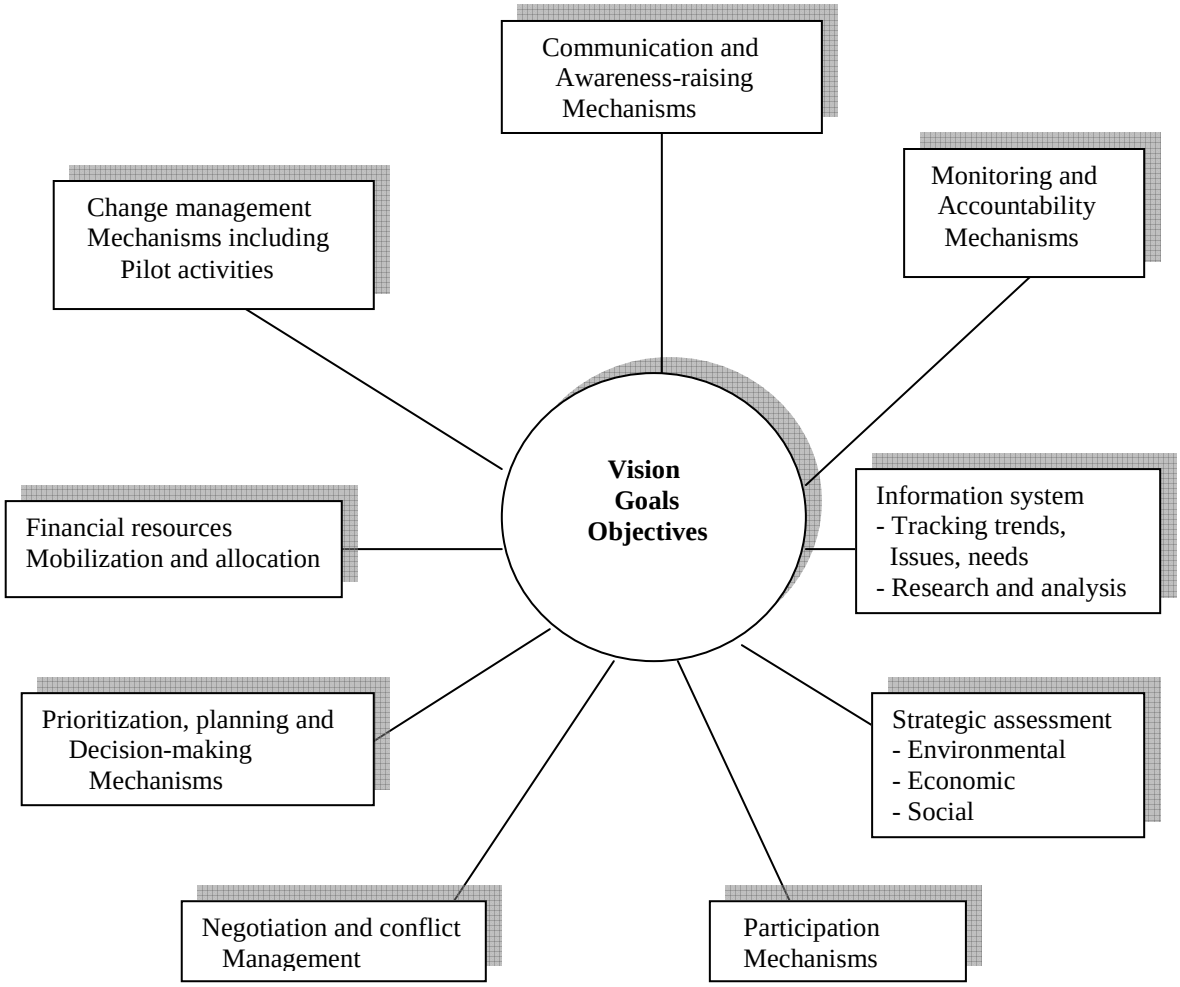
Figure 2 Relation for a systematic approach to sustainable development strategies




Note: Figure 2 might suggest that a sustainable development strategy involves a linear sequence of steps. In practice, strategies need to follow a cyclical, continuous improvement approach with monitoring and evaluation of the processes and outcomes, enabling renewed debate on key issues and needs.

The country dialogues also identified a number of specific mechanisms and processes that could strengthen the effectiveness of countries' development strategies. These are outlined in figure3.

Figure.3. Constellation of mechanisms contributing to a sustainable development strategy




National development plans, poverty reduction strategies, national conservation strategies (Clayton, Barry Dalal, 2002) and other approaches all provide a basis on which to build in moving towards the goal of an effective NSDS (OECD DAC 2000; UN DESA 2000).

Many of these principles represent good, common sense development practice and many are already being implemented at the project level. Nevertheless, putting these principles into practice in strategic planning and policy processes is more of a challenge. A cautionary note is indicated by the fact that many existing and past strategic planning processes, such as NEAPs and NCSs, have not had a lasting impact in terms of moving countries towards sustainable development. This is caused they were not focused on the full set of key principles.

**Key principles for sustainable development**

These are principles towards which strategies should aspire. They are all important and no order of priority is implied. They do not represent a checklist of criteria to be met but encompass a set of desirable processes and outcomes, which also allow for local differences.

1. **People-centered**. An effective strategy requires a people-centered approach, ensuring long-term beneficial impacts on disadvantaged and marginalized groups, such as the poor.

2. **Consensus on long-term vision.** Strategic planning frameworks are more likely to be successful when they have a long-term vision with a clear timeframe upon which stakeholders agree. At the same time, they need to include ways of dealing with short and medium-term necessities and change. The vision needs to have the commitment of all political parties so that an incoming government will not view a particular strategy as representing only the views or policies of its predecessor.

3. **Comprehensive and integrated**. Strategies should seek to integrate, where possible, economic, social and environmental objectives. However, where integration cannot be achieved, trade-offs need to be negotiated. The entitlements and possible needs of future generations must be factored into this process.

4. **Targeted with clear budgetary priorities.** The strategy needs to be fully integrated into the budget mechanism to ensure that plans have the financial resources to achieve their objectives, and do not only represent 'wish lists'. Conversely, the formulation of budgets must be informed by a clear identification of priorities. Capacity constraints and time limitations will have an impact on the extent to which the intended outcomes are achieved. Targets need to be challenging – but realistic in relation to these constraints.

5. **Based on comprehensive and reliable analysis**. Priorities need to be based on a comprehensives analysis of the present situation and of forecasted trends and risks, examining links between local, national and global challenges. The external pressures on a country – those resulting from globalization, for example, or the impacts of climate change – need to be included in this analysis. Such analysis depends on

credible and reliable information on changing environmental, social and economic conditions, pressures and responses, and their correlations with strategy objectives and indicators. Local capacities for analysis and existing information should be fully used, and different perceptions among stakeholders should be reflected.

6. **Incorporate monitoring, learning and improvement.** Monitoring and evaluation need to be based on clear indicators and built into strategies to steer processes, track progress, distil and capture lessons, and signal when a change of direction is necessary.

7. **Country-led and nationally owned.** Past strategies have often resulted from external pressure and development agency requirements. It is essential that countries take the lead and initiative in developing their own strategies if they are to be enduring.

8. **High-level government commitment and influential lead institutions.** Such commitment – on a long-term basis – is essential if policy and institutional changes are to occur, financial resources are to be committed and for there to be clear responsibility for implementation.

9. **Building on existing mechanism and strategies.** A strategy for sustainable development should not be thought of as a new planning mechanism but instead build on what already exists in the country, thus enabling convergence, complementarities and coherence between different planning frameworks and policies. This requires good management to ensure coordination of mechanisms and processes, and to identify and resolve potential conflicts. The latter may require an independent and neutral third party to act as a facilitator. The roles, responsibilities and relationships between the different key participants in strategy processes must be clarified early on.

10. **Effective participation.** Broad participation helps to open up debate to new ideas and sources of information; expose issues that need to be addressed; enable problems, needs and preferences to be expressed; identify the capabilities required to address them; and develop a consensus on the need for action that leads to better

implementation. Central government must be involved (providing leadership, shaping incentive structures and allocating financial resources) but multi-stakeholder processes are also required involving decentralized authorities, the private sector civil society, as well as marginalized groups. This requires good communication and information mechanisms with a premium on transparency and accountability.

11. **Link national and local levels.** Strategies should be two-way iterative processes within and between national and decentralized levels. The main strategic principles and directions should be set at the central level (here, economic, fiscal and trade policy, legislative changes, international affairs and external relations, etc. are key responsibilities). However, detailed planning, implementation and monitoring would be undertaken at a decentralized level, with appropriate transfer of resources and authority.

12. **Develop and build on existing capacity.** At the outset of a strategy processes, it is important to assess the political, institutional, human, scientific and financial capacity of potential state, market and civil society participants. Where needed, provision should be made to develop the necessary capacity as part of the strategy processes. A strategy should optimize local skills and capacity both within and outside government.

    Source: OECD DAC (2001)

**Agenda 21 on national strategies for sustainable development**

Agenda 21's successful implementation is first and foremost the responsibility of governments. National strategies, plans, policies and processes are crucial in achieving this. International cooperation should support and supplement such national efforts.

Governments, in cooperation, where appropriate, with international organizations, should adopt a national strategy for sustainable development based on the implementation of decisions taken at the Conference, particularly in respect of Agenda 21. This strategy should build upon and harmonize the various sect oral economic, social and environmental policies and plans that are operating in the country. The experience gained through existing planning exercises such as national reports for the Conference, national conservation strategies and environment action plans should be fully used and incorporated into a country-driven

sustainable development strategy. Its goal should be to ensure socially responsible economic development while protecting the resource base and the environment for the benefit of future generations. It should be developed through the widest possible participation. It should be a through assessment of the current situation and initiatives.
(Source: Agenda 21 United Nations Conference Environment and Development - UNCED 1992)

Agenda 21 and the conventions and agreements reached at the Earth Summit in 1992 comprise a global programme of action for sustainable development. They cover 40 different sectors and topics and pay particular attention to national legislation, measures, plans, programmes and standards, and the use of legal and economic instruments (Source Book – 1999) for planning and management.
Arguably, Agenda 21 has become the most prominent and influential – but non-binding – instrument in the environment and development field and is a guiding document for sustainable development in most regions of the world. It's most important impact has been to focus attention on the core concept of sustainable development, providing policy-makers with a point of reference for linking environmental, social and economic issues. It stresses the importance of NSDS and supporting policy instruments for implementation of sustainable development, although little guidance is given on NSDS.

NSDSs were expected to provide focal points for integrating environment and development in decision-making, and for defining and implementing sustainable development priorities. The importance and value of such strategies is a strong theme throughout Agenda 21.

