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REVIEWING THE SOCIO-ECONOMIC ASPECTS OF DESERTIFICATION AND LAND DEGRADATION*

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Abstract. The paper discusses some of the most important social and economic aspects of the concepts of land degradation and desertification, raising issues related to integrated socio-economic and environmental sustainable development. Although it is widely recognized that social and economic forces, phenomena and policies play a central role in the production and reproduction of desertification problem, most studies analyze and emphasize mainly in the biophysical aspects and dimensions of desertification and land degradation. This article draws attention to crucial socio-economic forces underlying the problem, such as economic policies, institutional organizations, production and market structure, social development, social inequality, poverty and population mobility. Final, the paper raises the question of an integrative policy framework for mitigating and combating the problems of desertification and land degradation.

Keywords: Desertification, Land Degradation, Economic and Social Development, Economic and Social Policy

* This paper it's based on primary findings of a European research program,

1. INTRODUCTION: THE DESERTIFICATION AND LAND DEGRADATION PROBLEM

This paper concerns a preliminary examination of some of the most crucial social and economic aspects of the problems of land degradation and desertification. It is based on primary findings of an international research program, MEDACTION (Policies for Land Use to Combat Desertification) (Iosifides and Korres, 2002). It also aims at opening up a debate about the issue of direct and indirect policies, which influence those problems. This introductory part starts with an attempt to define the desertification problem and phenomenon taking into account all the dimensions (biophysical and socio-economic) which characterize it. Emphasis will be given to the political, social and economic processes, which produce, reproduce and affect desertification, to the human and social causes and consequences and to the implications the phenomenon has on human socio-economic organization and life.

The themes of social and economic organization, social integration, inequality and social policy and their relations to the production and reproduction of land degradation and desertification are discussed further in the next part of the present report, where they intermingle with the theoretical framework of sustainability and sustainable development. Here we briefly relate some of the most crucial socio-economic phenomena and processes to the desertification problem. This relation presents in an integrated way the interplay between underlying factors, driving forces, causes, consequences and implications of the human-nature interaction regarding desertification and land degradation.

Desertification is land degradation in arid, semi-arid and dry sub-humid areas resulting from various factors, including climatic variations and human activities. Desertification affects about one sixth of the world's population, 70/per/cent of all drylands, amounting to 3.6/billion hectares, and one quarter of the total land area of the world. The most obvious impact of desertification, in addition to widespread poverty, is the degradation of 3.3/billion hectares of the total area of rangeland, constituting 73/per/cent of the rangeland with a low potential for human and animal carrying capacity; decline in soil fertility and soil structure on about 47/per/cent of the dryland areas constituting marginal rainfed cropland; and the degradation of irrigated cropland, amounting to 30/per/cent of the dryland areas with a high population density and agricultural potential (UN, Economic and Social Council, 2000).

Another significant item in the current UNCOD definition of desertification listed above is the idea of "land degradation." UNCOD defined land degradation as follows: "Degradation implies reduction of resource potential by one or a combination of processes acting on the land. These processes include water erosion, wind erosion and sedimentation by those agents, long-term reduction in the amount or diversity of natural vegetation, where relevant, and salinization and sodication", (UNEP 1992).

"Desertification" is progressive loss and spatial redistribution of primary productivity and is the dominant process of land degradation of arid and semi-arid landscapes. It is a complex, non-linear phenomenon influenced by physical, ecological, and human systems and processes.

The seriousness of desertification depends on factors which vary from one region, country or year to another. These factors include:

- the severity of the climatic conditions in the period considered (particularly in terms of the annual rainfall);
- population pressure and the standard of living of the people involved;
- the level of the country's development, and the quality of the preventive measures established there.

The population-supporting capacity of the land, based on livestock and crop products, was evaluated for different input levels for the years 1975 and 2000. The results of this evaluation indicate that, taken as a whole in the five regions considered, the area of potential rain-fed cropland is liable to be reduced by 18 %. Rain-fed crop production potential could be reduced by 29 %. Currently productive land could be degraded to marginally productive land. The overall loss in production from rain-fed crops and grassland over the five regions is estimated at 19 %. The situation is particularly severe in desert-prone regions of Africa, largely dependent on rain-fed production and in South America (FAO, 1997). Table 1 indicates the areas affected by desertification.

