NATURAL DISASTER PREPAREDNESS, ENVIRONMENTAL DEGRADATION AND SUSTAINABLE DEVELOPMENT IN KENYA

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ABSTRACT Lack of disaster preparedness has remained one of Kenya's enduring development challenges for decades. The *El Nino* rains which flooded most parts of the country between 1997 and 1998, and the prolonged drought during the year 2000 have both led to massive displacement of populations, loss of lives, destruction of property, water and energy crises, and the collapse of vital infrastructure.

Most of the disaster response initiatives in Kenya have tended to be adhoc, uncoordinated and short-term measures, mainly in the form of emergency relief services to the worst affected areas. However, disaster and environmental management ought to integrate disaster preparedness measures and recovery operations into ongoing development programs for sustainability.

Key Words: Disaster preparedness; Environmental degradation; Sustainable development; Capacity building; Community participation; Targeting.

INTRODUCTION

Whatever else it may be, a disaster of any kind is a development issue. The occurrence and recurrence of floods, droughts, landslides, lightning and other natural disasters, which have played havoc in Kenya and continue to do so in the risk-prone parts of the country, have been the subject of great concern both within and outside the country. There are several reasons for the concern. First, natural disasters in Kenya have come to be closely associated with unprecedented deprivation and suffering of the most vulnerable population groups, especially those living in fragile ecosystems. Secondly, some natural disasters like droughts, floods and landslides have contributed to severe environmental degradation in both urban and rural areas of Kenya, and threatened lives and livelihoods on a vast scale. A third reason to which attention has recently been focused is the apparent lack of recognition of the interrelationship between lack of disaster preparedness, unsustainable production, and consumption patterns. What also seem not to have been fully acknowledged, at least from the point of view of past and present interventions, is first, the fact that environmental degradation is both a cause and a consequence of poverty and secondly, that emergency relief is not the answer to disaster. Relief, by its very nature, is a short-term mitigation measure. It also has a tendency to exacerbate vulnerability to crises particularly if efforts are not made towards a speedy rehabilitation of the affected people, infrastructure and sectors as part of a recovery process to normalcy

and sustainable development.

If appearance is not mistaken for essence, then the extensive damage already caused by the torrential *El Nino* rains which flooded the country between October 1997 and early 1998, and led to environmental, food and health crises, are poignant signals that the capacity to predict, prepare for, mitigate and manage natural disasters on a sustainable basis is severely limited in Kenya at all levels. The devastation from the floods and landslides in many parts of the country in terms of displaced populations, loss of lives, destruction of property and the collapse of vital infrastructure clearly reflect a definite lack of disaster preparedness nationwide.

While there is an emerging consensus on the need for sustainability as an enduring means to responsible well-being, which recognizes obligations to the present and future generations and to their quality of life, the specifics of how to achieve this goal vary widely under conditions of accelerating change. At a general level, however, the key to sustainability is a preventive and participatory development approach which focuses on capacity development, seeks to reduce poverty, recognizes the diverse cultures and conditions of people's lives and work, and addresses the crucial link between disasters, environment and development. A major challenge for all interventions is to translate development policies and principles into programmes, projects and other initiatives, which can help secure an overarching goal of sustainable well-being for all. In the discussion that follows, the primary concerns are to explore the linkages between the three issues of disaster preparedness, environmental degradation and sustainable development; call attention to some of the challenges facing various actors, and offer some insights.

