

Indigenous Participation in the Environmental Policy of Botswana and Ethiopia

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Abstract

This study examines the environmental policies of Botswana and Ethiopia. It argues that unsuccessful environmental policies in these nations have been shaped by the following: (a) national government's failure to allow local or indigenous people to participate in the formulation process of environmental policy or plan, (b) the absence of coevolutionary relationship between nature and society. The failure of technical policies alone to help solve environmental problems in Botswana and Ethiopia, and (c) the failure to increase social satisfaction or welfare of the indigenous people in these nations. The study recommends some policy options for the governments of Botswana and Ethiopia in the twenty-first century.

Introduction

During the past two decades, approaches to incorporate environmental considerations into economic policy in Botswana and Ethiopia have been confusing, arbitrary and contradictory. Each nation's environmental history involves the relationship of its society to its natural environment - land, air and water. Land and natural resources shape the possibilities for social life while social action alters the natural landscape. Current attempts in Botswana and Ethiopia at formulating environmental policy that are exclusive to the indigenous people have led to comprehensive confusion rather than clarity. Sustainable development to Botswana and Ethiopia means finding alternative to many of the development techniques that are currently depleting their natural resources. The broad sentiment associated with the term is greater sensitivity to nature and natural resources. However, beyond this general association, formulation of more rigorous environmental policies in Botswana and Ethiopia has ignored the input of indigenous people who are supposed to help implement all the environmental policies in their rural land. Thus,

environmental problems of these nations fall broadly into two categories - the problems arising out of poverty or the inadequacy of development itself, and the problems that arise out of the very process of development. The problems in the first category are reflected in the poor social and economic conditions that prevail in both the rural and urban areas. But as the process of economic development gets under way the problems in the second category also begin to emerge and to gain in significance. Two major environmental problems (among others) in Botswana and Ethiopia are resource depletion and pollution. Fossil-fuel sources of energy, such as oil and coal, are finite; they also pollute the air and water, and contribute to global warming. A third fossil-fuel source, wood, also contributes to warming and atmospheric pollution in these nations as well as globally. Although in theory wood is a renewable resource, in these nations wood harvesting has passed the maximum sustainable level. Some of the hydroelectric power plants in these nations as elsewhere in sub-Saharan Africa are with environmental problems.

The sustainability of environmental resources stems from a combination of two factors: (1) the possession of appropriate local ecological knowledge and suitable methods or technology to exploit resources; and (2) a philosophy and environmental ethic to keep exploitive abilities in check and to provide ground rules by which the relation among humans and animals may be regulated (Norman 1996; Appiah-Opoku 1994; Sadler and Boothroyd 1993) In this sense Indigenous institutions in Botswana and Ethiopia could play a very significant role in environmental assessment. Their beliefs, norms and humane environmental practice could help stem the tide of their utilitarianism.

In Botswana and Ethiopia spectacular growth in the form of massive rural to urban migration and the subsequent disruption of community and regional cultures are some of the environmental problems these nations have been facing. The receptive governments have dramatically altered their natural environment by urban and demographic growth, toxic output from industry, relentless deforestation, drought, desiccation of their lakes and rivers, exploitation of natural resources and materials for construction, among other factors. The social and cultural impact of the population on environment is left outside of the domain of environmental policy. Government environmental policies in Botswana and Ethiopia have not been able to ensure that environmental protection agencies are molded into effective vehicles for representation of both their interest and those of their local citizens. The emphasis of environmental policies in these nations have in most cases relied on the Western

values and the "Willingness to pay" principles, despite the differences in national contexture and culture. Such a stance has led to the creation of values and access to subsistence which are linked to sacrificing environmental quality for short-term economic gain. Appropriate environmental policies for Botswana and Ethiopia in the twenty-first century should entail concerted attempt to tackle an agenda of urgent environmental policy issues, which have been ignored for too long.

This study examines the environmental policies of Botswana and Ethiopia. It argues that unsuccessful environmental policies in these nations have been shaped by the following: (a) national government's failure to allow local or indigenous people to participate in the formulation process of environmental policy or plan, (b) The absence of coevolutionary relationship between nature and society. The failure of technical policies alone to help solve environmental problems in Botswana and Ethiopia, and (c) the failure to increase social satisfaction or welfare of the indigenous people in these nations. The study recommends some policy options for the governments of Botswana and Ethiopia in the twenty-first century. This study is organized in the following manner. Following this introduction is the second section, which attempts to discuss some of the dynamics for understanding environmental protection issues in sub-Saharan Africa. The third section focuses on the evolution of environmental policy in Botswana and the extent to which this has helped in attaining sustainable development. The fourth section examines the predicaments facing environmental policies in Ethiopia, while the fifth section addresses what the twenty-first century environmental policy approaches should be in Botswana and Ethiopia. Finally, the concluding section pulls all the loose ends together and presents a challenge for environmental policy makers in the 21st century.

Understanding Environmental Protection Issues

The 1980s have been marked as the beginning of the international environmental movement, which is an expression of fundamental change in human perceptions of life on earth. A new ecological view of the role of humans on earth has been emerging, one that departs from the traditional perception of human dominion over nature and moves toward a more realistic appreciation of humanity's inter-relationship with the biosphere. This new view has led to action in which scientific knowledge, lessons of experience, and ethical judgments have been united in public policies and

international agreements.

Jessica Matthews (1991) and Alex De Waal (1997) contend that before the 1980s watershed, environmental issues were seen as local or regional concerns, extraneous to economic growth, matters of health, aesthetic, and perhaps ethics. After the 1980s, environmental issues assumed a global dimension, and began to be seen as intrinsic to economic growth or decline, and to be recognized as significant determinants of nations' prosperity, governability, and security. Further, public attitudes started to be influenced by a steady drumbeat of internationally reported events. The oil price rise and widespread shortages that opened the decade; the chemical accident at Bhopal; the decimation of United States and European forests by acid rain; droughts and famine in Africa; Exxon Valdez oil spill; Chernobyl nuclear plant accident; ozone depletion and the discovery of a hole in the ozone layer over Antarctica; an outbreak of freakish weather; devastating flood around the world; El Niño; powerful hurricane and warmer winter in the coldest region of the earth bring new intense concerns to the possibilities of a global greenhouse warming.