Degree of Desertification Risk	South America		North Central America		Africa		Asia		Australia		Europe	
	Km ²	%	km ²	%	Km ²	%	km ²	%	km ²	%	km ²	%
Very high	414195	2.3	163191	0.7	1725165	5.7	790312	1.8	307732	4.0	48957	0.
High	1261235	7.1	1312524	5.4	4910503	16.2	7253464	16.5	1722056	22.4	-	-
Moderate	1602383	9.0	2854293	11.8	3740966	12.3	5607563	12.8	3712213	48.3	189612	1.8
Extreme desert	200492	1.1	32638	0.16	177956	20.4	1580624	3.6	-	-	-	-

Source: FAO and UNESCO, 2003 United Nations Environment Programme /DEWA/GRID-Geneva

Table 1. Area of regions affected by or in danger of desertification

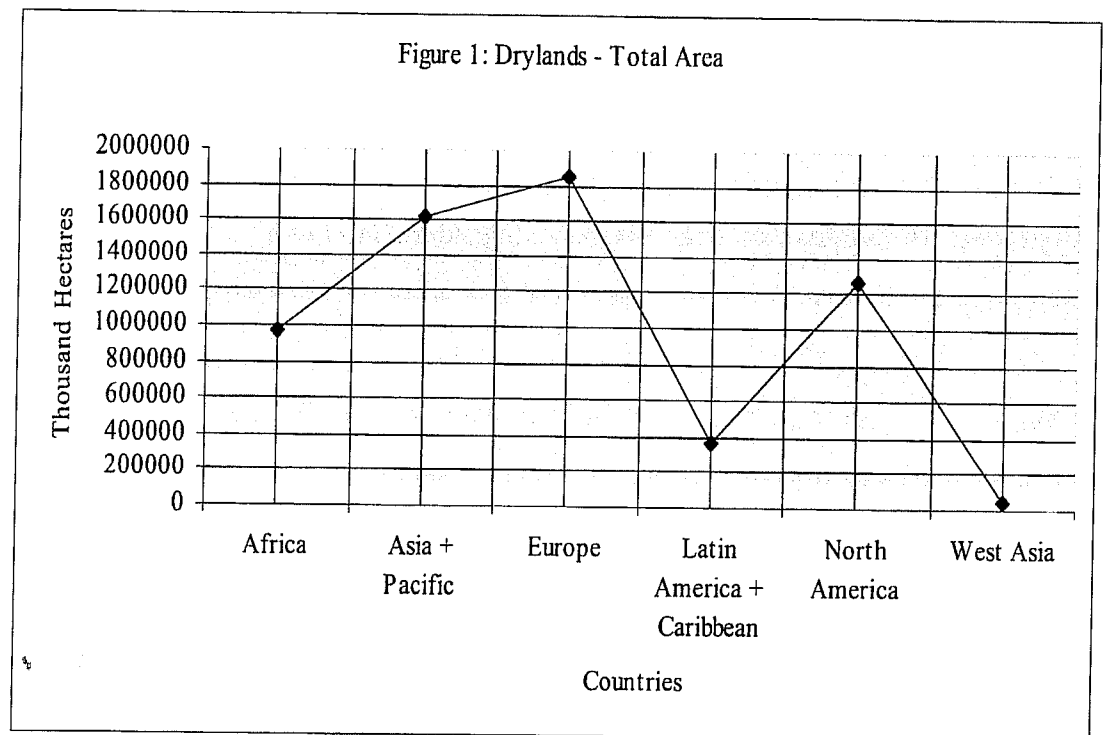
Desertification and drought remain crucial issues for the sustainability of land use, having economic and social consequences and causing environmental degradation. The problems are worldwide, with more than 100 countries affected, but they are particularly evident in the poorest regions of the developing countries, especially in Africa. At least one quarter of the total land area of the world, or 3.6 billion hectares, is affected by desertification. Recent estimates suggest that almost 1.6 billion people live in arid and semi-arid countries and that nearly half of the world's poor people live in dryland regions with fragile soils and irregular rainfall.