DISASTER PREPAREDNESS

The ability to anticipate disasters before they occur and to respond to them expeditiously and effectively in a well coordinated manner requires, among other things, the development of an efficient early warning system with state-of-the-art capabilities for early warning system preventive action. Disaster preparedness is a concept that has been used by many development professionals and practitioners from the biophysical and social sciences in diverse but technically precise ways. Although this discussion omits the many conceptual details of the term, the issue of preparedness is rooted in the question of what capacity exists in the country as a whole to effectively deal with natural and human-made calamities. The capacity question focuses on all aspects of the emergency management system at national and grassroot levels, and also includes an assessment of the political, cultural, social, economic and environmental factors which influence vulnerability to disasters. Disaster preparedness is thus required at all levels. According to the Kenya Government's draft proposal on National Disaster Management Programme, disaster preparedness is viewed as one of the disaster management strategies which involves the operation of an early warning system and consists of timely activities to minimize the effects of a catastrophe (Republic of Kenya, 1996a; 1997). Disaster preparedness is part of a mitigation measure and it lies along a continuum of other disaster management activities which range from relief and rehabilitation to recovery and reconstruction.

In actual practice, the level of preparedness and the capability to reduce vulnerability to disaster largely depends on the developmental stage of a country or a community and the balance between the strengths and imperfections in the functioning of its sectors, structures and institutions. The level of disaster preparedness depends on the existing capabilities at all levels. One of the requirements for disaster preparedness is, for instance, the establishment or improvement of monitoring and early warning systems that can ensure prompt and adequate preparation and response as part of a preventive development strategy.

Enhanced capacity at the Kenya Meteorological Department and the Department of Resource Surveys and Remote Sensing (DRSRS), together with the involvement of private sector institutions in monitoring and forecasting changes in weather patterns and setting up floods early warning systems could, for example, possibly lead to some useful preventive measures. Similarly, the Department of Mines and Geology should be able to carry out studies and establish an early warning information system which should, for example, show all the areas in Kenya which are prone to landslides so that they are not used as sites for heavy settlements, roads, and railway. However, what ought to be done and how it is actually done is sensitive to a variety of underlying conditions ranging from the levels of environmental awareness and disaster preparedness to the wider issues of poverty and management of the development process (UNDP, 1997).

Preventive strategies can be made more effective if the capacity and the will are there, the priorities are right, legal and institutional frameworks are developed, policies are implemented and the planned activities are well coordinated. The Kenyan Government has been criticized, especially in view of the recent droughts, floods and landslides, for lack of preparedness and ad-hoc response. The typical response has been to mobilize substantial resources after the occurrence of a natural disaster rather than to mobilize them before the disaster to prepare and empower people in risk reduction measures. Very often, indecision prior to a disaster is as much a capacity problem as it is a management one. Improvement in governance and the management of the development process in general, and resource management in particular, could facilitate broad participation through public and private partnership and enhance capacities to develop sustainable disaster management strategies.

Although disaster preparedness is an important component of preventive development, its usefulness can only be determined, if the people who are so often affected by natural hazards are sensitized about the potential danger and empowered to respond effectively to contribute to the development of their own communities on a sustained basis. This raises one of the more crucial issues in sustainable development—awareness creation—which is also one of the strategic objectives of the preventive development approach.

Disaster preparedness involves creation of awareness among people living in disaster-prone areas of the impending danger they face and how best to respond in the event of an occurrence. Public education through a broad range of channels may be combined with the richness and validity of indigenous technical knowledge drawn from folk culture to enhance local people's awareness and confidence and to empower them to act when faced with adversity. Heightened awareness provides a basis for increased participation, particularly in promoting community-based early

warning systems. Two examples of how folk knowledge can be used to heighten awareness and develop sustainable early warning systems are, first to observe the way some trees shed their leaves, and secondly, to listen to how some birds sing. These and other techniques are among the few indigenous early warning systems which can serve as signs of imminent drought and famine. They can be used to alert people of an impending famine and to seek ways not to deplete their food reserves. On a regional scale, weather experts have already warned of severe drought and famine after heavy rains, while Kenyan meteorologists predicted a dry spell during the next farming season in March and April 1998.

ENVIRONMENTAL DEGRADATION AS A FORM OF DISASTER

Environmental degradation is a growing source of potential and recurrent disasters, particularly in areas of poverty. The major cause of environmental deterioration is the unsustainable pattern of production and consumption which depletes renewable resources without adequate replacement. Environmental damage may also occur when non-renewable resources are exhausted and no investments are made in their substitutes (Markandya, 1996). Such a pattern often leads to the loss of a productive base needed for sustainable well-being.