The OECD's Shaping the 21st Century strategy (1997) called for the formulation and implementation of a sustainable development strategy in every country by 2005. This is one of the seven International Development Goals (IDG) agreed by the OECD.

**International development goals**

In 1996, the Development Assistance Committee (DAC) of the OECD selected an integrated set of goals for sustainable development, which aim to provide indicators of progress. These goals were based on targets formulated and agreed by the international community over the last decade through UN conferences, which addressed subjects important to sustainable development:

- Education (Jomtein 1990);
- Children (New York 1990);
- Environment (Rio de Janeiro 1992);
- Human rights (Vienna 1993);
- Population (Cairo 1994);
- Social development (Copenhagen 1995); and
- Women (Beijing 1995).

**Economic well-being**

- The proportion of people living in extreme poverty in developing countries should be reduced by at least one half by 2015 (Copenhagen).

**Social and human development**

- There should be universal primary education in all countries by 2015 (Jomtien, Copenhagen and Beijing);
- Progress towards gender equality and the empowerment of women should be demonstrated by eliminating gender disparity in primary and secondary education by 2005 (Cairo, Beijing and Copenhagen);
- Death rates for infants and children under 5 years should be reduced in each developing country by two-thirds of the 1990 level by 2015 (Cairo);
- Rate of maternal mortality should be reduced by three-quarters between 1990 and 2015 (Cairo, Beijing); and
- Access should be available through the primary health care system to reproductive health services for all individuals of appropriate ages no later than 2015 (Cairo).

**Environmental sustainability and regeneration**

- There should be a current National Sustainable Development Strategy (NSDS) in the process of implementation in every country, by 2005, so as to ensure that current trends in the loss of environmental resources are effectively reversed at both global and national levels by 2015 (derived from a commitment agreed at UNCED in Rio de Janeiro).

  Source: OECD DAC (1997)

More recently, 147 heads of state signed the Millennium Declaration in September 2000. The associated millennium Development Goals include one relating to environmental sustainability, with a target (but no date) to: 'integrate the principles of sustainable development into country policies and programmes and reverse the loss of environmental resources' (UNGA 2001). Initiatives towards sustainable development strategies should therefore also contribute to the achievement of this particular target.

**The millennium development goals**

Each goal is accompanied by various targets:

- Eradicate extreme poverty and hunger;
- Achieve universal primary education;
- Promote gender equality and empower women;
- Reduce child mortality;
- Improve maternal health;
- Combat HIV-AIDS, malaria and other diseases;
- Ensure environmental sustainability; and
- Develop a global partnership for development.

  Source: UNGA (2001)

## 3.4 PAKISTAN'S NATIONAL CONSERVATION STRATEGY

A strong basis for a national strategy for sustainable development, in Pakistan, the National Conservation Strategy (Samdani, Ghulam M., 2000) was prepared through an elaborate, high-level participatory process spanning six years, gained widespread support in government, among political parties, NGOs and civil society, and received cabinet approval in 1992. Despite political upheavals and changes of government, the NCS retains a high level of support and is still being implemented.

**Background**

A 1998 **review of strategies for sustainability** carried out for the World Bank observed that national sustainable development strategies are imperative in that they provide a framework for analysis and a focus for debate on sustainable development. In addition, they institutionalize processes for negotiation, mediation and consensus building, for issues, which are inherently confliction. Furthermore, they facilitate planning and the implementation of action, which can change or strengthen values, knowledge, technologies

and institutions with respect to priority issues. Strategies can assist countries (to) solve interrelated economic, social and environmental problems by developing their capacities to treat them in an integrated fashion... Cross-sect oral strategy initiatives... provide a foundation from which a national sustainable development strategy can be developed.

The Pakistan National Conservation Strategy (NCS) situated Pakistan's socio-economic development within the context of a national environmental plan. The NCS began with a two-year start-up phase, followed by three years of preparation, during which a strategy document was prepared, reviewed, revised and submitted to cabinet for approval. Pakistan's NCS was approved by cabinet in March 1992, and has been regarded as one of the largest and most comprehensive documents of its kind in the world. The authors and stakeholders of the document endeavored to make this the central document against which sustainable development in Pakistan would be measured. The main implementation phase was launched with a donor conference in January 1993, although some implementation began in 1991, with allocations in the federal budgets of 1991-2 and 1992-3.

The strategy has been commonly referred to as more than just a product, but a process based on a participatory methodology that had the net effect of creating an "environmental movement" within Pakistan, committed to implementing its goals and objectives. This development is key to the central tenet of the NCS, which postulates that documents and policies do not make change, only people do.
The NCS has three macro objectives:

1. Conservation of natural resources;
2. Sustainable development; and
3. Improved efficiency in the use and management of these resources.

Achievement of these objectives is contingent on the viability of the three key operating principles: achieving greater partnership in development and management, merging environment and economics (22, July 1999) in decision-making; and focusing on durable improvements in the quality of life of Pakistanis.

The NCS contained three sections. The first, Pakistan and the Environment, addressed the global environmental context, Pakistan's resources use and environmental impacts, and existing institutions and policies related to the environment.

After outlining the environmental problems and the means of mitigating them, the second part, Elements of the National Conservation Strategy, focuses on opportunities for improvement in the primary, secondary and tertiary sectors.

Part three, Implementation Arrangements, identified 14 core theme areas for priority implementation, along with the detailed commitment needed by government, NGOs and the private sector over ten years 1991-2001:

- maintaining soils in croplands,
- increasing irrigation efficiency,
- protected watersheds,
- supporting forestry and plantations,
- restoring rangelands and improving livestock,
- protecting water bodies and sustaining fisheries,
- conserving biodiversity,
- increasing energy efficiency,
- developing and deploying renewable materials and energy sources,
- preventing and abating pollution,
- managing urban waste,
- supporting institutions for common resources,
- integrating population and environment programs, and
- preserving the cultural heritage.

http://www.nssd.net/country/pakistan/pamtr2ax.htm)

From these core themes, 68 programs were identified. Each program was presented in detail with communication, research and training components, as well as long-term goals, outputs, and the resource investments required. The NCS indicated how to integrate these programs into existing and proposed national, sect oral and subsidiary plans. It then proposed building institutions to support the action agenda and implementation plan, paying particular attention to federal-provincial leadership, increasing inter-agency cooperation, enhancing departmental capacities, improving district level coordination, involving the corporate sector, and cooperation with communities and NGOs. Community-based management is identified as the key means of meeting these commitments. The report called on government, NGOs

and donors to support and nurture local participatory organizations for the management of common resources throughout the country.

The Pakistan NCS has been called 'over-ambitious in scope' and early implementation plans were scaled down to dimensions that are more practical. Nevertheless, as one of the most comprehensive early National Conservation Strategies, it broke new ground as a planning document for the country's future sustainable development, and became a model for other countries in South Asia.

An NCS Mid Term Review Committee, comprising The Environment Section of the Planning Commission, the NCS Unit of the Ministry of the Environment, IUCN and the Sustainable Development Policy Institute, has met during the second half of 1998 to develop terms of reference for the NCS Mid Term Review.

**Purpose/objectives of the Mid Term Review**

**Purpose**

The NCS Mid Term Review will enable the stakeholders (government, civil society and supporting institutions) to take stock of the current situation and take necessary steps for mid-course correction.

**Specific objectives**

1. To assess the progress achieved since the adoption of the NCS, taking into account all the influential factors.
2. To analyze and collate lessons learned so far, draw conclusions and formulate recommendations regarding adjustments of NCS as a holistic and integrated strategic guideline for sustainable development in Pakistan.

Objective No.1: This would entail achievements with regard to the core programme areas; institutional development; capacity development, legal framework development; policy development; (financial instruments, fiscal incentives, monetary and credit policy links, sustainable trade policy). The above will be approached through an assessment of public sector programmes, donor funded programmes and projects and initiatives undertaken by NGOs and private sector organizations.

Objective No.2: It clearly suggests that the MTR should be seen as a forward-looking study. In examining the achievements and problems of the past, it should point clearly towards the future in its recommendations. It should offer clear direction on the following questions.

- To what extent should the NCS be reformulated, refocused or rewritten to take into account new developments and changes in the context?
- What should be the future role of supporting institutions, including national and provincial governments, donors, NGOs and others?

In the above context, some key questions have been identified by the Steering Committee for MTR. These will be widely circulated in order to seek comments from as many stakeholders as possible.

For a meaningful review of the NCS, following tasks are envisaged:

i. Agree on an analytical framework for covering conservation and sustainable development processes and outcomes – both to encompass the many dimensions of sustainable development, and to provide a rigorous 'filing system' for the varied findings on NCS progress, which will be evident at many levels such as inputs made into and outputs achieved from NCS implementation. In addition, to assess whether sustainable development is being achieved, we need to assess the actual **outcomes (or impacts)** of the activities. On the other hand, if impacts are not yet evident (many will take time to appear), we need to assess the quality of the various **processes** that help to make the transition to satisfactory outcomes. If we can assess both of these so much the better.

ii. Focus group discussions on the changing context, and on progress and new priorities in environmental conservation and sustainable development – issues not really covered by the NCS-globalization of markets, new international obligations, etc. We need many perspectives on this, to regroup the priorities. Furthermore, a contextual discussion will help to focus and revise the sustainable development analytical framework; and it will reveal people who have useful information, for later detailed interviews, etc.

iii. Review development of the main institutions proposed by the NCS – the institutions provides the only continuity and 'glue' for the NCS. Their work defines how the NCS

is evolving. A lot has been achieved in setting new institutions up, and it is time to take stock of how they are working-individually and together. Furthermore, each institution is facing constraints, which need to be identified and removed for further progress.

iv. Review provincial and district strategies – such a review should also be a helpful exercise for people involved in the provincial strategies, giving them both a chance to reflect on their own strategies, and to feed back to the NCS.

v. Review legislation/policy changes pertaining to NCS – legislative and/or policy changes and amendments as required for the implementation agenda of the NCS is due consideration here.

vi. Review mass awareness on environmental/conservation issues – the NCS advocates access to information on environmental and conservation issues in order to ensure NCS implementation in a holistic fashion.

vii. Review financial adjustments pertaining to the NCS – reflect on the resource allocation and funding allotted by external confessional lending, domestic resource mobilization, and private investments for NCS implementation.

viii. Create a database of all projects related to the NCS – such a database would reveal the changing 'shape' of government/donor commitment and investment in different types of sustainable development activities. Seeing the 'big picture' may reveal the real-life priorities, which can then be compared to the NCS's goals and assumptions.

ix. Review progress and impacts of a sample of NCS projects – identifying projects, which have been successful, will reveal what processes are helpful for them (those processes connected to NCS, and other processes that might need to be accommodated by it). Finally, the involvement of PEP personnel in project reviews will give them useful feedback on the actual outcomes of projects and the effective processes that contributed.

x. Review the overall NCS process and its management – this should help future promotion of the NCS. It is obviously also needed for adjustment of the whole process in the second half of the NCS term.

xi. Produce a draft synthesis report, summarizing findings and ways forward – to bring together all the evidence in a form, which enables debate on findings, recommendations and next steps.

xii. Debate MTR findings and proposed ways forward – the results of the MTR must be widely 'owned' if people are to act on them. Up to this point, there will have been much discussion with individuals and focus groups. Now the ideas need to be put to those at the center of the NCS.

xiii. Produce and disseminate final NCS-MTR report – to summaries the changed contexts and challenges, to communicate findings and any agreed adjustments to NCS to all NCS stakeholders and to act as a basis for funding discussions with donors.