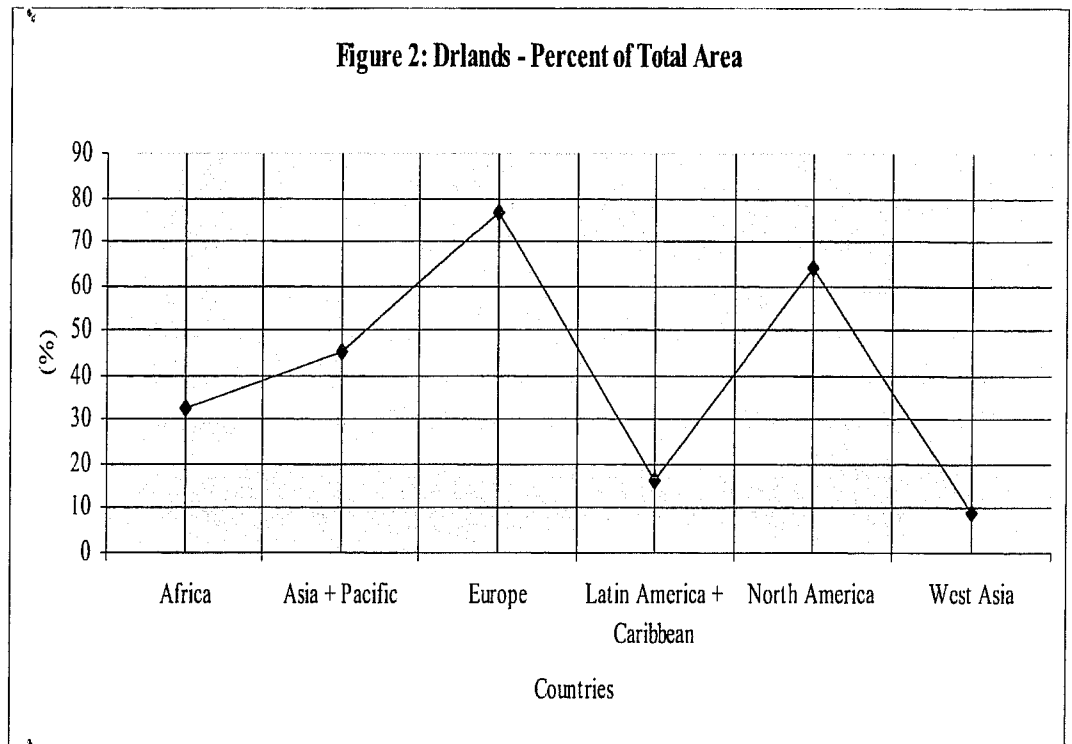
The priority in combating desertification should be the implementation of preventive measures for lands that are not yet degraded, or which are only slightly degraded. However, the severely degraded areas should not be neglected. In combating desertification and drought, the participation of local communities, rural organizations, national Governments, non-governmental organizations and international and regional organizations is essential.

2. ECONOMIC ASPECTS OF DESERTIFICATION AND LAND DEGRADATION

Low productivity of the resource base in the dry zones, coupled with fluctuations in yield, due to low and erratic precipitation, has tended to discourage investment and the development of scientific inputs to conserve and develop the productivity of low rainfall areas. Whereas the argument for giving priority to allocation of development funds to the more productive areas may seem to be justified in terms of bank criteria, such policies, where adopted, have set in motion a vicious circle

whereby lack of adequate investment (financial and technological) perpetuates retrogressive management and an anemic economy in low rainfall areas, because of the degradation of natural resources. Figure 1 and Figure 2 illustrate the total area of drylands, in thousand hectares and in percentages, respectively. Whereas, Figure 3 showing population in drylands as a percentage of total population, and Figure 4 presents the main causes of dryland soil degradation by region, (United Nations Environment Programme /DEWA/GRID-Geneva, 2003).





Even from an economic viewpoint, the validity of this option is doubtful. Concentration on more productive areas has most often been synonymous with concentration on cash crops, for which dry areas are generally ill suited. The resulting distortion, in terms of insufficient foodcrop production, has had severe economic as well as social consequences in many parts of the dry region. Treatment of these areas as anti-priorities, and hence areas to be neglected when establishing priorities for *development*, has accentuated *socio-economic disparity* within the rural sector itself, between "favorable" and "less favorable" land areas and their populations and generated disruptive pressures. It has prevented the low rainfall areas and their people from making a greater contribution to, as well as benefiting from, overall economic and social progress (FAO 1997).