International interest in these issues has been spurred by three major factors. First, the biodiversity of tropical lands together with the high potential of the virgin tropical forests in preserving the world's environmental heritage. Second the role of deforestation in global weather change, most especially its contribution to the greenhouse effect. Third, the loss of valuable natural habitats, wild plants and animal species (James 1993; World Bank 1990; Pearce et al. 1990; Barbier 1989). Governments were influenced also by insights flowing from a new field of research known as earth systems science or global change. The system science studies composed of geology, ecology, oceanography, chemistry, paleobiology, meteorology, and earth system science. The increased attention to change was buttressed by advancing understanding of the high degree of interaction among the planet's non-living realms - water, the atmosphere, rocks, and soil - and its living realm, the always evolving biosphere, which overlaps each of these. Together these two trends virtually demanded a new approach to research. Through technological advance in remote sensing devices on satellites and airplanes, as well as improvement in computer capabilities, it became possible to measure global phenomena.

Most scientists have found that carbon, nitrogen, phosphorous, and sulfur, which pass through earth affects; air, water and living things on a global scale. They argue that humankind is altering the

natural carbon cycle largely through the combination of fossil fuels. The natural carbon dioxide concentration in the atmosphere has increased by 25 percent in the past 150 years (Norman 1996; Miller 1995; Matthews 1991). One minor class of chemical compounds, the chlorofluorocarbons, has also depleted the life-giving stratospheric ozone layer (Barbier 1989; Millar 1995).

Redclif and Goodman (1991), Van Den Breemer et al. (1995) and Omar Norman (1996) provide the concept of convolution. Coevolutionary theory suggests that, in order to be successful, development policy should ensure either that the extension of agricultural practices foreign to specific socio-cultural settings is accompanied by the appropriate knowledge and organizational structures necessary to sustain the practices to monitor and react to the environment's responses to the new technology; or that new techniques are allowed to develop out of local knowledge and experience. Thus being pre-adapted to existing organizational structures. These scholars used this concept to explain the dynamics of the relationship between nature and society, and the sustainability of specific livelihood. Agricultural coevolution describes the process whereby the manipulative actions of human beings on local ecosystems result in environmental responses. These, in turn necessitate subsequent individual action or social organization in order for the society to take on regulatory functions which were previously carried out by individuals or endogenous groups to the ecosystem, in its previous state of equilibrium.

The general effort to stimulate interest in environmental protection in most developing nations have recently focused on sustainable development. Marian Millar (1995) and Omar Norman (1996) pointed that in practice, the concept of sustainable development has little uniform operational meaning around the world. This is because on one hand, in the developing nations it means finding alternatives to many of the development techniques that are currently depleting their natural resources. On the other hand, sustainable development means reducing consumption in the developed countries. Its implications for economic policy are at best vague because over the past two decades attempts at formulating environmental policy as opposed to selectively addressing particular problems such as protecting an endangered species, have led to comprehensive confusion rather than clarity. The benefit of economic growth in the world, however, comes at great cost in terms of resource depletion and pollution. But these costs and benefits are not shared equally among the world's peoples. Although sub-Saharan African countries have limited access

to these benefits, they pay a disproportionate share of the costs. In large part, developing countries' role in global economy is rooted in their colonial past. Dependency theorists see the development and wealth of the developed nations and the underdevelopment of African countries as functions of each other. Patterns of resource exploitation emerged that enabled the colonial power to accumulate capital and assume political hegemony over the subordinate colony, leading to a pattern in which the colony's resources were used in a manner incongruent with local needs. At the same time, these patterns of resource exploitation incorporated new products and technologies from other areas of the globe. Developing nations became very dependent on both export and import trade, and decolonization did not end this pattern.

The literature on environment and development posits a strong relationship between economic development, poverty and environmental quality. Bad economic performance increases poverty, which accelerates environmental degradation (Ascher and Healy, 1990). For policy purposes, development economists concurred that sustainable development consists of three main building blocks: a healthy economy, attention to social equity, and environmental quality (Weaver and O'Keefe, 1991). The need for citizen participation was subsequently added to these criteria.

Environmental Policy in Botswana

Botswana's climate is sub-tropical, ranging from continental to semi-arid with the wettest months (December and January) coming in the summer in years of normal rainfall. Winters are dry (with July and August normally the driest months) and there is occasionally frost around June. Average rainfall is less than 475 mini-meters annually, ranging from 250 mini-meters in the desert region of the southwest to over 650 mini-meters in the northeast. Vegetation reflects rainfall and soil patterns in the east and southeast. The country is prone to periods of severe drought extending over a number of years. The 1981-87 drought was the most severe this century, but since 1988 a more normal rainfall pattern has prevailed (De Waal 1997).

Table 1: Ecology of Botswana

Ecological Regions	Meters Above Sea Level	Rainfall (MM)	Average Temperature (0C)
Hardveld	850-1489	400-500	20.6 (Gaborone)
Sandveld	800-1200	250-690	22.4 (Maun)
Okavango Delta	990-1030	400-500	22.0 (Shakawe)
Makgadikgadi	905-930	400-450	22.0 (Rakops)

Source: Ringrose et al. 1996."Environmental Change in the Mid-Boteti Area of North-Central Botswana: Biophysical Processes and Human Perceptions." Environmental Management, 20 (30): 397-410.