A dialectical and dynamic relationship exists between poverty, environmental degradation and vulnerability to disasters. Poverty, population increase and high livestock densities have been a continuing threat to ecological balance and major causes of environmental stress. They have led to ecologically unsustainable uses of natural resources. The depletion of natural resources has contributed to the deteriorating living standards and increased vulnerability to disasters. The problems are linked in a complex network of relationships which do not lend themselves well to simple explanations. Although Kenyans have taken action to combat deforestation by planting millions of trees in the last two decades through various afforestation programmes, the increasing demand of a growing population, together with those of industrial and urban development have prompted unsustainable land and water utilization patterns in recent years with perverse environmental consequences (United Nations, 1993; Cornelius and Cover, 1997).

The World Development Report of 1992 states that the poor are both victims and agents of environmental damage. In other words, environmental degradation is both a cause and a consequence of poverty. Deteriorating living conditions are associated with poor nutrition and health which compel the poor to work harder under worse environmental conditions (INSTRAW, 1992: 6). The whole scenario is a Catch-22 situation (this means a dilemma) where the poor are damned if they try to secure a livelihood from degraded natural resources, and damned if they don't.

Various forms of ecological damage such as soil erosion, sedimentation, desertification, degradation of pastures and the loss of biodiversity have been the outcome of deforestation, fuelwood exhaustion, overgrazing, and excessive cropping on watershed areas. Poor drainage systems and excessive cultivation of watershed areas frequently lead to flooding in lower areas which are usually followed by chronic droughts (Liaison Committee of Development NGOs, 1994). Droughts and desertifi-

cation adversely affect rainfed agriculture, and given the limited technological capabilities of most small-scale crop and livestock producers, droughts have threatened food security in the worst affected parts of the country. This is partly because prolonged dry spells contribute to a decline in the productivity of agricultural land, falling livestock prices, and losses in household incomes. These trends have increased poverty among most vulnerable groups, created a veritable environmental disaster, and led to more intense pressure on degraded pastures and croplands.

In the absence of effective environmental regulations, one of the greatest threats to environmental quality is the unsustainable use of the chemical fertilizers and pesticides to raise the level of agricultural productivity and meet the demand of growing population. The need to intensify cultivation in some marginal lands has encouraged excessive fertilizer and pesticides use and ignored sustainable soil conservation practices. Such unsustainable production patterns have added to environmental costs of chemical run-offs and soil-and-water pollution, which threaten the health and livelihoods of increasing numbers of people in many rural and urban areas.

The goal of environmental sustainability lies in a policy framework and a strategy which integrate environmental and natural resource management concerns into the development process. The focus ought to be on poverty reduction, redistribution of resources, and investments in human capital. Although the main objectives of the national environmental policy in Kenya include the sustainable use of natural resources, integration of environmental conservation activities into existing development programmes, maintenance of ecological balance and disaster mitigation, the actual implementation of the various environmental protection and management programmes remains the responsibility of several ministries and departments (Republic of Kenya, 1994). The implementation arrangement for environmental management programmes is sectoral, piecemeal, and gender-neutral, and some of the activities are uncoordinated and conflicting.

At present there are several laws governing environment and natural resources management issues, but there is no umbrella environmental legislation or a broader policy framework which deals with all environmental concerns (UNDP, 1997). As Ojwang (1996) has pointed out, this lack of a comprehensive and coordinated legal framework for environmental protection and management has undermined efforts to establish and enforce common environmental standards in Kenya both at a national level and also across sectors.