Figure 3: Population in Drylands: Percent of Total Population

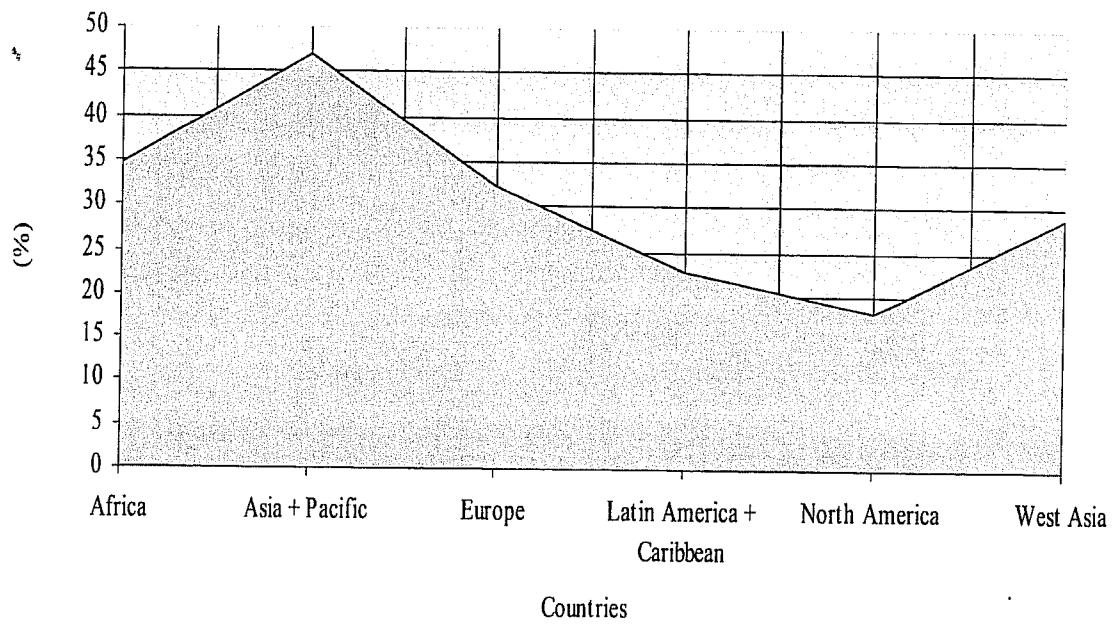
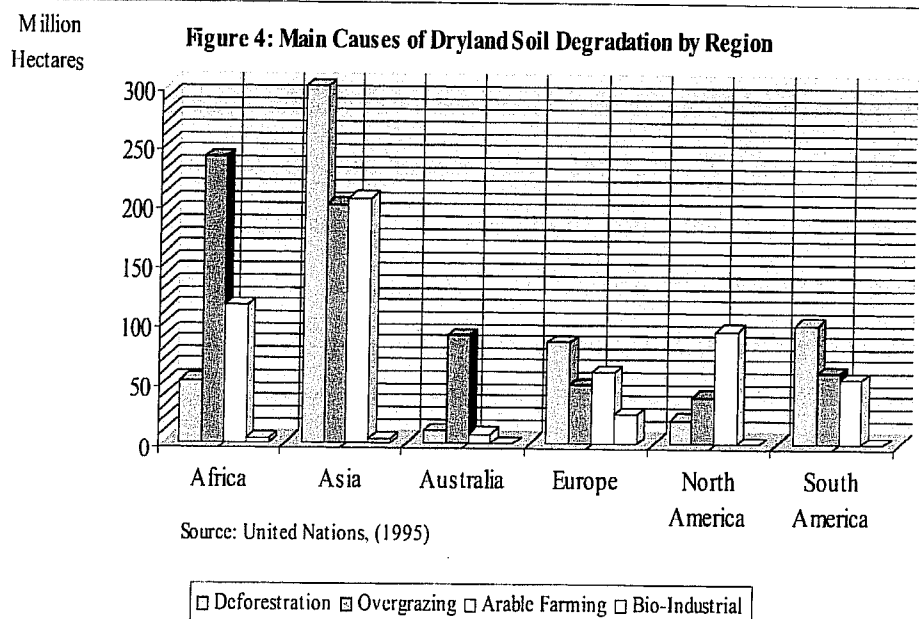


Figure 4: Main Causes of Dryland Soil Degradation by Region



There are, however, valid economic possibilities for return on investment. For instance, if crop production is integrated with livestock,

then low yields in crops could be partly offset by income from livestock products. With further integration of crops, livestock, forestry, wildlife, cottage industries, etc., investment possibilities are more likely to move from "marginality" to profitability. Desertification stems from complex socio-economic-environmental problems requiring integrated multi-disciplinary approaches and action programmes to solve them. Human activities are the main factors triggering desertification processes on vulnerable land.

