CLIMATE CHANGE AND POVERTY: CONCERNS FOR BOTSWANA AND THE AFRICAN CONTINENT

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ABSTRACT

Climate change poses serious challenges and takes centre stage in the global agenda as an issue calling for corporate strategies and appropriate measures by countries, communities, and individuals. The United Nations and other actors are responding to the challenge with the major focus on the development of strategies, and policy framework. These approaches set standards for relevant and contextualized country's specific approaches to attain sustainable community-climate related livelihoods. On this premises, this review is pre-occupied with Climate Change and Poverty as it concerns Botswana and the African Continent. It was revealed from the study that current trends indicate that Botswanans are gradually shifting from crop production and livestock to tourism partly due to drought related losses. Therefore, there is need for widespread Climate Change Community Education (CCCE) and intensified advocacy at all levels of government in Botswana and the African Continent.

Keywords: *Climate change, poverty, livelihood, Botswana*

INTRODUCTION

Climate change poses serious challenges for sustainable socio-economic development of countries and communities. It has taken centre stage in the global agenda as an international issue calling for corporate strategies and policies and appropriate measures by countries, communities, and individuals. The United Nations, non-governmental organizations, and other actors have responded to the challenge. The major focus has been the development of global strategies, and policy framework to provide guidance on how to address climate change and related consequences. These approaches are meant to set standards for the development of relevant and context specific approaches by countries and other actors to attain sustainable community-climate related livelihoods.

It is appropriate, therefore, for countries to mobilize action and stimulate dialogue towards mitigating the negative impacts and adopt positive measures of managing the effects of climate change at national level. Such measures should strengthen on-going governmental efforts to fight poverty and ensure that the improvement of community livelihoods is not a failure. The intention of this paper is to provoke a debate across professional lines on the subject through assessing community preparedness for climate change and formulating recommendations that are deemed essential. These issues are: (1) the relationship between climate change and livelihoods in general; (2) the relationship between climate change and poverty; (3) the Botswana national poverty reduction strategy and climate change; (4) an assessment of available climate change programs in Botswana as a whole; (5) the level of community preparedness in terms of climate change challenges; and 6) the way forward in creating sustainable community livelihoods.

THE RELATIONSHIP BETWEEN CLIMATE CHANGE AND LIVELIHOODS

Climate change and variation continues to have a great effect on communal livelihoods globally and on the African continent in particular. According to the International Research Institute for Climate Change (IRI, 2007) the phenomenon refers to "longer term trends in average temperatures or rainfall or in variability itself and often to trends resulting wholly or in part from human activities, notably global warming due to burning of fossil fuels". These fossil fuels are said to have damaged the ozone layer which controls the sun's radiation and water evaporation. The International Federation of Red Cross and Red Crescent Societies attest that weather related disasters have increased from an annual average of 200 in the early 1990s to more than 350 since the year 2000 (IFRC, 2009). The increase in disasters relates to equally rising numbers of people affected worldwide. These numbers have risen from an average of 190 million per year in the 1990s to 243 million in 2008. The IFRC (2009) further states that the high number of climate related disasters in 2008 (floods, storms, heat-waves, and droughts) accounted for 60 percent of grants allocated by its Disaster Relief Emergency Fund (DREF). IFRC (2009) posits that climate change affects the natural

resources which are fundamental to the economic development of third world countries. It further asserts that climate change and rapid development and/or economic meltdown in some countries combine to intensify disaster impacts (IFRC, 2009).

The problem is not unique to African countries but is also experienced in the developed world. Australia is threatened by recurring severe drought and drying trends in major parts of the country, the likely increase in heat-waves, floods, and bush fires, and the impact of an increasingly acidic ocean and higher ocean temperatures on marine resources and iconic ecosystem (Steffen, 2009). UNDP (2008) asserts that Africa's variable climate contributes negatively to its development. It is affecting the key sectors of agriculture, water, energy, transport, and health that contribute significantly to a sustainable socio-economic-status of rural communities. African communities rely on animals for transport, draught power, as a source of income. Plants serve as sources of energy, food production, and herbs for treatment of various diseases. Subsistence agriculture has for years been the means of food availability and accessibility for rural communities. It is dependent entirely on rain which provides water also for human and livestock consumption. These communities sell their assets to mediate food deficiencies during drought periods. This kind of practice was observed in South Wollo, northern Ethiopia, where farmers, due to drought, sold their assets (livestock) and plunged into destitution (IFRC, 2007).