A mid-term review, it found that, during eight years of implementation, the strategic objectives, early debate and visioning processes had fragmented into hundreds of unconnected component activities with no feedback mechanism. There was a lack of routine monitoring of project impacts and sustainability indicators, and a lack of policy links between the NCS coordinating body and NCS-inspired projects. As a result, the possibilities for leading were far fewer than there could have been. The NCS review therefore tried to provide a simple base line and framework for correlating sustainability outcomes with strategic processes in future.

The review found that the NCS had generated much awareness about the links between environment and development, and had inspired spontaneous innovation and investment in the private sector. The NCS recognized its broad scope, and called for provincial and district conservation strategies to deal with local trade-offs. These local strategies have incorporated economic and livelihood issues more firmly – and indeed, some are seen as sustainable development strategies.

The NCS MTR process brought to light a few important lessons for Pakistan's planning processes:
NCS could not influence key socio-economic issues such as poverty reduction and economic development. This is an emerging debate under the MTR results i.e. the macro level issues were not integrated into NCS implementation strategy and that NCS implementation was largely left to project identification around NCS core areas.

NCS implementation processes could not characterize formulation processes hence leading to rapidly decreasing commitment for action – Consultative processes were the hallmark of NCS formulation, however, NCS implementation strategies did not emerge in as participatory a manner as was anticipated.

Need for action on environment and SD has nevertheless been recognized by public sector even given the harsh political environment and capacities. The MTR reports that an intensive effort has been made towards awareness raising and institutional building. This however, with less than adequate political commitment and with prevailing level of capacities did not translate into adequate action for NCS implementation.

The contextual shift from environmental conservation to SD over last ten years. Substantial changes in emerging context necessitated a flexible approach to implementation of NCS or any other sustainable development plan for Pakistan, translation of which through a flexible and frequently revisable process is inevitable.

In Pakistan the NCS processes, both formulation and review are characterized by extensive participation of and consultation with key actors from public, NGOs and private sectors that ensured the widespread ownership of NCS by all sectors. Now there is a need to build a broad –based consensus on taking the MTR forward. In addition, there is a need to initiate an informed public debate on future directions in the emerging political and economic context. Involvement of media would therefore be a key element. Dialogue is also necessary to bring an informed convergence of various sustainable development initiatives that are being deliberated in the country. Such as poverty reduction strategy (World Bank and IMF), National Sustainable Development Programme (UNDP), Mainstreaming Environment to Fight Poverty and follow-up on NCS MTR (Ministry of Environment and Planning and

Development Division of Government of Pakistan, IUCN, SDPI) that is also linked with OECD-DAC NSDS dialogue process.

The process of NCS MTR greatly benefited from the lessons learnt and recorded during the formulation process of NCS and other plans in Pakistan.

### 3.5 SUSTAINING NATURAL RESOURCES

**IUCN in Pakistan: The largest country programme**

In 1982, an exploratory mission for Headquarters laid the foundation for the International Union for Conservation of Nature (IUCN) Programme in Pakistan. In 1985, a one person IUCN was established in Karachi to initiate the implementation of the national conservation strategy. Since then IUCN Pakistan has the largest country programme with five programme offices and a number offices in the field.

IUCN's mission is to influence, encourage and assist societies throughout the world to conserve the integrity and diversity of nature and to ensure that any use of natural resources is equitable and ecologically sustainable.

To ensure sustainable development of Pakistan's natural and local resources, IUCN Pakistan aims at:

- Integration of environment and development;
- Support to institutional and human resource development for environment;
- Facilitation for the creation of a supportive policy and legal framework; and
- Increasing popular support for the environment.

IUCN works closely with the government at the national and provincial levels as well as with civil so following a two-pronged approach, IUCN: advocates and technically assists the development of the strategies; and, supports strategy implementation by providing assistance in policy and legislate capacity development, environmental assessment, awareness and education, and selected field project.

**Pakistan programme**

**IUCN** Pakistan's main projects include:

- Pakistan Environment Programme – capacity building for implementation of the National Strategy;
- Sarhad Provincial Conservation Strategy (SPCS) – assisting implementation;
- Balochistan Programme – working on priority areas of Balochistan Conservation Strategy;
- Northern Areas Conservation Strategy – strategy development;
- Mountain Areas Conservancy Project (MACP) – community-based conservation in Pakistan; and
- Environmental Rehabilitation of Northern Pakistan (ERNP).

In addition, IUCN Pakistan maintains core capacity and services in the form of thematic programmes Country Office. They are organized under three groups: Society, Environment and Economy (SEE). Communication and Knowledge Management; and Ecosystems Management (EM). These support the various projects to ensure timely delivery of quality outputs, and serve to internalize learn.

**Organizational structure**

The Pakistan Programme is headed by the Country Representative who is based at the Country Office. The Country Office has four main components:

Policy and Constituency Development, Programme Finance, Operations and Human Resources.

**Progress and direction**

IUCN Pakistan's (IUCN-P) most important contribution to the environmental movement of the country, the development of the National Conservation Strategy (NCS). IUCN-P has also contributed to the Environment Protection Act (PEPA) 1997 and has contributed to the development of key measures including the National Environmental Quality Standards. IUCNP has also co-designed and facilitated post-NCS environmental projects; helped in developing the Biodiversity Action Plan for Pakistan successfully advocated a greater space for civil society in public policy and decision making. IUCNP district and local strategies offers insights into the debates and possibilities needed to be explored the issue of good

governance. Following the NCS, geographically specific and contextually strategies developed for Abbotabad, Chitral, Sarhad, Northern Areas and Balochistan.

In consonance with future priorities and challenges, IUCN-P developed a strategic plan that runs general focus has been consolidation, meeting commitments, and ensuring financial sustain opportunities will be selectively taken in areas of policy, economics and urban environment, as may with the aim of consolidation, knowledge management and learning.

The IUCN Programme in Pakistan is characterized by a mix policy and fieldwork at the federal, local levels bringing together government, civil society and private sector institutions. The Program around several themes, various conservation strategies and select field projects.
The themes deal with issues of business and the environment, biodiversity, communications, coastal environmental assessment, environmental education, environmental law, knowledge management and support.

As part of the NCS implementation, IUCN Pakistan supports various sub-national conservation strategies. The process is either being developed or implemented. These include the Sarhad Provincial Conservation, Balochistan Conservation Strategy, Northern Areas Conservation Strategy, Chitral Conservation and Abbottabad Conservation Strategy.

The strategies themselves are essentially capacity-building initiatives complemented by other capacity demonstration projects implemented by IUCN. Notable among these are capitalizing on capacities of Pakistan Environment Programme (PEP), Environmental Rehabilitation in the NWFP and the Mountain Areas Conservancy Project (MACP), and Mangrove Forest Rehabilitation.

**Protecting natural resources in Pakistan**

Northern Areas spread over 72000 sq. km is a rich mix of human and natural resources including cultures, languages, plants, animals and habitats. Around a million people live in this land of high mountain peaks, glaciers, alpine pastures, forests, lakes, plateaus, valleys and rivers. Rapid growth in population, poverty, low quality of life, unsafe drinking water, lack of sanitation, deforestation, depleted pastures, low productivity of agriculture and livestock, declining wildlife, soil erosion, degrading watershed and tourism values of natural

resources, rapid and uncontrolled urbanization and unplanned tourism are only some of the major concerns that have alarmed the Northern Areas Administration. There are many constraints being faced in realizing the opportunities for development of agriculture, hydropower, tourism and mining. A clear vision of the future is necessary.

Land and natural resources play a decisive role in the lives of people in Pakistan. Ninety one percent of Azad Jammu & Kashmir (AJK) province's 2.8 million people live in rural areas where they are dependant on forests and agricultural land for their livelihood. But a steadily increasing population, along with unmanaged and exploitative use of the land is depleting natural resources and threatening the way of life – and the very lifeline – of the local people.

Through a series of projects, the government and international donor agencies have learned that, rather than directing change from the outside, providing local people with the knowledge and means to take responsibility for modifying and managing their land use is the most effective way to help sustain the region's natural and human resources.

The recently completed Northern Resource Management Project broke new ground in community-driven natural resource management in AJK. Through Village Development Committees, which emphasized an expanding role for women in decision-making roles, local communities have learned the benefits of organizing themselves to preserve their way of life and improve the future for their children. Financed by the World Bank, the project's foundation was an effective partnership formed by government, NGOs and local communities. Based on lessons learned from this project, and the general success of a participatory approach to rural development, the World Bank is considering the best options for continuing its partnership role – in particular focusing on communities and vulnerable groups living in areas of AJK where development indicators are the sub-national average.

**Life-styles change as farming becomes less productive**

In some respects, AJK is better situated than other parts of Pakistan: land is more equitably distributed to small holders, and education levels are relatively high – with literacy at 45 percent compared to 37 percent in the North West Frontier Province (NWFP), and 28 percent in Balochistan Province – areas facing the similar development challenge of hilly terrains. However, the predominant system of land use is unsustainable, and the overall

productivity of forests, most crops, and livestock are already low or declining. Between 1980 and 1990, the average agricultural production decreased by 123 kg per person.

**Fragile natural resource base**

Forests cover around 43 percent of the land area in AJK, and nearly half of that land is utilized for commercial forestry – an important source of government revenue. Another third of the total land area is under cultivation by farmers. With a rapidly increasing population of 2.7 percent per year, the natural resource base is being depleted beyond sustainable levels. Despite recent reforestation programs, the net loss in forest cover due to commercial and illicit cutting ranges between 6,000 ha to 8,000 ha annually. Stress on the land is exacerbated by the 3 percent growth per year in the number of livestock, along with additional summer grazing by goats and sheep of the nomadic herders.

**Impact on women**

The changes in lifestyle have been particularly difficult for women. A woman's role typically includes the collection of firewood and other forest products, care of livestock, cropping activities, and collection of water. The average workday is nearly 17 hours. Although women's contributions to agriculture have been equal to that of men, there has been little or no agricultural extension support specifically for them due to traditional gender biases, lower literacy rates than men, and unacceptably tough working conditions for female extension workers.