Table 1 shows the ecology of Botswana. The climate and soil of Botswana are most suited to large scale ranching, which was the country's predominant economic activity until the development of the mining sector in the early 1970s. But, due to lack of water, stock can only be grazed on 20 percent of the land area. In the 1970s the rapid expansion of the national herd led to overgrazing. Like other governments in this region Botswana is reorganizing its ranching methods in a bid to limit overgrazing through a major program establishing fenced leasehold - the Tribal Grazing Land Policy (TGLP) which was introduced in 1975. Communal areas are reserved under the program for small-scale farmers, although development of ranches has proceeded slowly and the TGLP also aims to improve conservation and farming techniques (Botswana National Conservation Strategy, 1990). The government now aims to maintain a high but sustainable level of cattle production through improved livestock management and husbandry techniques, land conservation and a more efficient land tenure system. (Abucar and Molutsi 1993; Ringrose et al 1996).

In 1983 the government of Botswana accepted the need for the preparation of a National Conservation Strategy. This need emerged from close cooperation between the government and United Nation Environmental Programs (UNEP) in preparing the clearinghouse mission report. That report reflected the importance attached to identifying policies and other measures, which would ensure whenever possible, the sustainability of all future development.

The government of Botswana attaches great importance to the wide range of natural resources and

features which exist throughout the nation, and especially in protected areas: national parks, game reserves, forest reserves and designated wildlife management areas. These resources include fresh air, clean water, vegetation, and livestock. Wildlife, soil, human culture, visual, archaeological and other related features. It is upon these resources that many people depend directly for a livelihood. Some of the resources are appreciated internationally for their univalves: The Okavango Delta and the central Kalahari game reserves, for example have experienced (a) the depletion of fuelwood resources, groundwater resources, wildlife species and indigenous veiled products resources, (b) land erosion, (c) urban and rural pollution, and (e) rangeland degradation. (Abucar and Molutsi, 1993; Ringrose et al. 1996). The government of Botswana has also been committed to sustainable development. However, achievement of sustainable development calls for comprehensive evaluation of environmental and economic implications before major new developments are undertaken. Consistent with this, the natural conservation strategy is specifically geared toward environmental protection and conservation.

Botswana's environmental policy emphasizes effective utilization of land and livestock needs. It attempts to create instruments that are intended to solve the problems of livestock development and land use, in order to improve the cash income of the livestock industry. The primary government policy with regard to conservation is in connection with development goals which call for balanced development, more employment opportunities with the diversification of the rural economy, better utilization of resources, improved education and people's participation in resources conservation.

Despite the above environmental policy goals, the social and cultural impact of the environment on the people of Botswana are left outside of the domain of environmental policy. Apparently, as the environment's potential of Botswana declines, the impoverished people continue to practice their traditional modes of utilization without realizing that changes are required and that the government had enacted new environmental policies. Depletion of wood resources both in commercial harvest of forests and as the main source of domestic fuel in most settlements continues in the nation. As a matter of fact, wood harvesting has been largely undertaken in an unrestricted manner. The people of Botswana have paid little or no attention to ensuring that yields are economically sustainable. There has also been an overuse and exploitation of some mineral products such as diamond, copper-nickel and coals, together with small amounts of gold and natural soda. Minerals have

provided the basis for Botswana's recent economic growth. However, large-scale mineral exploitation by the De Beer Botswana Company has also caused a lot of environmental pollution (Mpotokwane 1992). This has damaged the mineral capacities to provide for both subsistence and commercial needs. Pollution of air, water, soil and vegetation resources have also continued. As a result of human struggle to support life in both urban and rural areas of Botswana, the nation's environmental policy have been greatly ignored (Abucar and Molutsi, 1993).

Despite the formation of a national conservative strategy for Botswana, recent studies have identified continuing sources of environmental problems, such as inadequate waste disposal, lack of public toilets in urban areas, inadequate industrial and mining waste disposal system, declining wood and other natural resources. (Abucar and Molutsi, 1993). Treated water has declined and most people and animals are increasingly dependent on ground water. This inadequate human resource development and financial commitment on the part of the government creates constraints in the application of environmental policy.

Activist groups concerned with a more comprehensive policy have not yet developed the ability to influence the government to implement stated goals. For example, the Kalahari Conservative Society is more interested in the conservation of wildlife and natural resources than in environmental problems that affects public health. (Abucar and Molutsi, 1993). The Ecological setting of Botswana society has experienced change brought about by population growth, rural-urban migration, economic changes and market opportunities. People move out of their villages to the cities in search of better opportunity to meet their basic needs and this result in transplanting rural culture into urban areas.

While traditional land conservation as practiced in the past has not yielded good results, environmental change could be achieved through cultural change. What is required is alternative cultural practice, for example, the use of controlled crop rotation and fertilizers, which combines compatible indigenous and modern methods. Although some farmers employ fertilizers, little control is undertaken by the government to see that its use does not exceed limits laid down by environmentalists. Coevolution theory teaches one that the introduction of alternative cultural practices in farming requires cooperation between government and the indigenous farmers. It is imperative that measures, which promote coevolution and new cultural input, are adopted to replace

the old cultural practice in Botswana.

The cultural continuity between rural and urban areas rests on the extent to which social networking and coevolution of people in Botswana are implemented. This coevolution and networking could effectively deal with a number of problems like unemployment, poverty, poor transportation system, and dependence in rural Botswana, and segregated inner city dwellers in urban Botswana. These issues have direct implications for the environment.

The concentration of population in major towns and cities in Botswana has public environmental problems due to lack of social infrastructure. Public toilet service is not a priority of government environmental policy. This oversight of government has resulted in the use of uninhabited spots in Gaborone, the capital city, as public latrine facilities, thus, polluting the immediate environment and creating a health hazard. The dumping of consumer waste along the main roads on the outskirts of the city and villages is also due to the increased population and continuous movement between rural and urban areas. Thus, in order for Botswana's environmental policy to succeed, it is imperative to develop a long-term comprehensive coevolution policy that will encourage the development education of an environmental awareness program with a package dealing with more equitable distribution of income.