Botswana is prone to persistent droughts which the Government has combatted for the past four decades. The National Policy on Disaster Management (1996) reveals that, from 1981 to 1987 and 1991- 1992, the country experienced recurrent and severe droughts. These trends severely affected communities dependent on subsistence agriculture, particularly that which is rainfed, and livestock. Heatwaves, floods, and bush fires are common experiences in Botswana, South Africa, Namibia, Zimbabwe, and other South African Development Community (SADC) countries (International Research Institute, 2007). In addition, water shortage in Botswana capital city, Gaborone, and surrounding villages has been a major drawback for the economic growth of the country. Without potable and industrial water, development of the people is socially and economically jeopardized. Osman-Elasha (2009) argues that currently 300 million Africans have no access to safe drinking water and 313 million others lack basic sanitation. These circumstances have led to various health, economic, and social problems in Africa. The lack of sufficient rain led to depletion of vegetation, soil erosion, land degradation, overharvesting of trees, and unwillingness to conserve natural resources. Yet excess rainfall equally destroys the environment, crops, and houses and causes the development of gullies. A farmer in the Pandamatenga farming block in Chobe district, Botswana, lamented the fact that the harvested sorghum was soaked by winter rains and that many papaya trees were lost. The trees provide supplementary food for employees and their families. All these factors indicate the seriousness of threats posed by climate change to traditional agricultural or communal livelihoods in Botswana (DailyNews, 2009).

Lee (1989) argues that since the majority of the population of Southern Africa Development Community (SADC) States live and work in the rural areas, the development of the agricultural sector is critical. Between 1980 and 1986, agriculture contributed 34 percent of the region's Gross Domestic Product (GNP), employed up to 80 percent of the total labour force, and accounted for about 26 percent of total foreign exchange earnings. In these member states that are not dominated by mining, agriculture contributed 60 percent of total foreign exchange earnings. Although agricultural production has declined in the SADC region over the years, Botswana's economy is still dependent upon it as one form of foreign exchange. Botswana exports beef and beef- products to Europe, Brazil, and other African countries. The Botswana Millennium Development Goals (MDG) Report (2004) asserts that agriculture, which was a dominant sector at independence in 1966, accounting for 40 % of Gross Domestic Product (GDP), has become a marginal source of income for the majority of rural households. Its contribution to employment declined from 15% to 3% in 2001 and its GDP share is now less than 3%. UNDP (2003-2007) confirms that livestock farming and arable agriculture are the most common forms of land use but, over the years, the role of agriculture in rural economies has continued to decline.

Furthermore, President Ian Khama, on a recent official visit to Australia, admitted that agriculture has been performing badly partly due to changes in weather conditions, despite government efforts to revive it (DailyNews, March 8, 2010: 7). This concern is supported by the agricultural performance prevailing in the Bobirwa area where only 1757 farmers were able to account for 4595 hectares in 2010 through the Integrated Support Programme for Arable Agricultural Development (ISPAAD) due to poor rainfall (DailyNews, April 13, 2010). This was in contrast to 5000 farmers who ploughed during the same season in 2009. It is explained that the hot conditions in Bobirwa caused most crops to wither away, especially maize. Similar conditions of low rainfall were faced by farmers in the Tswapong area, particular Lerala village (DailyNews, April, 13, 2010).The herders in North Africa have a similar experience and cannot cope with severe drought because climate change has caused desertification to escalate (Abdalla, 2010). The challenge faced by communities in Botswana is further complicated by mismanagement of communal grazing areas initiated because of shortage of land for cattle farming. As such, the limited communal pastures for large herds of cattle, donkeys, goats, and sheep, and wild animals led to overgrazing. The grazing pastures are unsustainable during the dry season and depletes faster because of mismanagement and lack of cattle control systems. This has led to loss of large herds of cattle by farmers and emergence of various environmental problems such as the outbreak of wild land fires (UN, 1996).

In the Sahel region of North Africa, their major concern is the extensive exploration and production of uranium which has diminished and degraded grazing lands, depleted water supplies, and exacerbated the rate of desertification (Abdalla, 2010). The current strategy in managing communal grazing areas is the fencing that

separates them from the fields (which communities use to grow their crops). The fence is meant to restrain domestic animals from destroying crops and to minimize conflict between and amongst farmers. The minimization of conflict between farmers is also a concern for government agricultural officials. Sentiments about the conflict were raised in Malwelwe village in Botswana recently where community members were warned that those who leave their livestock to destroy other people's crops would face legal action (DailyNews, Tlhakole 18, 2010). Rural areas in Botswana survive on different seasonal croppings that are rain fed. Farming activities are heavily concentrated around the summer rainy season between October and April.

This also applies to the Touareg and nomadic farmers of the Sahara Desert in North Africa (Abdalla, 2010). As such, drought negates availability of nutritious food for subsistence farmers, the country, and the continent. This has made the availability of food and the harvesting of other crops highly uncertain in Botswana. The deficiency of food results from low yields during the drought period, accounting for food insecurity and an ongoing cycle of poverty. Therefore, inadequacies and deficiencies of nutritious food cause malnutrition in children. Until relatively recently, irrigation schemes have not been the traditional practice of agricultural communities in Botswana (Presidential Task Group, 1996). The continuous drought trends have led to increased migration of farmers from rural areas to urban centres in search of alternative livelihoods. The movement of subsistence farmers to urban areas meant the abandonment of agricultural production (Osie-Hwedie, 1984). For example, the Touareg farmers of the Sahel region in North Africa migrated in large numbers to cities in Algeria and Libya because of famine and extreme shortage of water (Abdalla, 2010). This unplanned movement complicated the problem of unemployment in urban areas and placed a burden on limited resources (Vision Council, 2009). Current trends show that Botswana are gradually shifting from crop production and livestock to tourism partly due to drought related losses.