The pressure on women has increased, but so too has their entry into traditionally male decision-making roles in the areas of reforestation, livestock management, and agricultural activities. The participation of women has provided the government and various development programs with an opportunity to rethink and renew their approach to community level natural resource management in AJK.

**Change through natural resource management project**

Since a vast majority of the rural population of Northern Pakistan is engaged in subsistence agriculture on terraced land steep hills, the government has been active in developing rural areas through its line agencies. The departments of agriculture, animal husbandry, and forestry have been implementing development schemes to manage natural resources for the past several decades. However efforts have been somewhat fragmented. The World Bank has

supported the government's efforts towards sustainable management of Kashmir's natural resources. In the early 1980s, it helped finance a series of projects beginning with the Hill Farming Technical Development Project, which developed plans for technical assistance to farmers in mountainous areas. This was followed by the Integrated Hill Farming Development Project, which aimed to reverse environmental degradation through community development, and using the technical packages identified in the previous project. Based on the positive lessons from these projects, the Northern Resource Management Project was undertaken in 1994, with greater emphasis on changes in policy, greater community-focus in extension services, and more attention to women's increasing role in natural resource development.

**Natural resource management project in action (NRMP)**

The NRMP's main objectives were to support sustainable and economically efficient use of land resources in Kashmir, through:

- Improving the policy framework for the use of land resources;
- Restructuring and strengthening the main institutions managing land resources; and
- Testing community participatory methodologies, encouraging communities to take fuller management responsibility of land resources.

**Community based extension strategy**

Under the NRMP, a community-based extension system was established in five sub-watershed areas (geographical areas consisting of a range of hills with identifiable boundaries on both sides marked by deep gullies or streams). AJK has roughly 350 such sub-watershed areas. Special support units, in particular a Social Mobilization Unit (SMU) and Women In Development (WID) program, were established to enhance the community-focused extension system and find innovative ways to focus on previously neglected gender issues.

The development of a Social Mobilization Unit (SMU) was an innovative approach adopted in AJK. The social mobilization unit was mandated by the government to assist in mobilizing communities and help them take management and financial responsibility for planning and implementing activities, which promote sustainable natural resource use.

One of the social mobilization unit's main responsibilities has been to help communities establish village development committees, through which they were encouraged to draw up detailed inventories of resources and a prioritized list of needs, and to establish savings funds (Source Book - OECD, 1999). This social mobilization unit, with assistance from technical experts from the departments of agriculture, animal health and forestry, identifies suitable technical packages for communities or individuals to adapt to their needs. Through this practice, the village development committees have become channels through which the technical departments of the government interact with communities and, in the words of a senior forestry official, "it has changed the role of (government) field agents, from enforcers preventing the depletion of the forest, to a more supportive role working with the community to expend and conserve the forest

The project demonstrated that public services could be delivered to a wide population more efficiently and if social intermediation is entrusted to experienced NGOs or staff drawn from such NGOs who are given flexibility and operational freedom with strict accountability for the outcome.

**Cornerstone of success – Community participation**

The village development committees are encouraged to look into ways to better utilize their natural resources – managing forest plantations, pastures and communal lands using land conservation measures. The activities undertaken are designed to be income generating in order to encourage participation. Initially they were funded on a cost-sharing basis and later, in some cases, were fully funded by community. Originally 20 village development committees were to be established in the 5 pilot sub-watershed areas, however due to an overwhelming response from the communities, 60 village development committees were formed.

A further development was the establishment of over 300 community based organizations by NGOs working nearby and encouraged by the results in the pilot areas. These NGOs have also been assisted by government departments with similar technical support as that provided to social mobilization unit sponsored village development committees. Therefore, in some areas 40 percent of farm households are working with government technical services through their community organizations, promoting an extension system in which development in communities promises to become more relevant and self-sustaining.

**Women as equal partners**

In contrast, to past rural development schemes, women are very much a part of this process through the Women in Development (WID) program. The mold has been broken, and community members are now increasingly accepting the new role of women as equal partners in the management of natural resources, and as having a right to their own income-earning activities. Women are members of village development committees, and the WID program has trained and placed 16 female extensionists and has supported 40 women's development committees. Women in communities have received training in cultivating vegetables for kitchen gardens, in becoming poultry paravets, and in managing poultry. They are finding new ways to improve livestock nutrition and manage forest nurseries.

**The future**

The Natural Resource Management Project ended in June 1999. Various stakeholders have made a strong case for scaling up the participatory arrangements. Many opinion leaders, NGO members and government policy makers felt strongly that the social mobilization unit should operate for another three to five years, but more importantly, that the pilot social mobilization program should expand to a larger area, and that the program should not be fewer than 10 years in duration. As a commitment to sustain the social mobilization unit activities, a two-year sub-project was later approved by the government from its own resources pending expansion of the program beyond pilot areas.

## 3.6 SUSTAINABLE DEVELOPMENT EFFORTS IN PAKISTAN

Pakistan has taken a number of steps to implement the Global Environment Agenda; these include the promulgation of the Environmental Protection Act 1997, establishment of a full ministry of environment, local government and rural development, Pakistan Environmental Protection Council and federal and provincial Environmental Protection Agencies (EPA).

Operational activities include the ratification of the Convention on Biological Diversity (CBD) in 1994 – and approvals of the Biodiversity Action Plan (BAP) as well as submission of the first and second country reports to the CBD secretariat. Ratification of the Convention to Combat Desertification (CCD) in 1997 and the United Nations Framework Convention in 1994.

Moreover, Pakistan has ratified almost ten other multi-lateral environment agreements, which are under implementation. The latest landmark in this regard is the approval of the National Environmental Action Plan (NEAP) by President in February 2001.

### 3.7 NEED FOR NEW ORGANISATION IN SUSTAINABLE DEVELOPMENT

How can we meet the needs of today without diminishing the capacity of future generations to meet theirs? Sustainable development implies a broad view of human welfare, a long-term perspective about the consequences of today's activities, and global co-operation to reach viable solutions. Economic development of the country imposes significant environmental challenges, which are magnified by the lack of research and awareness about sustainable development. These environmental challenges created a need to establish in Pakistan an institute for research and education about sustainable development.

Today environmental and social threats to global development are greater than ever in human history, and also human knowledge is greater than ever in our history. This poses both a threat and a huge opportunity to bring together centers of knowledge with the decision makers in a creative manner that will steer our civilization safely towards sustainable development.

We are currently in a situation of planetary emergency, marked by an array of very serious problems that are closely related: pollution and environmental degradation, depletion of natural resources, unsustainable demographic growth, and extreme inequalities among different human groups, destructive conflicts, and loss of biological and cultural diversity. This situation is associated to individual and social behavior driven by the search for short-term private benefits, without taking into account the consequences for others or for future generations. This behavior is due, to a great extent, to the habit of only focusing our attention on what is closest in terms of both space and time. It is therefore, necessary to establish explicit commitment on behalf of all education, both formal (from primary school to the university) and informal (museums, media...) to contribute to a correct perception of the state of the world and prepare citizens for decision-making, generating responsible attitudes and behavior oriented towards the attainment of a culturally plural and physically sustainable development.

# CHAPTER 4
# KNOWLEDGE DISSEMINATION FOR SUSTAINABLE DEVELOPMENT

## 4.1 KNOWLEDGE DISSEMINATION AS A SELF-ORGANISED SYSTEM

In order to build a global sustainable civilization it is important to establish a society whose development will be based on knowledge, where information technologies play a very important role (Mansel, 1998). With the possibilities of modern information and communication technologies it is possible to build a global network, based on the model of self-organized criticality (Morel, 1999). Although this model was first developed by a physicist Per Bak to describe complex non-equilibrium systems at the border of order and chaos (Bak, 1996), it has been extensively used to describe economic and social systems (Axelrod, 1997). In this model usually the most efficient solution is a non-equilibrium state at the boundary between order and chaos. Modern global economy, which is based on knowledge, provides many examples of successful non-equilibrium networks.

In this work we refer to knowledge as the full utilization of information and data, coupled with the potential of people's skills, competencies, ideas, commitments and motivations. Inspite of the importance of knowledge, it remains the most neglected asset. Knowledge provides the ability for a creative response. It can be either implicit or tacit, encoded in organizational processes, documents, products, services, or systems. Educated people represent a necessary condition for knowledge absorption. While most of the world basic research is performed in developed countries, it is also important for the developing country to invest in basic knowledge as well as in discoveries and inventions, of course such that are appropriate for the culture and level of development. The self-organized criticality model suggests that society best lives in the middle between order and chaos. If there is too much order, creation of knowledge is suppressed, however too much chaos is not sustainable and does not support economic development.

Based on the applications of self-organized criticality model in social systems (Axelrod, 1997) we conclude that a networked structure is best suited for a new educational a research institution in the field of sustainable development.

## 4.2 EDUCATION AND PUBLIC AWARENESS FOR SUSTAINABLE DEVELOPMENT

The international institute for sustainable development (IISDP) will focus education and public awareness in Pakistan. Quality education is a prerequisite for sustainable development. Making the abstract real, and developing the capacities of individuals and societies to work for a sustainable future is, essentially, an educational enterprise. Indeed, the four principles for achieving sustainable human development enunciated at the World Summit for sustainable development in 2002 reflect the four pillars of education.

Achieving sustainable development requires:

- Recognition of the challenge;
- Collective responsibility and constructive partnership;
- Acting with determination; and
- The indivisibility of human dignity.

Education provides the skills for:

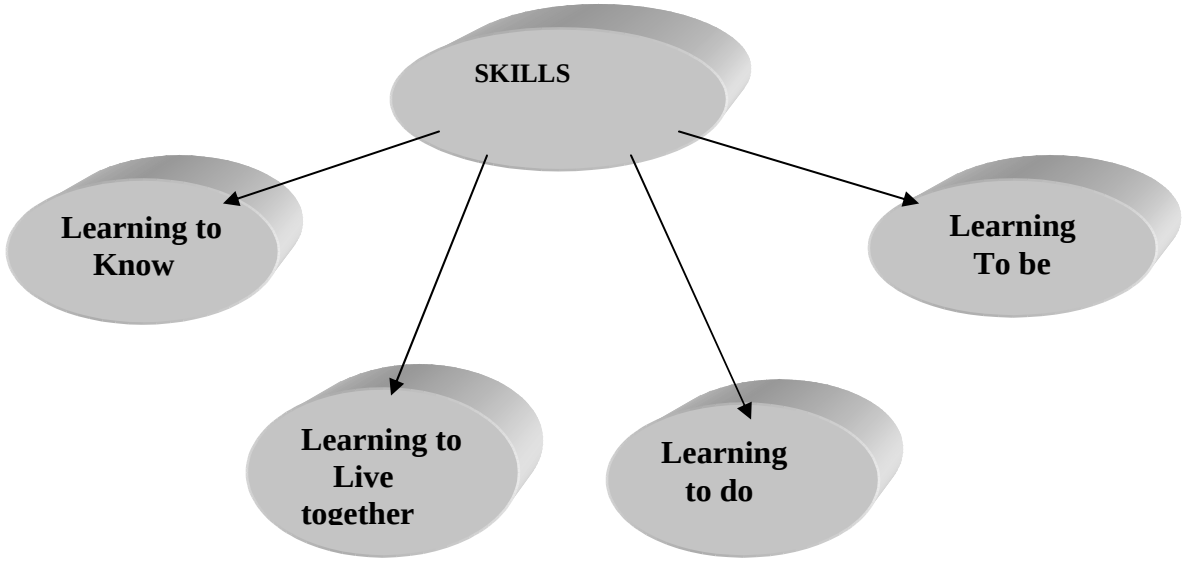
-Learning to know;

-Learning to live together;

-Learning to do; and

-Learning to be.