OFFICIAL RESPONSE TO NATURAL DISASTERS

Weather patterns in Kenya have changed drastically since 1991 when the long rains of March-May and the short rains of that year fell far below average in the Arid and Semi-Arid (ASAL) parts of the country. In 1993, and about three years later, the prolonged drought conditions were again experienced in most parts of the country following short rains in 1995 and long rains in 1996. These recurrent droughts led to crop failure, malnutrition and a high prevalence of human and livestock diseases (Republic of Kenya, 1996a). As a result, the lives and livelihoods of

about 1.4 million people in the pastoral districts of North-Eastern, Eastern and Rift Valley Provinces were affected. The Government of Kenya declared drought as a national disaster emergency on 28 January 1997, and appealed for humanitarian assistance from local organizations and the international community (GOK/UNDP, 1997; United Nations, 1997b). The collapse of local security in the worst affected ASAL districts was widely believed to be one of the reasons for the declaration of emergency. The urgency and severity of the drought situation prompted the declaration of an emergency in order to facilitate suspension on import taxes and levies on food and non-food commodities and also to speed up the delivery of supplies and services to the pastoral and farming communities living in the worst affected areas.

The vulnerability of pastoral and farming communities to droughts, floods and famine reflects lack of real improvements in their living conditions, and the poor state of infrastructure which hampered the delivery of supplies and essential services. The heavy flooding from the *El Nino* induced rains destroyed what little was left of the country's infrastructure, particularly the countrywide road network (The Weekly Review, Feb. 27, 1998). The rapid deterioration of the country's infrastructure has mainly been due to poor quality workmanship and lack of regular maintenance.

In the absence of a clear and comprehensive disaster management policy and a coherent institutional framework to implement it, the Kenya government's response to drought and other types of disasters has tended to be ad-hoc and uncoordinated. The Kenyan responses were unsustainable because they dealt with outward symptoms and paid little attention to the underlying causes of the problem. Some examples of short-term Kenyan interventions in disaster situations include the establishment of Famine Relief Committees, appeals to donors and other agencies for humanitarian assistance, mobilization of local resources through harambee (Swahili word which refers to the process of pulling resources together for development purposes under the principles of collective responsibility and mutual support), which includes setting up emergency funds for disaster victims, adjustments in budgetary allocations from one programme to another, and the deployment of technical and professional personnel to repair and rehabilitate the damaged infrastructure (Oduol, 1996; Republic of Kenya, 1996b). Other types of responses include the provision of temporary shelter to displaced families and the procurement and distribution of relief supplies to the affected populations.

TARGETING DISASTER VICTIMS FOR EMERGENCY RELIEF

The government's institutional framework for the delivery of relief supplies and services to areas affected by disaster operates through national and district levels of the Social Dimensions of Development Programme, coordinated by the Office of the President. This programme deals with the wider issue of poverty but, in terms of relief and rehabilitation, it tends to include almost everybody. The capacity to respond quickly and effectively to ameliorate the effects of any disaster partly depends on the resource mobilization strategies used by national and international organizations involved in relief operations, proper coordination and improved tar-

geting.

Until recently, the areas most affected by drought in Kenya were the traditional Arid and Semi-Arid (ASAL) districts of North-Eastern, Eastern, Rift Valley and Coast Provinces. However, some studies have indicated that global climate change, changes in weather patterns, increasing population pressure and the unsustainable use of natural resources have contributed to severe environmental degradation in many other parts of Kenya, and the spread of drought beyond the traditional ASAL areas (Republic of Kenya, 1994; Nyambok, 1996; Ogolla and Mwangi, 1996). These trends have played havoc with pre-existing ecological systems, social arrangements and economic activities. Consequently, an increasing number of lives and livelihoods in Kenya are now threatened as the level of vulnerability to natural disasters continues to rise (Odegi-Awuondo, 1990). During the past two decades, several pockets of drought have emerged in parts of Western Kenya and Central region. Some of these areas were traditionally regarded as medium to high potential agro-ecological zones, but are increasingly becoming semi-arid. A similar problem was experienced during the *El Nino* rains which flooded most of the country between October 1997 and the beginning of 1998, and caused excessive social and economic devastation to hundreds of thousands of people.