3. SOCIAL ASPECTS OF DESERTIFICATION AND LAND DEGRADATION

In this section, we briefly examine the relation between the following points:

- desertification and land degradation,
- social demography and population dynamics,
- social inequality and poverty,
- resource management at the local and supra-local level,
- migration, population mobility and urban development,
- forms of socio-economic development, (especially rural development within the framework of urban-rural dynamics), and some more general aspects of social development and integration.

Social Demography and Population Dynamics

The common perception or common logic on the relation between population dynamics and land degradation/desertification is that

population pressures lead to the intensification and exacerbation of the problem. Indeed research findings and evidence from several developing countries, (Costa Rica, Pakistan and Uganda) support this notion (IEPRI 1999). Nevertheless in many cases land degradation and desertification occur in geographical areas with limited population pressures. Furthermore periods of population decline coincide with the exacerbation of the problem (Blaikie and Brookfield 1987). These observations show that the relation between population dynamics and pressures and desertification is complex and non-linear and that always other contributing factors (socio-economic and natural) must be taken into account (Perez-Trejo 1994).

The phenomenon of social inequality and poverty and especially rural poverty lies at the heart of the debate about the relation between social processes and land degradation/desertification. Before we analyze the complex relations between poverty and environmental degradation it is important to define and conceptualize some of the more important dimensions of the problem.

Social Inequality and Poverty

Poverty has been seen and analyzed as both a causal factor and as a consequence of land degradation and desertification. Again, as for population dynamics and pressure, this factor does not present a clear and linear line of causation with desertification. The links between the two phenomena are more complex and complicated, and show that in the most cases poverty and social deprivation is a mechanism through which other factors lead to degradation (UNEP 1992). These other factors may be institutional mechanisms, policy frameworks and measures or

markets. Under different conditions and manifestations of the above factors the poverty-land degradation trends and links may either be exacerbated or mitigated (UNESCO 2003).

In the literature on the relation between poverty and degradation one can identify three main lines of argument. The first relates directly the two phenomena in a vicious spiral where the cause of the one is the result of the other and so forth. This view is over simplistic and ignores the series of other contributing factors to the manifestation of both phenomena. For example, this notion emphasizes degradation as the causal factor of poverty, especially in developing countries, leaving aside other important contributing factors e.g. economic policy or structural features. The second line of argument is more realistic and relates the two phenomena indirectly taking into account other factors such as government policy, structures of local markets, institutions, as well as poverty itself. The third approach may be seen as a continuum of the second, as it emphasizes the importance of poverty in accelerating the problem of land degradation and desertification and vice versa where public policy is inappropriate and market and institutional functions are weak (UNESCO 2003).

Resource Management at the Local and Supra-local Level

Directly related to the previous analysis is the issue of resource management in local, regional and wider geographical scales. By resource management we mainly refer to practices of use and allocation of natural resources as inputs to the system of production. More specifically we refer to various cultivation practices and rural resource management for agricultural production.

Recourse management and cultivation practices depend on a series of factors of political, economic, social and natural/environmental origins. The social structure as it affects directly the structure of production is one of the most important factors. A social and economic structure characterized by social inequality, deprivation and poverty offers numerous opportunities of unsustainable methods of production and cultivation to prevail. Furthermore in conditions like these the possibility of effective formulation and implementation of environmental friendly policies is limited. The structure of land ownership is another factor of critical importance. The conception that communal ownership of resources under any conditions leads inevitably to overexploitation and degradation is not supported by empirical evidence (UNESCO, 2003).

In an era of globalization and great interdependence between economies and societies all over the world, local resource management is affected by developments in the regional or global scale, by the structures or fluctuations of the world market, the economic relations between developed and developing countries and the political will in a global scale to formulate and effectively implement agreements and conventions to promote sustainable production and development. Thus, when we examine resource management and practices in local or wider levels, one must take into account the global – local interplay, which determine most of the decisions affecting the human-nature relationship.

Migration, Population Mobility and Urban Development

Migration and population mobility is a very complex phenomenon, which correlates directly or indirectly depending on the

specific case, with problems of environmental and land degradation and desertification. Migration can take many forms, two of the most important of which, have to do with the temporal dimension and the direction of movements. Regarding the temporal dimension of migration we can identify seasonal, semi-permanent and permanent movements. According to direction, migration may be classified as rural-rural, rural-urban, internal or international (UNESCO 2003).