Figure 4 Education Provides Skills




Source: UNESCO/Education-Quality Education

Thus, education is the primary agent of transformation towards sustainable development, increasing people's capacities to transform their visions for society into reality. Education not only provides scientific and technical skills, it also provides the motivation, justification, and social support for pursuing and applying them. We need to foster – through education – the values, behavior and lifestyle required for a sustainable future. Education for sustainable development has come to be seen as a process of learning how to make decisions that consider the long-term future of the economy, ecology (Rammel, C., 2003) and equity of all communities. Building the capacity for such futures-oriented thinking is a key task of education.

The underlying values which education for sustainable development must promote include at least the following:

- Respect for the dignity and human rights of all people throughout the world and a commitment to social and economic justice for all;
- Respect for the human rights of future generations and a commitment to intergenerational responsibility;
- Respect and care for the greater community of life in all its diversity which involves the protection and restoration of the Earth's ecosystem; and
- Respect for cultural diversity and a commitment to build locally and globally a culture of tolerance, non-violence and peace.

This represents a new vision of education, a vision that helps people of all ages better understand the world in which they live, addressing the complexity and interconnectedness of problems such as poverty, wasteful consumption, environmental degradation, urban decay, population growth, health, conflict and the violation of human rights that threaten our future. This vision of education emphasizes a holistic, interdisciplinary approach to developing the knowledge and skills needed for a sustainable future as well as changes in values, behavior, and lifestyles.

Pakistan urgently needs to align its education system and curriculum to the dictates of sustainable development. To accomplish this, efforts, must be made both to strengthen and reinforce the education curricula at all levels, to develop educated believers and practitioners of sustainable development.

The objectives of education on sustainable development are to help individuals and groups within society to:

- Become aware of and sensitive to the total environment and its allied problems;
- Acquire basic knowledge about the environment, its associated problems;
- Learn skills for anticipating, avoiding and solving environmental problems;
- Develop the ability to contribute to and evaluate environmental policies, measures and programs; and
- Develop a sense of responsibility and urgency leading to a direct participation in appropriate action.

**Awareness raising**

Awareness raising, international institute for sustainable development (IISDP) will focus on Pakistan. The national conservation strategy (NCS) has created awareness about environmental protection and management needs, and to a lesser extent, about ways in which environment and economy link, and about social impacts of environmental damage.

Unfortunately, there are no reliable surveys of how far the NCS has penetrated at the community level, nor of which messages are being absorbed by either rural or urban populations. Thus, the basis for building mass awareness campaigns is quite weakly developed, and a strategy for national environmental education is lacking.

Hagler Bailly, in its review of mass awareness conducted for the NCS, observed that "behavioral change does not just support the NCS environmental awareness campaigns – it is the NCS". This comment should be kept in mind, for it succinctly expresses an important message. Without significant behavioral shifts within institutions and on the part of individuals, the objectives of the NCS will never be fully addressed. They reveal a situation where there is limited appreciation of the range of tools available for mass awareness and disconnect between this theme and the limited efforts for environmental education within schools.

**Problems to be addressed**

Pakistan is still faced with daunting challenges, which is quite considerable regarding improved awareness and some institutional development, many fundamental development constraints remain. These include:

**Human development** - Social indicators in Pakistan continue to be among the worst in the world. Pakistan lags behind South Asia countries in several areas. Infant mortality is 95 per thousand live births relative to 77 on average in South Asia, illiteracy is 59%, and access to safe water is 62 %. Viewed from a gender perspective or in absolute numbers, these statistics point to an even worse performance. Thus, approximately 30 million people cannot meet minimum nutritional norms, 42 million adults (over two-thirds of the population) are illiterate, 58 million people do not have access to health facilities, 28 million people are without safe drinking water and 87 million people lack basic sanitation facilities.

**Environmental sustainability -** While environmental data are limited and of variable quality, there is evidence of widespread environmental degradation in Pakistan. Water availability has declined. Application of agricultural chemicals has increased by almost a factor of ten since 1980. Air pollution exceeds, despite important efforts, deforestation has also continued unabated, with forest cover shrinking by about 3.1% annually and woody biomass by about 5% annually. Energy use continues to be very inefficient and commercial fuels not accessible to rural households and the poor. Despite considerable natural gas reserves, the country continues to use high sulphur fuels, leaded gasoline, and about 60% of households continue to rely on solid fuels.

**Biodiversity and natural resources conservation -** The situation for Pakistan's very limited natural forest cover has declined over the past decade, the condition of mangroves in the coastal zone is precarious, and even more precarious is the status of certain aquatic wildlife, such as the Indus freshwater dolphin. In the mountainous regions of Balochistan, the Northern Areas and AJK, the wild populations of goat and sheep have declined. The situation is serious when considering many of the formerly abundant species.

**Economic growth -** Inequitable economic growth and widespread poverty, feudal social structures that are reflected in political power relationships, absence of local government and exclusion of the majority of the population in decision-making and access to basic services.

Unfortunately, there are no satisfactory mechanisms in Pakistan at present for raising awareness about sustainable development, educating the public on sustainable development, tracing the sustainability of development in Pakistan.

The public has the right to know about the dangers it is facing and should have access to the scientifically determined indicators of sustainable development. To facilitate the creation of a sustainable development constituency, strategic initiatives need to be taken at three distinct levels of formal education in schools, colleges and universities.

Education is the passport to accelerated economic growth, particularly in the current context of a rapidly globalizing world economy. Only those societies that have acquired relevant knowledge and skills can compete successfully in the global markets. The contribution of education to economic growth is not a matter of controversy. However, education without adequate, remunerative and productive jobs rarely leads to sustainable economic growth.

No education means no awareness, and that in turn leads to a deterioration of the social matrix, which in effect is the root cause of all degradation.

### 4.3 RESEARCH FOR SUSTAINABLE DEVELOPMENT

Research and technological development (RTD) generate two dominant characteristics of the contemporary world: rapid changes and globalization. Education, information and communication technologies (ICT), science, technology, and RTD are the factors, which increase our creative power. It is expected that research and technological development will decouple economic growth from resources consumption, allowing resources exploration to become more efficient.

Research and science education are the essential pillar of the society. International institute for sustainable development's research programme will focus on Pakistan; research programs from the following fields will be developed:

1. **Environment**
   - Sustainable industrial development;
   - Sustainable agriculture and forestry;
   - Climate change;
   - Hazardous waste management;
   - Water; and
   - Population and environment.

**2. Human development: social sector**

- Education;
- Gender;
- Community development; and
- Poverty.

IISDP's research output will be well established and recognized in the academic community. Research output will be disseminated both orally - through a weekly lecture series, workshops and conferences – and in printed form – research bulletin, working papers, research reports, policy briefs, policy papers, edited volumes of papers, monographs, journals and other periodic publications.

## 4.4 MODEL FOR KNOWLEDGE DISSEMINATION IN THE INSTITUTE

Self-organization provides several useful lessons for sustainable development (Buenstorf, 2002). Information alone is not enough for progress. Educated people who know how to use the information are also needed. Increased knowledge and information and communication technologies are dramatically changing human habits and quality of life as witnessed by the marked increase in the average human life span in the last 100 years.

We will unite education, Information and Communication Technologies (ICT), Research and Technological Development (RTD) and science and technology under a term: knowledge. However, a caveat is required. An important characteristic of knowledge is that while its factors ICT, RTD and science and technology are global, and can be more-or-less standardized, the sum of all of them – knowledge - is understood and contextualized within a specific cultural system, thus giving it a local meaning. Of course, in today's world cultures are not isolated, they interact and many of us belong to more than one culture (Culture in Sustainable Development, 1999). Knowledge is therefore a unique link, which connects global and local, and gives individual cultures global meaning.

Culture is a collective response developed to face threats, diminish weaknesses, maximize strength and increase opportunities. Therefore, a variety of different cultures is needed (Serageldin, 1999). Knowledge and culture must be the main pillars of the contemporary society. Knowledge is the most effective connection between local and global. It provides a

long-term vision not only compatible with rapid changes but one, which, by itself, generates changes.

Education is no longer a privilege of few; it must be extended to everyone. We are still not able to adequately educate a person to be able to live in a modern world. Living in a modern world requires constant learning of new phenomena and of new things; it requires new methods of coping with different situations. At the time of enormous increase in knowledge, a very broadly educated person with a good understanding of global and local issues is needed. The existing pattern of primary and secondary education to be followed by tertiary education.

The best way to advance knowledge is to invest in Research and Development (R&D). Investment in R&D is very profitable to the society. Social return on R&D spending is in the range from 50% to 105%, which is much higher than the average rate of return on private R&D spending 24% (Jones and Williams, 1998). This means that in addition to the profit of the company financing R&D (24%) there is almost twice as much profit to the rest of the society (42% on the average).

For developing countries one must be careful in this estimate. It is important that developing countries not only invest in R&D, but also in education and other infrastructure of a free economic system that are necessary for the full benefits from knowledge development. This is important for small countries; they are not rich enough to develop many promising technologies. Therefore, they must focus to a small number of carefully selected technologies. However, small number of technologies increases the risk of failure. Because of the greater risk small countries are inclined to investment less in R&D. International co-operation can spread the risk and create a critical mass of R&D spending that can support several promising technologies, thus increasing chances for success.

IISDP aims to take forward the development knowledge and information work initiated by the sustainable development networking programme, with a focus on IUCN's programmes and projects. In this context, it will be working to provide access to value added information and knowledge through the optimal use of the Information and Communication

# CHAPTER 5

## FORMULATION OF THE STRATEGY FOR THE INSTITUTE

### 5.1 VISION, MISSION AND VALUES

The **vision** of international institute is to promoting education, better living for all – sustainability, improving the quality of life every human being. It will include a networked knowledge clearinghouse with an Internet homepage. Its main activities will be:

- Offering services to the Government institutions in harmonization of the legislation with the world's standards on a commercial basis; and
- Web page providing free information on sustainable development and knowledge via distance learning web based courses, which will cover specific knowledge and skills, needed for sustainable development.