Contrary to current environmental policy in Botswana, which tends to emphasize technical solutions to environmental problems and issues, this section has demonstrated that technical solutions alone without considering the social dimension cannot effectively solve environmental problems. Social dimension will also bring about coevolution and cultural changes required to successfully implementing a progressive environmental policy. Through a policy of education for social development the current environmental policy could establish sustainable and adequate conditions for reducing the problems of environment in Botswana (Dibie and Kawewe, 1999). The government's stated goal, should therefore focus on increased education of and participation by members of society in improving the environment. This however, requires the introduction of a specific policy dealing with issues of indigenous cultural change and the need to improve the social economic conditions of the majority of the people of Botswana.

Ethiopia and its Environmental Premise

Despite abundance of natural resources, Ethiopia has faced a variety of environmental crises including drought since the 1980s. Much of the northern part of the nation has a dissected, and sloping terrain, fragile soil and is subject to highly erosive rainstorms during the main agricultural season. Low in organic matter and with little natural tree cover, Ethiopia is subject to severe soil erosion (Hoben 1995).

The farming techniques mostly used in the rural areas is plow-based mixed farming system and this contributes to soil erosion through fine tilling, monocropping and a lack of vegetation covering the soil during the heavy raining seasons. On the central and southern highlands, where rainfall is higher and distributed over most of the year, soils are generally higher in organic matter. Landform is less rugged and there is more natural vegetative cover. In the past five decades, natural forestry, which was extensive, has been reduced and grasslands brought under the plow by a combination of conquest, spontaneous small-farmers, migration, government-sponsored resettlement, expanding commercial and state farms, and private and state exploitation of the forests. Soil erosion appears to be less severe than in the north (Hoben 1995; Mulvihill 1988).

The indigenous environmental management before the 1974 revolution was such that, the Northern Ethiopians had long managed their landscapes and practiced some forms of conservation. Historically, however, political, institutional and economic conditions neither gives land rights to elites nor peasants. The strong incentives to invest in agricultural improvement, and labor intensive conservation measures are just to provide food for the nation and prevent the depletion of its natural resources. In any case, the main recurrent environmental problems in the northern highlands were animal and human disease, crop-destroying pests, and adverse weather conditions (Herweg 1994). The relationship between human beings and nature in northern Ethiopia has long been characterized by flux, crisis and calamity rather than by harmonious balance (Herweg 1994). Indigenous southern Ethiopian farming systems were more sustainable before the present century, but this was altered after many farming practices were changed as a result of the northern conquest. In the wake of the 1985 famine, the Ethiopian government launched an ambitious program of environmental reclamation supported by international donors and several nongovernmental organizations (NGOs) and backed by the largest food-for-work program in Africa. Over the

preceding five years, peasants constructed more than one million kilometers of soil and stone bonds on agricultural land and built almost one-half million kilometers of hillside terrace. They also closed off more than 80,000 hectares of hillsides to most forms of use to foster the regeneration of naturally occurring plant species, and planted 300,000 hectares of trees, much of it community woodcuts (Hoben, 1995).

The reclamation policy of the Ethiopian government during the famine period appealed to a variety of Western donors - the World Food Program (WFP), the European Economic Community (EEC), and The United States. These donors not only supplied food to the Ethiopian people, they also introduced massive food-for-work programs on the grounds and as such they were addressing the long-term, underlying cause of famine, rather than mere alleviating its sympathy. This enabled the donors to defend the criticism that they were only keeping people alive so that they could die in large numbers the next time the rains failed. The donors were also able to counter the argument, that the food aid in the form of handouts would make people lazy. In addition, the donors spread high levels of food supply after the famine was over not only to the people in the north, that were actually affected by the famine, but, also delivered food to areas that had not been affected by the drought or famine (Hoben 1989; Roe 1991)

The reclamation policy top-down approach seemed reasonable to the Ethiopian bureaucrats and urban dwellers that traditionally have rather negative stereotypes about peasant agriculture, intelligence and ingenuity. Local farmers' reluctance to accept new practices was often attributed to their traditional attitudes, rather than their socioeconomic circumstances. For example, the fragmentation of household landholdings is attributed to inheritance rules rather than the peasant's desire to diversify the farming enterprise in order to reduce risks (Herweg 1994; Roe 1991). The strengths of indigenous farming and environmental management system were overlooked. Indeed, even when visible, they were often not seen. Thus, the reclamation policy top-down approach was a system that assumed peasants did not know what was good for them and would not necessarily participate in bringing about change without political agitation, education and if necessary coercion from the international donors.

Between 1974 and the late 1980s, the military regime of Menistu Haile Mariam (The Derg) pressed an ambitious program of agrarian reform intended to transform rural societal, economic and political

institutions that addressed environmental problems, including deforestation and soil erosion. Ironically, the net effect of the Derg's actions was to lessen farmer's incentives for good natural resources management by decreasing both the securing of land tenure and the profitability of agriculture. In practice the program appears to have reduced, rather than increase food security in many areas (Hoben 1995; Herweg 1994).

The problems that arises from the military regime environmental policy in Ethiopia included the nationalization of natural resources, land tenure reform, promotion of production and services cooperatives, establishment of state farms, imposition of production quotas, state intervention in pricing and marketing, forced villagization, large-scale long distance resettlement, and the aforementioned environmental reclamation programs. As Derg struggled with a prolonged and ever more costly civil war, it also imposed taxes, required voluntary contributions and requisitioned unpaid labor, demands which often exceeded those experienced under the previous regime (Hoben, 1995).