Under conditions of continuing economic hardship, environmental degradation and the diminution of ecology, the number of people affected by such disasters has increased considerably, thereby exerting an inexorable pressure on available resources. This calls for clear criteria to determine those families and communities which are most adversely affected by disaster for purposes of proper targeting and planning if any measurable impact is to be made. Children, women, the elderly and the disabled living in drier and flood-prone areas and under impoverished conditions are usually among the worst affected groups. In addition to poor targeting and improper identification of disaster victims in greatest need for assistance, a second source of shortages in relief supplies is a flawed distribution system. Problems with the distribution system tend to create artificial shortages which may have nothing to do with the fact that supplies are inadequate.

Following the 1997 declaration of drought as an emergency and the government's request for humanitarian aid, the United Nations Disaster Management Unit organized a few Drought Assessment Missions to North-Eastern, North Rift Valley, Coastal and Eastern Regions of the country immediately thereafter. The missions assessed the extent of the drought and its impact, determined specific levels of need and worked out the details of effective and efficient response, rehabilitation and reconstruction programmes. As indicated in the reports of the UN Drought Assessment Mission Teams (United Nations, 1997a; 1997b), a distribution system which tends to include almost everybody without giving priority to those with genuine needs is likely to miss targets and create shortages. Perhaps most potently, shortages may also arise from leakages in the distribution system, especially when relief supplies which are intended for free distribution find their way into the market. This exacerbates the plight of families most seriously in need of relief food and other essential supplies. Opinions may differ about the wisdom of some relief operations but as long as emergency relief continues to be seen by some as a short-term mitigation measure, then a proper needs assessment of disaster situations, a more

tightly regulated distribution system, a more careful targeting of disaster victims, and well coordinated responses are needed to make relief operations more effective and efficient. These steps are also necessary to facilitate the integration of relief efforts into long-term development programmes.

FROM RELIEF TO SUSTAINABLE DEVELOPMENT

In the case of floods, landslides, droughts, and famine in Kenya's pastoral and farming communities, a lasting solution lies in sustainable agriculture and the management of natural resources. It is at this critical moment that efforts should be made to implement appropriate preventive development measures such as the conservation of water from the recent torrential rains for future use. It is noteworthy that farmers in marginal agro-ecological zones have been advised to plant drought resistant crops. It is being increasingly recognized that disasters have significant implications across many sectors. For this reason, it is essential for those concerned with implementation of disaster management programmes to adopt an integrated, multi-sectoral approach and also to be familiar with such linkages in a more sustainable fashion for greater efficiency, effectiveness and sustainability. Given that the effects of any disaster, natural or human-made, reflect the level of national vulnerability, and that the implementation of interventions tend to be sectorally based, a major challenge is to build and strengthen a national capacity and evolve policies which will encourage further investments in the management of natural resources, environmental protection, and infrastructural development.

Although the implementation of sectoral policies is primarily the responsibility of specific line ministries, these public institutions should work more closely with their partners in the private sector, local authorities, and non-governmental organizations on the basis of their comparative advantage. Public-private partnerships are essential for resource mobilization and sustainability. In a developing economy which is struggling with widespread poverty, large-scale high-level corruption, and degraded environment, the benefits of partnership are not merely economic, but social and political as well (Thompson, 1996). A participatory framework offers a range of opportunities both in terms of diversity in human and institutional capabilities, and an inclusiveness of the various dimensions of disaster as a development problem without the risk of wasted efforts. The underlying collective goal of such collaborative efforts should be to move a disaster-prone or stricken community from relief to sustainable development through the implementation of integrated multi-sectoral development programmes.

The transition from relief to sustainable development would involve the implementation of several measures focusing, for instance, on poverty reduction, food security, environmental protection and community welfare that target vulnerable pastoral, farming and urban communities (Chambers, 1997). To achieve this, the national capacity ought to be substantially enhanced in order to build systems to sustain the development process over generations.