The network will also raise public awareness and stimulate national dialogue on sustainable development by periodic reports to the press and television program. It will also stimulate international co-operation to improve effectiveness of the national research programs in the participating countries, popularize science as an effective tool for sustainable development, and improve the quality of life. We will build the market for sustainable development knowledge by proving to our customers that sustainable development is good business and will help them to significantly improve the quality of life.

IISDP is a non-profit organization. Our vision is to bring those who have the financial resources and the desire together with those who may not have the financial resources, but possess the intellectual capacity to promote education.

The **mission** of international institute is to develop education and research network for collaboration in order to catalyze the transition towards sustainable development, which is defined as the enhancement of well-being, peace and social justice both within and across the generations. For this purpose IISDP will support its employees with career development plans, help its clients to discover how sustainability can also mean bigger profits (Post, 1999), and empower local communities for active participation in sustainable development efforts, Mission of the IISDP will be achieved via contributing to the well-being of society

by providing high quality education and research to the units of governance, educational, cultural, social, and economic institutions of the country. Therefore IISDP will develop world class research and intertwine its research capacities with educational programmes.

Because education is the passport to accelerated economic growth, particularly in the current context of a rapidly globalising world economy. Only those societies that have acquired relevant knowledge and skills can compete successfully in the global markets. The contribution of education to economic growth is not a matter of controversy. However, education without adequate, remunerative and productive jobs rarely leads to sustainable economic growth.

In order to achieve its mission IISDP will follow its core values:

- Desire for continual improvement;
- Quality education;
- Effective interpersonal relationships; and
- Respect for differences.

**SWOT ANALYSIS**

In Pakistan, there are thousands of NGOs, hundreds of which are involved in environmental issues. Others are involved in the promotion of education, public awareness raising and the empowerment of women. In the Table 2 below an analysis of the Strengths, Weakness, Opportunities and Treats (SWOT) is presented. SWOT analysis is a very important starting point for the development of the IISDP strategy.

Table 2 SWOT analysis

| STRENGHTS | WEAKNESS |
|---|---|
| Ability to communicate at all levels in society, government, internationals<br><br>Use of appropriate technologies, streamlined services, minimal overheads<br><br>Flexible type of organization<br><br>High identification of local needs, build upon existing resource, and transfer technologies developed elsewhere | Lack of basic infrastructure<br><br>Dependence on outside financial resources and therefore limited self-sustainability<br><br>Lack of awareness<br><br>Low literacy and skill rates |
| OPPORTUNITIES | THREATS |
| Increasing attention from the side of governmental agencies<br><br>Special tax benefits<br><br>Eligibility for foreign financing<br><br>Strengthening position in the public sphere | Possible changes in legal framework for NGO's which are uncertain and risky<br><br>Lack of coordination<br><br>Competition for funding |

As the SWOT analysis (Table 2) shows, the NGO's position in the public sphere is strengthening and they are getting more attention from the side of governmental bodies. Most of the foreign financing organizations are donating NGO's. A non-governmental organization will have also the freedom to experiment with new approaches, to take more risk (as it is not profit oriented), to communicate at all possible levels. It is also a very flexible type organization, susceptible to creativity and new ideas. The international financing organizations also have special preferences to NGO's for performing projects. This will allow the institute to progress and gain experience during the first year of its establishment, without being constrained by pursuing a profit.

## 5.2 ROLE OF THE INSTITUTE IN KNOWLEDGE DISTRIBUTION

Education for sustainable development will aim to demonstrate the following features:

- Promotion and improvement of basic education;
- To disseminate knowledge on sustainable development with progress reports for public and leaders of economic development thus stimulating national dialogue on sustainable development;
- Critical thinking and problem solving: leading to confidence in addressing the dilemmas and challenges of sustainable development;
- Reorienting existing education programs at all levels to address sustainable development;
- Multi-method: word, art, drama, debate, experience, and similar; different pedagogies which model the process. Teaching that is geared simply to passing on knowledge should be recast into an approach in which teachers and learners work together to acquire knowledge and play a role in shaping the environment of their educational institutions;
- Developing public awareness and understanding of sustainability; and
- Providing training.

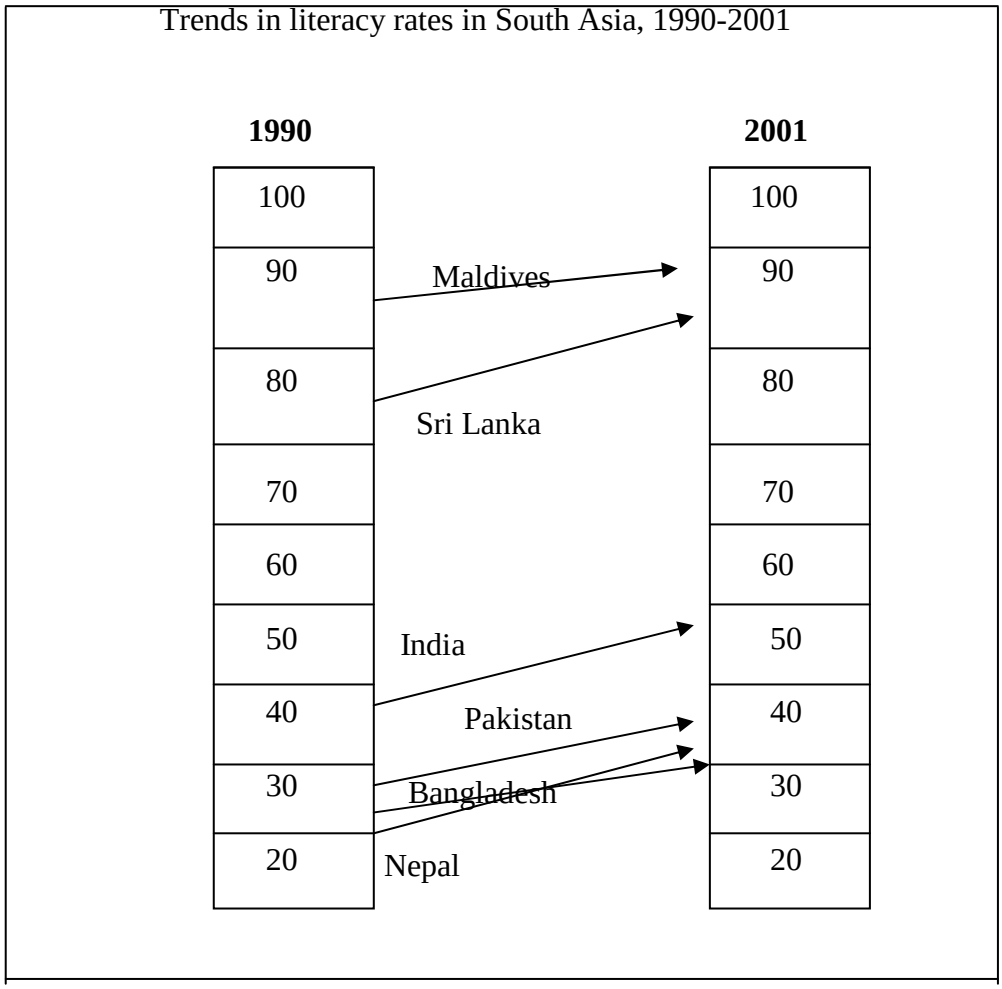
The SWOT analysis (Table 2) shows that in Pakistan, large population (especially women and children) still remains uneducated about the sources of population and the environmental health risks associated with different types of pollution. Thus, there is a need to expand the knowledge for sustainable development. This institute will assist in launching large-scale public awareness.

As documented in the Human Development in South Asia report of 1998, the current educational system in South Asia is characterized by low enrolment among poor vulnerable groups, high and repetition rates, and very poor quality of education. These problems are prevalent at all levels, but are most critical at the primary level.

Comparing the performance of South Asia with other developing regions, following table 3 shows that in reaching the quantitative goals of enrolment, since the performance of individual countries vary within the region, it provides data on literacy rates by country. Pakistan among this group of shows its poor performance at both primary and secondary levels. Pakistan's poor performance underscores this Center’s consist argument that education is not about money, but is about political commitment and participation of people

in the decision-making process. Pakistan is far behind other South Asian countries on both counts.

Table 3 Literacy rates in South Asia, 1990-2001




Source: UNDP 2003.

Table 4 Literacy and enrolment in South Asia, 1990-2001

| | Adult literacy | | Youth literacy rate | | Primary enrolment rate |
|---|---|---|---|---|---|
| | 1990 | 2001 | 1990 | 2001 | 2000-2001 |
| Bangladesh | 34.2 | 40.6 | 42.0 | 49.1 | 89.0 |
| India | 49.3 | 58.0 | 64.3 | 3.3 | ….. |
| Nepal | 30.4 | 42.9 | 46.6 | 61.6 | 72.0 |
| Pakistan | 35.4 | 44.0 | 47.4 | 57.8 | 66.0 |
| Sri Lanka | 88.7 | 91.9 | 95.1 | 96.9 | 97.0 |

Source: UNDP 2003

### 5.3 THE INSTITUTE AS A KNOWLEDGE BASED LEARNING ORGANIZATION

Learning for sustainability should become much more important. The term learning sustainability also makes it clear that new forms, learning locations and fields of action are required. It is not only schools, kindergartens or specially set up educational establishments that are suitable as learning locations, but also the home and the workplace as a learning organization (Darling, 1996). The institute has an opportunity to become a new type of organization – a learning organization (Drucker, 1988; Clegg, 1999).

Sustainable development requires diverse and life-long learning process that is concerned not only with acquiring abstract knowledge, but also the continuous building reinforcement of wide-ranging sustainability skills. Learning for sustainability must encourage the acquisition of new sustainable (e.g. resource-saving) lifestyles (consumption, mobility, living preferences, etc.) for all groups in society in their different living and working situations beyond the narrower educational landscape (school, basic and advanced training).

It is well known that environmental problems are not problems of the environment, but problems of people in dealing with nature, resources and environmental pollution. This means that ultimately they are the consequence of maladapted, non-sustainable behavior or

action. The path to sustainability consequently means changing and correcting behavior and adapting it to new findings. Specifically, this means: forgetting detrimental behavior and learning more compatible, sustainable, viable behavior.

The following must be remembered:
Sustainable and non-sustainable behavior patterns are not innate; they are learned and acquired from a young age and are constantly reinforced culturally and socially. Up-bringing, education and learning are very important here, with as much attention having to be paid to relearning as to new learning.