In the wake of this famine in the mid-1980s, existing government reclamation programs were greatly expanded. Activities on peasant lands were organized by the Community Forestry and Soil Conservation Development Department of the Ministry of Agriculture that was responsible for all food-for-work programs. The World Food Program's Project 2488, the European Economic Committee (EEC), and US donations of grain and edible oils supported the effort. Other donors provided technical equipment and tools. Non-governmental Organizations (NGOs) played a major role in implementation, each being assigned to a particular geographic location. During 1985-90 when Megistu announced far reaching reforms and moved away from socialist agriculture, the reclamation program encountered a number of difficulties and was increasingly criticized by members of the NGO Community and Bureaucrats of the Ethiopian Ministry of Agriculture. Many critics complained about the top-down nature in which the program had been implemented. Some found fault that with the exclusion of peasant participation while preferential treatment was given to international donors who imposed their environmental values on the Ethiopian indigenous people. As the Ethiopian regime began to loosen its grip and crumble, this top-down approach to environmental programs was publicly criticized. Participants at an NGO-sponsored workshop on community forestry held in October 1990 noted that many of the programs apparently had technical

problems that were in reality not related to the rehabilitation programs. Reliance on government-imposed institutions and their leaders was another set of problems. They pointed out that small farmers generally were not involved in identifying their needs and problems, establishing priorities, evaluating alternative solution or planning the implementation processes. As a result, indigenous farming systems technical knowledge, and common property institutions were ignored and thwarting farmer incentives for participation in community forestry projects.

As things turned out in Ethiopia, there were many logistic difficulties in conducting the regional and local assessments. Peasant input into the process was nominal at best. In the end, the secretariat was pressured to complete the National Conservation Strategy for an international seminar before any of the regions had completed their strategies. There was little discussion of indigenous techniques of soil amendment. Neither was there any substantial discussion or acknowledgment of indigenous terracing of run-off pond, and irrigation. Densely settled areas in the southwest were said to be at environmental risk because of population pressure with no investigation into the distinctive farming system that appeared until recently, to have sustained such densities for centuries. A similar gap regarding the strength of indigenous practices is embedded in some of the reports done by experts for the Ethiopian Forestry Action Plan (EFAP), an ambitious and in many ways excellent planning effort that folded into the National Conservation Strategy. Perhaps the most striking example of the problem in the EFAP is the estimation of a wood fuel deficit based on estimates that do not include the major source of peasant's wood fuel agro forestry.

In sum, Ideas and facts from old narratives were used uncritically, while new information and alternative understanding were ruled out. The ecological knowledge among members of indigenous economic institutions is not limited to only medicinal plants. For instance, the National Conservation Strategy (NCS) survey in Ethiopia reveal that indigenous farmers were able to use the color, texture and appearance of their crops to distinguish between poor and fertile soils; they know local climate characteristics and when to prepare their farms for the rains or to prevent too much soil moisture using simple farm implements such as the hoe, axe, and cutlass, which minimize exposure of the subsoil to the tropical climate. Similarly, the indigenous hunter has

expert knowledge of the location of certain animals plants waterbeds, forests and other elements of the local environment.

The 21st Century Approach to Environmental Policy

In response to soil erosion, loss of fertility, groundwater, soil pollution, pesticide contamination of both crops and workers, loss of forest, poverty of farmers, huge international debts and bush areas, a growing movement has been concerned with developing alternative agricultural models. These models have been called by a number of different names: organic, alternative, renewable, low input, ecological, or regenerative agriculture. The term gaining greatest acceptance seems to be "sustainable agriculture"(Jardins, 1997)

At first glance, sustainable agriculture appears simply to be a response to the specific problems associated with modern high-tech farming. Crop rotation and contour plowing, elimination of pesticides and chemical fertilizers, crop diversification, use of renewable resources and fuels, recycling, and composting all seem to address specific agricultural problems. In general, sustainable agriculture recommends adopting those practices that ensure a long-term, sustainable, and environmentally safe agriculture. The goal is not to rely on commercial resources produced elsewhere and the objective is more on how those resources that can be produced on or near the farm would do better.

Sustainable agriculture in the 21st century does not advocate the abandonment of technology and scientific farming. Indeed, it seeks a synthesis of scientific ecology, technology, and traditional conservation techniques. It does, however, require abandoning the priority that has been given to productivity and economic efficiency or at least redefining our notion of what counts as productivity. Thus it seeks to replace the image of a farm as a factory with the image of a farm as a natural ecosystem.

Given the sober assessment of the state of the environment in Botswana, and Ethiopia described in this study, two questions immediately come to mind: (a) Why and how has this situation developed; and (b) Can anything be done about it in the twenty-first century? As already outlined, the most obvious reasons for environmental degradation include multinational corporation exploitation, increasing harvesting of renewable resources at non-sustainable rate, rising population pressure

especially within areas, government and market failures.

The governments of Botswana and Ethiopia and International organizations have played a dominant role in the design and implementation of most development projects in the two countries under discussion. At the same time, many of the more or less top-down projects have failed to meet local socio-cultural and environmental requirements. The federal governments have initiated several environmental policies and monthly clean-up campaigns. The regional governments are as significant as the national governments. But as the settings for environmental politics, local level of action is often obscured by the greater emphasis on national politics and the universal context of science and technology.

The challenge, however, is how to incorporate indigenous institutions and their ecological knowledge and humane environmental management practices in environmental assessment. Jardins (1997) and Mulvihill (1988) argue that it would be inappropriate to attempt a complete integration of the two systems without considering the context of devolution. Ushers (1981) sees devolution taking two forms: the movement of authority and responsibility from a higher to a lower level within an established and intact framework or actual transfer of authority and responsibility from one system to another. A similar strategy was used under the colonial British system of indirect rule in Botswana, which not only relied on indigenous institutions as agents sometimes puppets for local government administration but sometimes assisted them to develop on their own lines (Appiah -Opoku 1994; Crowder 1976; Jardins 1997).