THE ESSENTIALS OF SUSTAINABLE DEVELOPMENT

Sustainable development has become a global issue and generated a great deal of discussion. As a concept, however, it is still in the process of being more succinctly defined. The World Commission on Environment and Development has defined sustainable development as "development that meets the needs of the present generation without compromising the ability of future generations to meet their own needs" (1987: 27). However, this does not just mean the preservation of the resource base, otherwise people will suffer. The critical point about sustainable development is that the economy's capacity to produce goods and services is not in any way diminished over generations. This embraces the principle that all aspects of nature should be used while preserving its natural biodiversity as well as continued growth through regeneration (United Nations, 1993; 1996). The whole philosophy of sustainability is about long-term perspectives which take a holistic view of the economy and society with emphasis on sustainable production and consumption patterns. This can then provide a basis for more focused sectoral development programmes with the overarching goal of sustainable well-being and livelihoods over generations. The concern of any development initiative should be with improvements in the quality of life of the present generation and sustaining the constituents of well-being for future generations through the principle of intergenerational equity (Chambers, 1997).

Sustainability does not imply the absence of external support. This may not be practicable in a developing economy which has a limited resource base and in a world which is increasingly becoming globalized and interdependent. Also, sustainability does not mean that every resource must be conserved intact, for to do so is to overlook the fact that physical and human capital do require maintenance, replacement and growth due to periodic wear and tear, depreciation and technical obsolescence (UNESCO, 1995; Siamwalla, 1996).

Broadly, the goal of sustainable development can be accomplished by making substantial investments in physical and human capital and national infrastructure, reducing poverty, strengthening human and institutional capacities, enhancing technological capabilities, using local resources, creating an enabling environment for people to think and act innovatively, facilitating community participation and instilling a sense of ownership through bottom-up approaches. Additional requirements for sustainable development are poverty reduction and the establishment of cultural, social, economic and political institutions which are resilient, flexible and diverse. Such institutions can also provide a framework for the implementation of environmentally sensitive development policies. What is also needed to ensure sustainability, especially in disaster management programmes, is a system of feedback between the planners and the local community to allow national forces to listen to local voices because the realities of the two often differ. This could provide all the partners with an opportunity to know what works and what does not, where and why. Although the specific sustainability requirements will vary across generations, cultures and programmes, the principle remains the same in its essential character.

CAPACITY DEVELOPMENT FOR SUSTAINABLE DISASTER MANAGEMENT

In a developing country which is struggling to grow under the ravages of rampant poverty and successive disasters, the national capacity to develop sustainable disaster management programmes is severely limited in Kenya. Pervasive poverty has contributed to accelerating levels of vulnerability to disasters with potentially perverse environmental consequences.

One of the strategies in the promotion of sustainable disaster management is to strengthen national capacity in the government, private sector and NGOs to mitigate the effects of disasters and to integrate recovery operations into ongoing development programmes. However, capacity development is not an end in itself. It is a means to an end, and, in the context of natural disaster preparedness, the end is to prepare for, monitor, mitigate and manage disasters in an effective, efficient and sustainable manner. Thus the enhancement of human capabilities through training, education and increased access to productive resources could lead to the diversification of skills, livelihood strategies and income sources of populations living in disaster-prone areas (Chambers, 1997; Boddington, 1996; GOK/UNDP, 1997). For most communities in the traditional ASAL districts of Kenya, pastoralism or subsistence agriculture can no longer provide a secure livelihood. Part of the explanation is that recurrent droughts, the deterioration of natural resources and ecological damage displace communities from their traditional economic activities. Additional skills and knowledge are therefore important as a fall-back option during disaster periods.

Although the level of resilience is usually varied, people without diverse skills tend to be the most vulnerable groups in the face of natural calamities and environmental stress. This indicates, as Thompson (1996) has pointed out, that investments in human capital has the highest payoff. In this regard, the proposed training of the emergency sub-committees of the district Social Dimensions of Development Committee with support from UNDP and other development agencies is potentially a worthy investment (UNDP, 1997: 15).