It is certain that migration policies have to be an integral part of a set of social policies aiming combating degradation and desertification. The association of the phenomenon with other social processes and phenomena such as poverty, population pressures, urban-rural dynamics, urban development and socio-economic structures of productions lead (or has to lead) to a comprehensive policy framework towards population decentralization, prevention of excess and unwanted internal migration and incorporation of international migrants in the system of production in a sustainable manner.

4. THE QUESTION OF POLICY

Economic Policies

Economic policies are one of the main factors, which directly or indirectly determine sustainable development. Monetary policy involves changes in the monetary base (i.e. currency plus bank reserves) accomplished through open market operations. In practice, central bank implements monetary policy using the interest rates incentives for investment and credit policy as the main policy instruments.

Monetary policy includes investment and incentive policy and credit policy. Monetary policy determines the quantity of the monetary base and, as by product establishes the aggregate amount of credit that the Central Bank will extend. Credit policy is part of monetary policy involves the choice of central bank assets, as for instance the allocation of credit. Central bank credit policy determines how the given aggregate amount of credit will be allocated across alternative assets.

The policy adopted by a government aiming to raise the revenues, to meet the expenditure and furthermore to influence the level of business activities. Fiscal policy finds expression in the annual budget. Fiscal policy includes the tax-policy, the public finance system and public expenditure policy. Taxes can be classified as direct taxes (taxes on wealth and income) and indirect taxes (surcharges on prices, which are paid eventually by consumers, like VAT and excise taxes). Trade Policy is undertaken in pursuit of the government overall macroeconomic objectives available to a country that seeks to restrict or modify the pattern of its international trade in some way. Sectoral policy is a supplementary important tool for sustainable development and furthermore for economic and social cohesion. Sectoral policy includes agricultural and industrial policies. The agricultural policy is very important for the union. Industrial policy can be defined as government actions to influence industry and thus considered as state interventionist policy (Eichengreen 1995).

Farm income received from the marketplace has varied significantly over time, a pattern no more evident in any combination of products than in grains and oilseeds. In recent years, shortfalls of producer income have been partly assuaged by large infusions of government funds. The magnitude of these infusions is very impressive.

As a result, the fluctuations in farm income were much less than they otherwise would have been, thereby reducing the financial stress of many producers. While the money was very acceptable on the part of the recipients, little was accomplished in terms of reorienting of agriculture on the prairies in a more sustainable direction. Land prices were maintained at levels higher than those which could be supported by returns from the market.

The resulting distortion in terms of insufficient food-crop production has had severe economic as well as social consequences in many parts of the dry region. Treatment of these areas as "anti-priorities", and hence areas to be neglected when establishing priorities for development, has accentuated socio-economic disparity within the rural sector itself, between "favorable" and less favorable land areas and their populations, thereby generating disruptive pressures. It has prevented the low rainfall areas and their people from making a greater contribution to, as well as benefiting from, overall economic and social progress.

Social Policies

Social policies in general, are of high importance in combating the problems of land degradation and desertification, because of their strong social dimensions and implications. Having in mind these specific relations one can identify three sets of policy options, which in most cases are interrelated and complementary (UNESCO, 2003):

- As social inequality, poverty and especially rural poverty are in most cases gendered phenomena, policies of equitable participation of women to economic and social life are needed as an integral part of the wider set of social policies for poverty and social exclusion alleviation.

- Social policies with an emphasis on human resources development especially education and training. Education and training schemes have to comprise a direct and strong environmental and sustainability element. Furthermore stable and permanent mechanisms for information dissemination and policy implementation are needed in association with direct or indirect economic incentives. These schemes have to promote alternative livelihood and cultivation strategies in favor of the environment and sustainability.
 - The formulation and implementation of social policies in order to combat and reduce poverty and social inequality in general and especially in rural areas is crucial for the creation of a sustainable and equitable social and economic environment. Only in an environment like this, it is possible for people to understand, accept and participate in the implementation of environmentally friendly policies and practices.
- A set of some important and crucial policy options and approaches within this framework, is the following (Singh and Strickland 1994, IFPRI 1999, IPCC 2001):
- Social and economic policies aiming in general at employment creation either in the agricultural or in the urban sector or both in order to help the poor to change their livelihood strategies and escape the poverty-land degradation nexus.
 - Income transfers to the rural poor (direct or indirect) to complement their personal or collective income and reduce the pressure on resources.
 - Decentralization of rural institutions and incentives for active participation in local sustainable development programs.