Action takes place at various levels of individual and collective action (individual, family, company, school, village, community (Lachman, 1997), local club, as well as region, nation and international community). Learning process must therefore be shaped in as many different ways.

Environmentally relevant and sustainable actions have special features that make learning and acquiring environmental and sustainability skills more difficult. Actions can have direct impacts that can be perceived by all immediately. In the case of environmentally relevant, and thus sustainable, action, the causal link and the time and geographic effect can often not be perceived by the individual person – or only with a delay.

Non-sustainable patterns of behavior can repeatedly be seen in specific spheres of life (at home, at work, in shops, in leisure time). Learning for sustainable patterns of behavior must therefore also take place at many different learning locations.

Non-sustainable patterns of behavior are executed by specific players in their various roles and positions (children, adolescents, elderly people, men and women, garden owners, land users, employers, politicians, teachers, etc.). The variety of groups, lifestyles and roles must therefore also be given appropriate consideration.

Whereas we once assumed that a general environmental awareness would have an impact on all areas of life and all actions, research these days tries to make a distinction between fields of action where non-sustainable behavior is demonstrated. Because it is far from proven that

someone who successfully saves water also buys organic food, dispenses with a car or actively resists the destruction of nature.

In all of the efforts for "raising awareness" for nature conservation or learning for sustainability, it must always be made clear that terms such as "environment", "nature" as well as "sustainability" and "sustainable development" are constructions of society that it develops, negotiates, questions or confirms in ever new communication processes in society and in scientific and political debates.

According to Garvin, there are three primary routs to corporate learning (Garvin, 2000):

1. Intelligence gathering;
2. Experience; and
3. Experimentation.

According to Gary Hamel (Hamel, 2000) new global economy requires different skills and attitudes for success than "age of progress", which was born in Renaissance, reached maturity in the industrial age and died at the dawn of 21st century. This age of progress was initiated by the unshakable belief that progress was not only possible, but also inevitable. During this time, life spans increased as well as the material standard of living. Knowledge grew as the discipline of reason and deductive method of science was applied everywhere. Hamel describes as the key to thriving in today's world of business: A deeply embedded capability for continual, radical innovation. Hamel calls for revolutionary activists to shake the foundations of their companies' beliefs and move from a linear age of getting better, smarter, and faster, to a nonlinear age of becoming different. While in the past incremental improvements in products and services were accepted as good enough, Hamel shows that true innovation is re-creation of an entire business concept. In this work, we propose to use the modern concept of disseminating knowledge with in the international institute. Traditionally, knowledge was either provided in terms of formal education or in terms of buying licenses, patents or other forms of knowledge protection. In modern knowledge based organizations, knowledge not only exists in their databases and formal knowledge, but also distributed as skills, abilities and experience of the employees and customers. Here customers are not people who buy your products, but they also contribute significantly to the knowledge of your company.

The IISDP will be build as a learning organization based on knowledge and values. Strategic intent is to build an outstanding provider of knowledge and experience for sustainable development. To reach this intent we focus on the core competency of the project group, that is excellence in R&D of the world's leading research experts in science and technology for sustainable development.

### 5.4 PEOPLE AND SKILLS

Based on the above analysis the IISDP will need people with core competencies in particular the following areas:

- training, education and transfer of knowledge,
- communication with both the general public and decision makers, as well as facilitation skills, and
- World class researchers.

Since it is very important to get the right people for the right jobs, the IISDP will focus on:

- training and development of human resources,
- career planning for employees and other stakeholders,
- recruiting and hiring,
- coaching for employees and other participants, and
- evaluation of the skills and attitudes.

Technical and vocational skills can be developed only on a strong foundation of basic skills such as reading, writing, calculates, and a problem-solving attitude. These are acquired from a sound system of primary and secondary education. The most important vocational skills that today's workers needs are the basic skills of literacy and calculus at a functionally useful level. Primary education is important as the base on which a productive technical education system is built.

As technology changes, the skills required to operate it also change. Innovation is an important ingredient of technological progress. Unless one is creative and innovative, it will be difficult to survive in this new world. Therefore, today's training systems have to train people not only in suitable skills but also in being creative.

Quality of training is important because it directly affects the quality of products made. What is required is better quality education and training for the trainers, and continuous monitoring

and evaluation to improving the techniques. Trainers should be well educated as it is difficult to see how low educated trainers can impart skills of a knowledge-based economy to trainees.

## 5.5 ORGANIZATIONAL STRUCTURE

Following the SWOT analysis (Table 2) the institute will be organized as an independent non-profit knowledge organization (Cowey, 1999) with main goals linking Pakistan Educational Research Network (PERN) and Sustainable Development Policy Institute (SDPI):

- Promotion and improvement of basic education;
- Providing training; and
- Developing public awareness and understanding of sustainability.

The organization of international institute as a dynamic networked process based organization dramatically decreases administrative costs of running. Most important core processes will be organized by the IISDP, while other services will be outsourced to the other selected institutions.

In particular, the IISDP goals will be achieved through the process based structure, proposed by Michael Hammer (Hammer, 1997). Each pool of experts from a given area (e.g. basic education, technical education,) is organized by its co-coordinator, who is responsible for personal and professional growth of his members. Processes are organized by the process leaders who ask co-coordinators for specific personnel. Here process leaders are responsible for the results of the processes, and pool co-coordinators are responsible for the performance of the members from their pool.

At the IISDP, leadership will be achieved through its core structure, which will consist of:

- Director;
- Steering Committee; and
- Science Council.

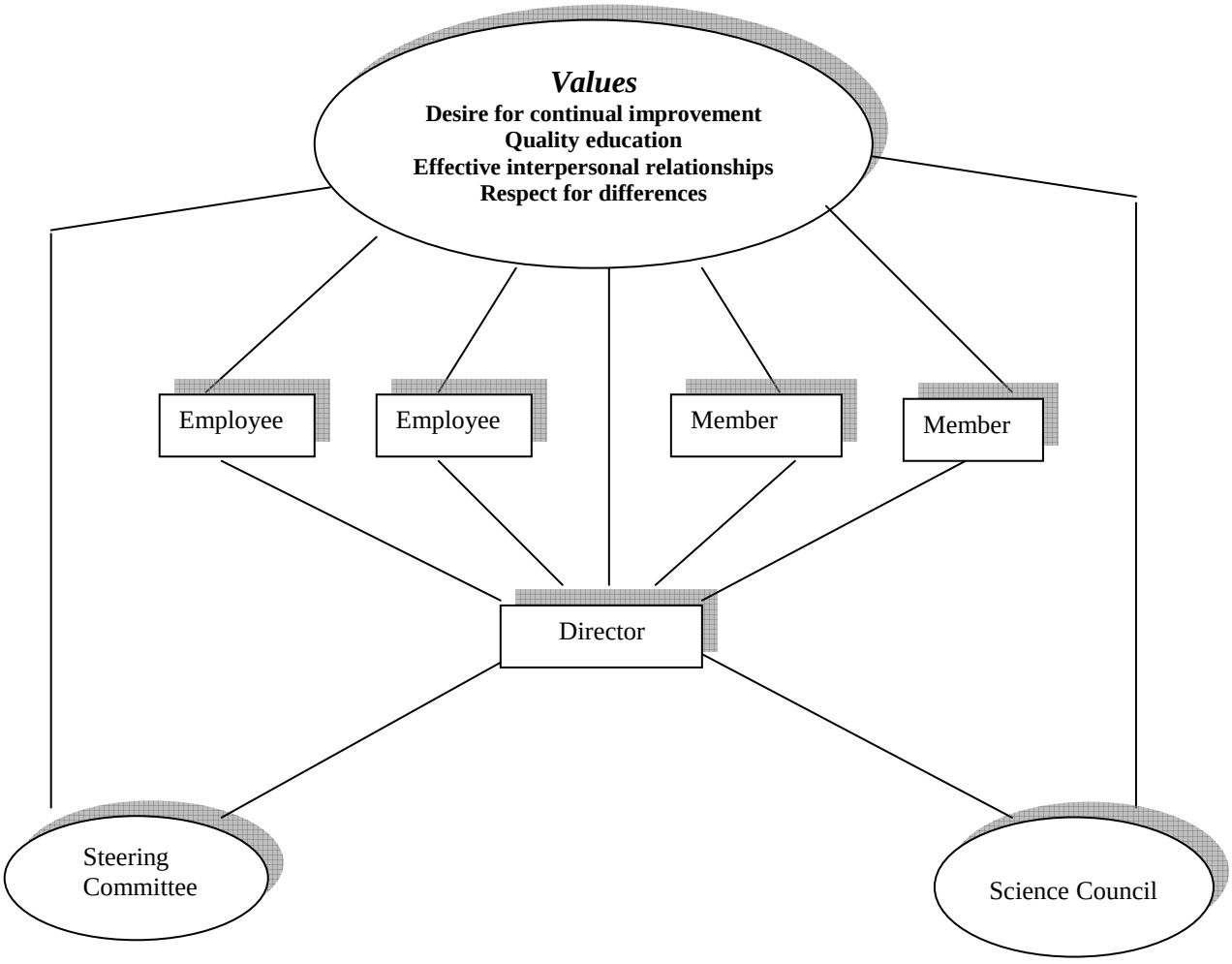
Here we propose a three layer inverted pyramid structure where employees are in the middle of the pyramid. They are ruled by the IISDP values at the top, and the Director's role is to

serve the employees by assuring a creative environment where the vision and mission of the IISDP can become a reality.

Organizational structure of the IISDP is based on its values, which are directing behavior of employees. The Director at the bottom of the structure serves employees and institute members. Director's office is an equal partner in the network, however with additional responsibility to lead the network in the direction of its values and to assure smooth communication among the members, which is needed for the achievement of the network's objectives. This additional responsibility is the reason the Director is shown at a lower level than other employees are. The number of institute members is not limited. More members can be added to the graph without changing the basic structure. The Director is counseled by the Science Council. Steering Committee makes decisions about the direction into which the IISDP should move.

These two organs primarily help the Director fulfill his responsibilities, and are thus shown at a level below the Director. Of course, these organs must have their direct connections also to other members and employees of the network. However, these connections are not shown in the graphs, because they would make the graph too crowded and difficult to understand (figure 5).

Figure 5. Organizational Structure




**Terms of reference of the IISDP**

The international institute will be located in Karachi, Pakistan. It will be run by a Director, who will report to a Steering Committee. The Steering Committee will be composed of the following members:

- The Minister of Finance of the Government, or a person authorized by him;
- The Minister of Environment of the Government, or a person authorized by him;
- The Minister of Education of the Government, or a person so authorized by him; and
- The Director-General of PERN/SDPI, or a person so authorized by him.