Institutional capacity building is another important aspect of sustainable development and disaster management. Since public-private partnership is required for effective disaster management at all levels, institutional capacity building has to go hand in hand with investments in human capital. Institutional capacities may be strengthened by creating new structures, streamlining old ones and providing financial resources for essential facilities, equipment, supplies and personnel, among others. In Kenya, this kind of support can strengthen the coordination role of the social Dimensions of Development Secretariat in the Office of the President so that disaster management activities are linked and synergistically sequenced.

COMMUNITY PARTICIPATION IN DISASTER PREPAREDNESS, MITIGATION AND MANAGEMENT

An invaluable aspect of sustainable development is community participation. Community-based participatory approaches have been adopted to empower commu-

nities to cope with the disasters and also to share with the government and other key players the responsibility of rehabilitating the damaged infrastructure. These approaches have been adopted in some of the drought-stricken areas of North-Eastern Kenya, particularly in the rehabilitation of water resources and livestock sector. For example, following the prolonged drought of 1991/1992, some pastoral communities in the Northeast took responsibility for the operation and maintenance of rural water facilities to sustain their water supply on a cost recovery basis. Another community-based initiative is the establishment of community Animal Health Workers in parts of Isiolo, Garissa and Wajir districts. These animal health workers are trained in both diagnostics and treatment to create a community-based and sustainable animal health care programme which can be readily accessible to pastoralists and reduce excessive livestock losses. This initiative is part of the government's Drought Recovery Programme in some parts of North-Eastern Kenya.

The Department of Relief and Rehabilitation in the Office of the President has been implementing a Drought Management, Preparedness and Intervention Programme (DPIRP) in Turkana, Marsabit, Isiolo and Samburu since 1995 with funds from the Netherlands government (Oduol, 1996). A key component of this programme is the community-based drought early warning system which incorporates indigenous knowledge and techniques of monitoring impending disasters.

As an approach, community participation is potentially an effective resource mobilization strategy. When sufficient capacity is built at the community level with some of the early warning systems institutionalized within government structures at national and grassroot levels, the process could lead to community ownership of disaster management projects. The novelty of a community-based participatory approach lies in the creative interaction between the local people and "outsiders" and the recognition that the former have some capabilities which have been largely unknown to the latter but invaluable to sustainability. (Dey and Westendorf, 1996)

CONCLUSION

The goal of sustainable development is to achieve long-term well-being for all. Environmental degradation and lack of disaster preparedness increase the level of vulnerability to disasters and affect the well-being of present and future generations. This discussion has attempted to illustrate that disasters are development issues, and that an effective disaster management strategy requires a shift in focus from relief and other short-term measures to a long-term, integrated, and multi-sectoral approach which incorporates recovery operations into existing development programmes.

Community participation has been discussed as one of the strategies in sustainable development. There are two main reasons for this assertion. First, in terms of environmental protection and management, community-driven initiatives tend to combine indigenous ecological knowledge and traditional environmental management practices with modern scientific knowledge to develop programmes which can work. Secondly, the effectiveness of community-based participation lies in the recognition that most agro-ecological problems are located at a very local level and

require substantial use of local resources.

Despite the virtues of community participation in disaster and environmental management, the role of local groups and organizations alone is not enough. In a resource-constrained economy, the most effective approach is one that focuses on partnership and combines government, NGOs, community and private sector interventions in a participatory process which recognizes that each partner has an important role to play.

Sound natural resource and environmental managements as well as disaster management all require a holistic, multidisciplinary and inter-sectoral approach, environmental awareness of the dangers of resource depletion, a coherent and comprehensive policy to guide the process, and institutional framework for effective programme implementation. The pursuit of economic prosperity and social equity should go hand in hand with environmental conservation for present and future generations. Ultimately, poverty reduction through job creation, the redistribution of resources and investment in human capital, in ways that integrate environmental and development concerns, remain indispensable requirements for sustainable development and disaster preparedness.

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