Ideally it would be desirable to have a firm grasp of environmental affairs in all regional levels and to reach some generalizations about their pattern. Such would be more than a Herculean task. Fundamental to environmental assessment is the availability of baseline ecological data, including past and current behavior of local ecosystem. Indigenous ecological knowledge could be invaluable in this context especially in regions where recorded knowledge of local environment is poor (Herweg 1994) as in the case of Ethiopia and Botswana. There is a general lack of accurate scientific assessment for the environment in Ethiopia and Botswana and all the leading institutions responsible for data collection in the area of land and water resources lack the very basic facilities for efficient operation (Appiah -Opoku 1994; Crowder 1976). Thus, the incorporation of indigenous institutions and their ecological knowledge may help resolve the paucity of scientific data for

environmental assessment. It may also facilitate the involvement of the indigenous people and encourage local participation and bottom-up approaches to environmental decision making.

In the twenty-first century, Botswana and Ethiopia should move away from the custom of regarding the national government as the only source of innovation in environmental matters and the states as laggards. But the growth of citizen environmental action at the local and state levels, and federal programs should help to build state administrative capacities which will also tend to foster new state environmental activities. Because each state has an independent source of potential initiative and because the complexity of the influences leading to such action varies with each state, the results might vary.

Another possible approach is the establishment of cooperative management regimes at the community level. A cooperative management regime is an institutional arrangement in which formal government agencies with jurisdiction over resources and user groups enter into agreement covering a specific geographic region and spell out a system of rights and obligations for those interested in the resources, a collection of rules indicating actions that subjects are expected to take under various circumstances, and procedures for making collective decisions affecting the interests of government actors, user organizations, and individual users. This could take shape in the form of sound networks that are connected to all levels of society (Dobie and Kawewe, 1999). This may improve communication, learning, and understanding between indigenous institutions and formal environmental management agencies.

In order to work towards conscious, organized environmental management, four preconditions exist at the local level. A first precondition is that the population involved should gain insight into the problems in their own environment, and perceive that these problems directly concern them. Practical involvement then becomes a second precondition. As a third precondition, the local population should feel that they are able to do something about the problems. A fourth precondition is that the people should feel that their efforts to achieve improved environmental management would benefit them. The sooner these benefits emerge, the better motivated they will be. Thus, there should clearly be self-interest, short-term as well as long-term benefits.

The national and regional governments should provide the indigenous people with space for independent environmental management. A certain autonomy and greater authority to take their

own decisions is essential. Closely related to this, is that government should guarantee legal security of tenureship of their own territory. Further, in two respects, there should be self-imposed limits on international aid. In the first place, it is the local people themselves who should take action, not the foreign aid workers. Aid from outside therefore has to be primarily of an initiating character, aimed at enticing and stimulating local people to do the work, instead of the mere parachuting of materials and manpower - which still happens too often. Secondly, aid should be limited in scale. In many instances, better and more sustainable results are achieved with a large number of well-designed small-scale projects, than with one multi-million large-scale project, and often at considerably lower cost. Small-scale projects are more manageable, more flexible in being adaptable to changing conditions or new insights, and more suited to the lives of the local population.

Accountability and honest self-reflection should become a priority for policy-makers and policy-implementers. Then it would become clear that an area is often better served by less aid, but, of course, aid workers also have their own interest. It should be stressed that accountability is also required at other levels ranging from national, state, and local governments to nongovernmental organization (NGOs). Local and federal governments should be accountable to their people for sustainable management of the nation's natural resources. Accountability at these levels will imply the enhancement and application of appropriate policy instruments. The preconditions for accountability at governmental levels will include the proper institutional setting, political commitment to promoting an appropriate and progressive policy environment and translation of political priorities into national budget.

With respect to the sustainable use of natural resources, there should be a strong interdependence between the choice of a well defined program approach and the associated policy instruments, on the one hand, and a number of preconditions for accountability, development objectives and interventions, on the other. Figure 1 shows how policy instruments such as: legislation, pricing policies, incentives, technology development, training could be used to encourage indigenous people to participate in the management of natural resource.

Figure 1. Combining Indigenous Practice with National Environmental Policy for Sustainable

Management of Natural Resources.

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Most of these policy and program instruments have to be implemented by government agencies such as National Environmental Protection Agency and NGOs as well. It should be recognized that global economic situations and international environmental concerns also influence relevant policy instruments.

In the interaction between national and regional governments, communities and NGOs, the starting point should be the local community. Environmental policies developed at the national level should be adapted to the conditions of the rural population if they are to be effective. Of course, effective policies may, and are even intended to modify these conditions, which in turn may necessitate the formulation of new policies. The overall system of interactions between different actors and their respective responsibilities will essentially define the institutional environment needed to accomplish the goal of development policies that focus on the sustainable use and management of natural resources at local levels around Botswana and Ethiopia.

These environmental management systems proposed for the twenty-first century should be operationalized through a number of principles, the most important being, giving the responsibility to every member of the community in the form of orientation towards conservative use. Others are judicious use of available resources in view of the need for self-sufficiency and independence from outside support; a minimal degree of specialization among community members and thus a widespread knowledge of the environment and its management; and also the recognition of psychological and spiritual values. Such involvement demands as propriety, some upgrading of environmental awareness in school curriculum. There is the need to look beyond the exploitation of environmental resources for immediate short-term against a more careful protection of resources for long-term sustainable economic returns. This would require incorporating training programs in environmental science into the nations. National and regional governments should provide educational and public relations awareness programs in environmental matters. This should be part of the school curriculum. Through education and public relations campaigns indigenous people and communities should be oriented towards conservative use. The recycling of waste product, utilization of refuses organic fertilizers, biomass and so on should be encouraged. These have

great potential as raw materials, but are currently not well utilized in the four nations. A very conscious and deliberate action is also needed to improve the efficiency with which natural resources are transformed into end products. Greater efficiency not only has economic advantages, but also makes it possible to save resources in order to reduce environmental deterioration in the extraction as well as processing phases. The application of pesticides in farm estates and plantations is increasing annually as a result of infestation by pests. Environment policy should include pesticides control so as to prevent the indiscriminate use of chemicals and the pollution of the atmosphere, as well as the poisoning of the soil from wrong use of fertilizer.