In turn, the Steering Committee will report to the Director-General of PERN and SDPI through the Environmental Management Branch within the Sector Support and environmental sustainability Division at SDPI Headquarters.

The Director and Steering Committee will be assisted by Science Council, whose membership will be composed of:

- Representatives of the founding institutions;
- Representatives of the financial community; and
- Representative of the educational community.

The members of the Science Council and the Director of IISDP will be chosen by the Director-General of Sustainable Development Policy Institute (SDPI) and PERN, taking into consideration the proposals of the Steering Committee.

Furthermore, through the Steering Committee the institute will maintain co-operative arrangements with the responsible authorities and institutions of Pakistan and other countries. The Science Council will make recommendations on the annual work programme.

PERN/SDPI Headquarters will have an overall supervisory role, in particular to ensure that the institute co-ordinates its activities with the PERN/SDPI network and other units and projects of SDPI concerned with sustainable development.

Small and medium sized enterprises, national and city Government institutions, national and international Non-Governmental Organizations (NGO) involved in sustainable development capacity building and knowledge dissemination will also be involved in the work of IISDP in an appropriate manner, which will be defined in a participatory process. This process will be organized by the IISDP Director, and all relevant stakeholders in Pakistan and other countries will be included.

**Staffing**

The institute will employ a director and an administrative assistant. National experts will be hired as needed.

**Reporting**

The Director of the institute will submit to the Steering Committee an annual report as well as other information as specified in relevant SDPI directives. After review of the reports, the Steering Committee will submit them to SDPI.

**Business processes**

The following business processes will be developed by the institute in the first year of its activity:

- Capacity building;
- Awareness raising;
- Education, to increase the institutional value and recognition of education and foster a supportive attitude toward education;
- Establish self-sustaining teacher training program, e.g. faculty learning communities;
- Plan and coordinate workshops and seminars with ongoing follow-up;
- Research co-ordination;
- Project administration;
- Encourage and assist in educational research;
- A series of educational research rounds; and
- Seminars on research method in education.

## 5.6 PROJECT STRUCTURE

Process based structure can be implemented through projects. The major projects are briefly described.

**IISDP Projects will focus on the following areas:**

- Education and knowledge; and
- R&D co-ordination.

In order to stay competitive a special project aiming at continuous improvement of the IISDP will run along with the projected. This project will report regularly to the Director and Steering committee with suggestions for changes and implementation of new projects, which are needed in the global economy with the accelerated rate of changes.

**Education and knowledge**

Education, knowledge and training will be provided by the IISDP. The country need to go beyond primary education to stress on better availability of secondary education and technical training we aspire:

- To promote technology oriented creative education in its network of schools, throughout Pakistan, ultimately bringing about a social change for the better;

- To provide a platform for an organized effort to achieve practically 100% literacy and participation rate in Pakistan;
- On-line learning courses from specific fields relevant to sustainable development (Slingsby and Barker, 2003) and other forms of knowledge provided by the IISDP web page.; and
- Degree and non-degree programs provided in co-operation with educational institutions.

Web page and its courses will be developed from the IISDP revenues; education emphasizes a holistic, interdisciplinary approach to developing the knowledge and skills needed for a sustainable future as well as changes in values, behavior, and lifestyles. Pakistan urgently needs to align its education system and curriculum to the dictates of sustainable development.

The objectives of education on sustainable development are to help individuals and groups within society to:

- Become aware of and sensitive to the total environment and its allied problems;
- Acquire basic knowledge about the environment, its associated problems;
- Learn skills for anticipating, avoiding and solving environmental problems;
- Develop the ability to contribute to and evaluate environmental policies, measures and programs; and
- Develop a sense of responsibility and urgency leading to a direct participation in appropriate action.

**R & D co-ordination**

Research programs from the following fields will be developed:

1. Environment:

- sustainable industrial development,
- trade and environment,
- climate change, and
- hazardous waste management.

2. Human development: Social sector:

- education,
- gender,

- community development, and
- poverty elimination.

New research programs can be added at the annual institute Steering Committee meeting. Project that help Governments to harmonize their legislation in accordance with the international law, will also be accepted on a commercial basis. Revenue from these projects will help to cover the administrative costs, which the institute will have the preparation of the project proposals and their co-ordination.

Leading research institutes will be prepared to measure local indicators of sustainable development and to communicate them to the public thus starting a national dialogue.
Most important initial outcomes of the IISDP are shown in table 5.

**Table 5. Initial outcomes of the IISDP**

| |
|---|
| o Making the institute in Pakistan operational, the institute will employ a director, an administrative assistant and a computer expert as a national professional officer, hire 5 national part time experts and 2 international part time experts. |
| o Identification of educational needs in Pakistan and formulation of pilot projects in selected branches. |
| o Establishment of educational programme. |
| o Research programme: identification of priority research areas and implementation of the work programmes in these areas of sustainable development. |
| o Assure sustainable sources of financing the IISDP from its activities. |

## 5.7 IMPLEMENTATION PLAN AND FINANCIAL INFORMATION

IISDP has to have sources for financing of its activities. These sources can be earned in exchange for providing a service, execution of a project, accomplishment of goal. The

institute will experience different types of financing while operating. During most of the time, this will be a combination of sources of financing. In the beginning, when the institute will be newly established and its activities will be oriented towards awareness raising, organization of seminars, training and promotion of sustainable development concept, most of the funds will likely come from institutional customers (authorities on national and regional level, international programmes). Initial funding is expected to be covered by the Ministries of Finance and Environment, and supplemented by the international agencies as well as donations from private sector.

IISDP project proposals for funding have been submitted to Pakistan Educational Research Network (PERN), Sustainable Development Policy Institute (SDPI). It is expected that PERN and SDPI will cover the cost of educational research program and awareness raising program. PERN and SDPI will provide funding for the administrative support. IISDP will offer its services to the government agencies, which are responsible for the harmonization of the legislation.

Efforts for sustainable development must envisage action at several levels of decision-making and be based on informed participation of all the stakeholders. Get leading R & D institute in co-operation with important NGO's, and other important stakeholders to define the necessary local indicators of sustainable development.

Take the volunteers, existing staff and associated scientific institutions of the IISDP and selected NGO's and help them to communicate sustainable development concepts to the public via regular television presentations, publishing of indicators in other media and the internet and workshops. The ultimate outcome is to educate people to make sustainable decision in their personal and professional life, which will support sustainable development of Pakistan.

In this context on one hand, the public will be addressed through mass media, and on the other hand, selected groups of important stakeholders for sustainable development will be addresses with focused activities. These groups includes but are not limited to industrial organizations and private sector, governmental institution and municipalities, and NGO's, schools, universities and other educational institutions, women organizations and trade unions.

Under the authority, the implementation unit will provide the technical, logistical and administrative support and all implementing agents in carrying out the planned tasks. In addition, it will be responsible for:

- Reporting on programme progress and impact;
- Identifying gaps and bottlenecks;
- Brokering donors support;
- Mobilizing and managing programme resources;
- Monitoring and evaluating programme performance and impact;
- Overall budget management; and
- Reviewing and validating the continued relevance of the programme document components and approach etc.

The purpose is to ensure the effectiveness of the activities being undertaken; efficiency with which they are being implemented; the continued relevance of the proposed actions in an evolving environment to assess the impact and determine the sustainability of the outputs; and to propose corrective course of actions whenever necessary. The implementation unit will serve as secretariat to the programme steering committee to facilitate its operations and functions.

# CHAPTER 6
# CONCLUSIONS

The aim of the present study has been to understand the concept of sustainable development and its relevance to Pakistan. In this course, an attempt has been made to develop a feasibility study for the establishment of an International Institute for Sustainable Development in Pakistan (IISDP). It is expected that it will have a major contribution in the process of transposing the sustainable development concept into practice.

Despite vast amounts of energy and resources devoted to education and a widespread belief in education as the key to resolution of our problems, we must provide a better education system. Although several efforts have been made to combat illiteracy, it remains a problem in Pakistan today. Our efforts will be similar to organizations working towards promoting educations, it is widely accepted that education is one of the most crucial factors for development, especially over the long-term.

Vision of the IISDP to grow into international network and contribute to improving the quality of life for every human being, will provide world's best knowledge, technologies and experience for sustainable development to citizens, private and public organizations. Universal primary education acceptable quality is the most important contribution that can be made for preparing young people for the world of work.

The priority is the urgent need to move the education goals to local, national, and international action. It is somewhat clear that all parties see the importance of education for sustainable development. The capacity for international discourse to impact the global community has helped education for sustainable development to emerge around the world. The many structures of collaboration and partnership, from UN agencies working with NGOs to enact the educational goals to local education groups taking the initiative to include education for sustainable development in their local efforts, indicate the power of international discourse. It allows the international community to act with direction, focus and clarity.

Empowering individuals and local governments to act on their beliefs provides the momentum to move from words to actions. By contrast, the absence of consciousness-

raising and empowerment as strategic actions has perpetuated ignorance and generated paralysis about the urgency of re-orienting education towards sustainable development, increasing public awareness about the inter-relatedness of all human activities and the environment and providing job-training opportunities for stronger links between employment needs and environmental concerns.

Education in relation to sustainable development remains fragmented. There is an urgent need for a program that embraces all approaches incorporating environment and development education as well as health, sustainable agriculture, peace and more. The education community, which is a much broader group than the formal education sector. It includes teachers, curriculum developers, administrators, support staff, industrial trainers, countryside rangers, environmental health and planning officers, education officers with NGOs, community educators, youth representatives, youth leaders, parent association members, students and pupils.

Realizing that global sustainable human development is possible only with effective mobilization of R & D potentials and innovative approach in dissemination of scientific and technological knowledge and experience we propose to establish a new international institute. The educational issue is very important in this context.

Mission of the institute will be to develop, collect and disseminate knowledge and experience for sustainable development. The ultimate vision is to build an effective networked organization that will benefit the founding country by:

- Capacity building for sustainable development, including degree and non-degree educational programs;
- Transfer of knowledge and experience for sustainable development to private and public institutions and NGOs;
- Co-ordination of basic and applied research for sustainable development; and
- Preparation and co-ordination of international research and development projects.

The institute will be established as a non-governmental organization, with the facilities conferred by the NGO status, the eligibility for participating in projects/programmes financed by international, national funds or organizations, special tax benefits support from

the civil society, the institute will be able to rise, evolve, promote itself and create, expand a market for its present and future services.

The research and education programs will be performed in close co-operation with leading national research and education institutions as well as NGOs and foundations from other countries.

The model of self-organized criticality has also been discussed as it offers a possibility to help build an effective and efficient institute for dissemination of knowledge on sustainable development. The theoretical discussion in this thesis implies that this model can be implemented in a developing country and establishment of the IISDP will demonstrate to which extent this model is applicable in Pakistan.

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