- Direction of public investments or public-private investment schemes in human capital (education, health, social provision, social and technical infrastructure) in rural areas.
- Policies aiming to population decentralization and at the same time policies aiming to encourage geographical mobility for employment reasons mainly from areas with severe degradation problems.
- Social policies aiming to empower the poor:

5. CONCLUDING REMARKS

Desertification is a global process with serious local consequences, and it concerns everyone. Some because they actively or passively cause it or aggravate it, others because, directly or indirectly, they suffer its consequences. The international community has long recognized that desertification is one of the most serious problems facing the planet, since it has clear social, economic and environmental implications. Insofar as desertification and drought affect around 1/6 of the world population and a total surface area of around 3.6 million hectares (i.e., approximately 30% of the continental zones of the planet), they have become a burning question calling for urgent measures to combat them. Like humid and sub-humid climates, desert and semi-arid climates are dynamic by their very nature and should be understood in terms of the general circulation of the atmosphere.

However, there is another aspect of the climate more closely linked with processes of desertification, and that is the physical climate of the Earth's surface, which is connected, with the system of exchange

and balance linking the atmosphere to other climatic sub-systems. This physical climate of a given location is transformed when humans alter the nature of the surface, and these changes may affect the global climate through processes of internal re-feeding which may work at the level of regions, continents or even the whole planet. The first impact of incorrect soil use takes place at the level of the local physical climate, as for instance, the microclimate. An understanding of the processes of desertification therefore depends on the ability to discern the influences that local man-made changes to the microclimate have on the global climate.

The seriousness of desertification depends on factors which vary from one region, country or year to another. These factors include:

- the severity of the climatic conditions in the period considered (particularly in terms of the annual rainfall);
- population pressure and the standard of living of the people involved;
- the level of the country's development, and the quality of the preventive measures established there.

Another consequence of desertification at the local and global level is the reduction in biodiversity, since it contributes to the destruction of the habitats of animal and vegetable species and micro-organisms. It encourages the genetic erosion of local livestock and plant varieties and species living in fragile ecosystems. It is extremely difficult to put a figure on this loss because of our inadequate familiarity with the features, the economic importance of the biodiversity of the dry zones. A substantial part of it is still fairly unknown to scientists, even though the

local people are very familiar with it. Reducing the biodiversity directly affects the food and health of the local people who rely on a large number of different animal and vegetable species. But it is also a loss to the whole of mankind. Many genetic strains of cultivated plants which form the basis of the food and health of the world's population originate from the dry zones: their disappearance can affect the possibility of producing plant-based medicines to combat specific diseases or epidemics.

Lastly, desertification directly reduces the world's fresh water reserves. It has a direct impact on river flow rates and the level of groundwater tables. The reduction of river flow rates and the lowering of groundwater levels leads to the silting up of estuaries, the encroachment of salt water into water tables, the pollution of water by suspended particles and salination, which in turn reduces the biodiversity of fresh and brackish water and fishing catches, interfering with the operation of reservoirs and irrigation channels, increasing coastal erosion and adversely affecting human and animal health. Lastly, desertification leads to an accelerated and often unbridled exploitation of underground fossil water reserves, and their gradual depletion.

Priorities in combating desertification should focus in the following points:

- Strengthening the knowledge base and developing information and monitoring systems for regions prone to desertification and drought, including the economic and social aspects of these ecosystems;
- Combating land degradation through, inter alia, intensified soil conservation, afforestation and reforestation activities;

- Developing and strengthening integrated development programmes for the eradication of poverty and promotion of alternative livelihood systems in areas prone to desertification;
- Developing comprehensive anti-desertification programmes and integrating them into national development plans and national environmental planning;
- Developing comprehensive drought preparedness and drought-relief schemes, including self-help arrangements, for drought-prone areas and designing programmes to cope with environmental refugees;
- Encouraging and promoting popular participation and environmental education, focusing on desertification control and management of the effects of drought.

A new understanding of the desertification problem reveals its universal impact and causes, which extends well beyond the drylands most immediately affected. Desertification not only destroys a nation's productive resource base, and hence causes famine and starvation during prolonged dry periods, but also causes the loss of valuable genetic resources, increase in atmospheric dust (which could have as yet unknown consequences on the global climate), disruption of natural water recycling processes, loss of markets and the disruption of national economies.

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