Population stabilization is also very important and should be closely considered in future environmental policies in Botswana and Ethiopia. The increase in population could affect the degradation of the environment coupled with a rapid demographic transition of the four nations under study, which in turn could result in difficulty in controlling the rate of poverty in Botswana and Ethiopia. Hence a national population maintenance policy inclusive of indigenous input is very critical for future environmental management.

Finally, environmental policies in the twenty-first century should be concerned with the problems arising out of poverty and those that arise out of the very process of development. The remedial approaches to these problems are closely interwoven with policies for sustainable development. These policies should embrace wider dimensions than the growth of gross national product alone, and must include some of the major environmental problems that arise in the context of urban and rural poverty. The problems of poor water supplies, inadequate sewerage, sickness, nutritional deficiency, and bad housing need to be dealt with in the process of planning and policy making. Goals and objectives in these areas should be incorporated into development plans as much as targets for the growth of output. Many environmental problems in Botswana, and Ethiopia cannot be effectively addressed with western-based traditional regulatory tools alone, but citizen participation, incentives and educational efforts may be useful supplements.

Conclusion

In this study we examined two approaches to ecological and environmental issues in Botswana and Ethiopia, called coevolution and sustainable agriculture. Although coevolution and sustainable

agriculture have some differences, these approaches share some important similarities that make it appropriate for us to examine them in this study. The perspective linking economic equity, peace and environmental protection is potentially becoming very political in Botswana and Ethiopia. As the coevolutionary and sustainable agriculture models suggest, the maintenance of nature/society and intra-societal linkages is imperative to the sustainability of all agricultural production systems. An attempt was made in this study to stress that the extent to which Botswana and Ethiopia pursue a style of development that is more responsive to social and environmental goals must be determined by the resources available to them which include the indigenous human capital.

Any revision to environmental policy to promote development of natural environmental management must involve fully participatory arrangement with local people if the policy is to succeed. Promotion of this concept should permeate the rhetoric of the national conservation strategies throughout the governments of sub-Saharan Africa. Understanding why participation is so important in large-scale efforts to develop the environment will be the key to identifying the adjustments and changes necessary so that policy directions are accompanied by field action. If a reasonable number of villagers from an area can be organized into a management cooperative, they can work with their other peers and the village authorities in brokering the understandings and consensus necessary to ensure that the environmental management plan, particularly the protection activities, can be effectively implemented. Local people must fully comprehend the objectives of management and the policy determinations behind them. They will also need to understand and accept their roles and responsibilities for achieving management objectives and how they in turn will participate in the benefits stream. These are all elements of the policy framework, which must permeate indigenous people's level. Moreover, the incorporation of indigenous institutions and their ecological knowledge in environmental assessment is tantamount to harnessing available human resources within communities at the grassroots level. This may reduce total dependence on outside ideas, goals, technology, and supervision in environmental management. It may also reduce expense in terms of the galaxy of outside experts in all fields needed to conduct environmental assessment and the lack of commitment to goals and aspirations of host communities.

The problems in environmental degradation are very huge, especially in the area of management and implementation of policies. As in the past, national and regional governments, and self-help

actions at the local level assisted by low-profile non-governmental organizations cannot be the only strategy. In the twenty-first century environmental challenges should be tackled effectively and the local population must be motivated to participate if environmental problems are to be tackled effectively. A combined plan should be formulated in which the local population, without coercion or compensation, contributes in the implementation stage of environmental policies in Botswana and Ethiopia. This may imply that foreign or external agencies will be willing to cooperate with indigenous groups only when certain conditions are met. However, supervision by donors of aid or foreign agencies will imply a loss of the autonomy of the local groups, which may also imply their gradual disappearance. The governments of these nations must be quite frank in facing the facts that organization problems remain because of this "dependency trap". Notwithstanding this problem, it seems worthwhile to collaborate with indigenous farmer groups in the future, in an attempt to achieve sustainable economic development and environmental protection.

The solutions to environmental problems today will be more difficult, costly, and controversial than those of the past two decades because of more awareness by the indigenous people and their subsequent demand that their governments compensate them for excessive exploitation. Also the trade-off between paying off national debt or paying damages to indigenous people will make solutions more costly. Thus design and implementation of appropriate policies will require genuine efforts and new budgetary priorities by governmental institutions and other organizations. All governmental programs compete with one another for scarce resources, and thus the extent and quality of environmental leadership in the nation and the agencies ultimately will depend upon politics. However, priorities will change when the indigenous people of these nations under study demand that their elected officials take environmental protection and enlightened stewardship of natural resources more seriously than has been evident in the past.

References

Abucer, Mohamed, and Patrick Molutsi. 1993. *Africa Today*, 1st Quarter, 61-73

Appiah-Opoku, S. 1994. *Theoretical Orientation of Environment Policy in Botswana: A Critique. entation of Environmental Assessment in Canada: Application to the Third World Environments* 22 (3): 103-110.

- Arnstein S. 1971. *Eight Rungs on the ladder of citizen Participation*. Pages 69-91 in Caln and P.A. Barry (eds), *Citizen participation: Effecting Community Change*. Praeger, N. York.
- Ascher, W. and Healy, R. 1990. *Natural Resource PolicyMaking: A Framework for Developing Countries*. Washington, D.C.: Durham.
- Barbier, E.B. 1989. *The Economic Value of Ecosystems: In (Eds.) Tropical Wetlands. Gatekeeper Series, No 89-102*. London: Environmental Economics Center. pp. 1-12.
- Botswana National Conservative Strategy, 1990. *National Policy on Natural Resources Conservation and Development*. No.1. Gaborone. Government Printer.
- Breemer Van Dem, Drijver C.A. and Venema L.B. 1995. *Local Resource Management in Africa*. New York: Wiley & Sons Publishers.
- Brokensha. D. 1986. *Local management Systems and Sustainability*. Paper prepared for the Annual meeting of the Society for Economic Anthropology, Riverside, California, and 3-4 April.
- Crowder M. 1976. *West Africa Under Colonial Rule*. Hutchinson and Company, Toronto, Ontario, Canada.
- Darkoh, Michael K. *Desertification and Environmental Management in Botswana*.
In Mohamed Salih and Shibru Tedla (eds.). *Environmental Planning, Policies and Politics in Eastern and Southern Africa*. New York: St. Martin's Press.
- Davies, J. Clerence. 1984. *Environmental Institutions and the Reagan Administration*. In *Environmental Policy in the 1980s*, Norman Vig and Michael Kraft (eds.) Washington, D.C. CQ Press.
- De Waal, Alex. 1997. *Famine Crimes: Politics and the Disaster Relief Industry in Africa*. Bloomington: Indiana University Press.
- Dibie, R. and Saliwe Kawewe. 1999. *Education Policy and the Future of Sustainable Development in Zimbabwe and Nigeria*. *Social Development Issues* Vol. 21, (3), 22 -29.
- Erocal, Denizhan. 1991. *Environmental Management in Developing Countries*. Development Center of the Organization for Economic Co-operation and Development (OECD).

- Goulet, D. 1975. *The Cruel Choice: A New Concept in the Theory of Development*. Atheneum, New York.
- Herweg, Karl. 1994. *Problems of Acceptance and Adaption of Soil Conservation in Ethiopia*. Unpublished paper (Addis Ababa. Soil Conservation Research Project.
- Hoben, Allan. 1995. *Paradigms and Politics: The Cultural Construction of Environmental Policy in Ethiopia*. *World Development*, 23: no. 6pp 1007-1021.
- Hoben, Allan. 1972. *Land, Tenure Among the Amhara of Ethiopia*. Chicago. Univeristy of Chacago Press.
- James, Valentine. 1993. *Africa's Ecology: Sustaining the Biological and Environmental Diversity of a Continent*. Jefferson NC: Mcfarland and Company Publishers.
- Jardins, Joseph. 1997. *Environmental Ethics: An Introduction to Environmental Philosophy*. Boston, MA: Wadsworth Publishing Company.
- Kopp, R. and Hazilla, M. 1990. *Social Cost of Environmental Quality Regulations: A General Equilibrium Analysis*!. *Journal of Political Economy*, 98, pp 853-73
- Kraft, Michael. 1996. *Environmental Policy and Politics*. New York, NY: Harper Collins College Publishers.
- Mathews, Jessica. 1991. *Preserving the Global Environment*. New York: Norton and Company.
- Millar, Marian. 1995. *The Third World in Global Environmental Politics*. Boulder: Lynne Rienner Publishers.
- Mpotokwane, M.A. 1992. *Pollution Risks in Botswana*. Unpublished Research paper, pp.3-5.
- Mulvihill P. 1988. *Integration of the State and Indigenous Systems Wildlife management: Problems and Possibilities*. Unpublished paper. School of Urban and Regional Planning. Faculty of Environmental Studies, University of Waterloo, Waterloo, Canada.
- Norman, Omar. 1996. *Economic Development and Environmental Policy*. New York: Kegan Paul International.

- Pearce, D.W., Markanda A. and Barbier, B. 1990. *Sustainable Development: Economics and Environment in the Third World*. London: Earthscan Publication.
- Redcliff, M. and Goodman, D. (eds) 1991. *Environment and Development in Latin America: The Politics of Sustainability*. Manchester, England: Manchester University Press.
- Republic of Botswana. 1992. *Botswana's National Report for the United Nations Conference on Environment and Development*. Department of Town and Regional Planning, Ministry of Local Government and Lands, Gaborone, Botswana.
- Republic of Botswana. 1996. *National Settlement Policy, Final Draft Report, Department of Towns and regional Planning, Ministry of Local Government, Lands, and Housing*. Gaborone, Botswana.
- Ringrose, S., R. Chanda, N. Musisi, and F. Sefe 1996. *Environmental Change in the Mid-Boteti Area of North-Central Botswana: Biophysical Process and Human Perceptions*. *Environmental Management*, 20 (3): 397-410.
- Roe, Emery. 1991. *Development Narratives, or Making the Best of Blueprint Development*. *World Development*, Vol, 19.no.4, 287-300.
- Sadler, B. and J. Bothroyd 1993. *Traditional Knowledge and Environment Assessment*. A Manuscript report prepared for the Canadian Environmental Assessment Research Council march. Ottawa, Canada.
- Schwab, R.M. 1988. *'Environmental Federalism,' Resources*, 92, Washington D.C. Resources for the Future.
- Switzer, Jacqueline. 1994. *Environmental Politics: Domestic and Global Dimensions*. New York, NY: St. Martin's.
- Usher, P. J. 1981. *Sustenance or Recreation? The Future of Native Wildlife Harvesting in North Canada*. pages 56-71 in M.M. Freeman (ed) *Proceedings: First International Symposium on renewable Resources and the Economy of the North*. Association of Canadian Universities for Northern Studies, Ottawa, Canada.
- Vig, Norman J. 1990. *Presidential Leadership: From the Reagan to the Bush Administration*. In

Environmental Policy in the 1990s, Norman Vig and Michael Kraft (eds.) Washington, D.C. CQ Press.

Weaver, James and Kevin O'Keefe. 1991. *The Evolution of Development Economics*. Washington, D.C.: American University Press.

World Bank. 1990. *Towards the Development of an Environmental Action Plan for Nigeria*. World Bank, Washington, DC.

_____1992. *Development and the Environment*. New York: Oxford University Press.