UNDP (2003-2007) states that, in a few areas, local communities have attracted considerable private sector investment and increased rural incomes through utilization of wildlife and veldt products. However, these efforts continue to be undermined by the human-wildlife conflict characterized by regular presence of tourists, issues of invasive species, over-harvesting of resources (especially veldt products), and plagiarism of indigenous knowledge systems. The shift is prompted by their vulnerability to poverty because of low and unreliable rainfall, a series of droughts, loose sandy soils, and hot summers. In such adverse conditions, community involvement in natural resource use, management, and conservation is attractive (economically) to encourage alternative sources of income (NCS, 1996). Botswana attracts tourist by its waterways (Okavango), fauna and flora, and beautiful landscape. The tourism sector has slowly transformed the economic status of some rural communities such as Kasane and Maun, bringing infrastructural development and prompting the establishment of tourism community trusts. This remarkable shift has reduced heavy reliance on

subsistence agriculture to conservation of natural resources. Although tourism is environmentally friendly, it is equally vulnerable to climate change, poor land and environmental management, and political instability.

UNDP (2003) asserts that in Botswana pressure on land resources comes from economic expansion, population growth, migration, livestock populations, animal populations, and climate change. It is further explained that economic activities, industry, and farming not only consume land resources but also pollutes them. Population growth leads to the annexation of more virgin land to meet human needs and may lead to violence (UNDP, 2003, Vision Council, 2009). An example is the dwindling natural resources in the border lands of Ethiopia, Somalia, Kenya, and Uganda which has led to increased fighting among the pastoralist people (IFRC, 2007).

RELATIONSHIP BETWEEN THE CLIMATE CHANGE AND POVERTY

Climate change will hasten the demise of poor and vulnerable communities in Botswana. Abdalla (2010) postulates that climate change escalated desertification and environmental disasters in the Sahara Desert such that farmers and herders struggle to survive. It has eroded their ability to make a living. Currently poverty is a major challenge in Botswana. Therefore, climate change may expose vulnerable communities to extreme poverty. Climate change is not a disaster but a natural hazard with the potentials capable of affecting many people negatively. UNDP (2008) defines natural hazards as a "natural processes or phenomena occurring in the biosphere that may constitute a damaging event and that in turn may be modified by human activities, such as environmental degradation and urbanization".

The International Research Institute (2007) confirms that climate- related disasters, such as catastrophic floods or prolonged drought, have enormous social and economic impacts that can negate many years of development. The prolonged dry periods characterized by damaged vegetation and loose soils, low or no crop production, loss of livestock, and heat-waves followed by heavy rains causing floods, gullies, and dongas, all contribute to the destruction of the environment (UN, 1996). In the Sahara Desert, vulnerability was worsened by the absence of lucid environmental and development policies, combined with population growth, land degradation, and erratic rainfall (Abdalla, 2010).

Early in 2010 torrential rains in Kenya caused floods which killed at least six people, left dozens missing, 5090 people homeless, and washed away 2000 herds of cattle (Daily News; March 8, 2010:18). The loss reduced the resilience of, and increased vulnerability to, poverty in the affected communities. Similar flooding has been experienced in Tanzania, Somalia, Malawi, and Mozambique. In August, 2006 floods in Ethiopia killed 364 people and swept away about 3, 200 cattle after a long drought attributable to climate change.

In response, the Ethiopian Government action was limited to provision of immediate needs (maize and wheat) rather than long term strategies and this led to an

upsurge of poverty (IFRC, 2007). As such, those who were poor before the disaster suffered increased economic and social hardships thereafter. They remained without habitable shelter, nutritious food, potable water, income, livestock, and economic support to reconstruct their lives. In Botswana, heavy down pours in Kenya destroyed maize, sweet reeds, and sorghum in many farms in the area (DailyNews, April 13, 2010). Climate change complicates the achievement of the MDGs by 2015 because of increased suffering and potentials for armed conflict within and between countries.

In addition to climate change, negative human attitudes and practices, especially discrimination and corruption, contribute to their vulnerability (IFRC, 2007). The World Disaster Report (2007:11) states that "disasters do not discriminate but affect minorities and majorities, the able and disable persons, young and old, men and women. But discrimination can multiply the effects of crisis on vulnerable people." As such, due to gender discrimination, disasters affect women and children more than men and female headed more than male headed households.

Gender mainstreaming in poverty reduction is critical as poverty impacts differently on women and men, in particular when coupled with crises and HIV/AIDS. Therefore, it is equally important to track how gender discrimination widens when poverty deepens due to climate change (UNDP, 2003). This makes the poor female headed households and women more vulnerable to disasters or even poorer than they were before the disasters (IFRC, 2009). Human vulnerability refers to a condition or process resulting from physical, social, economic, and environmental factors which determine the likelihood and scale of damage from the impact of a given hazard (UNDP, 2008). The Botswana MDG Report (2004) shows that poor households are made vulnerable to hunger by inflation which erodes real incomes of farmers to subsist during unfavourable seasons. Botswana estimates that 37 percent of the population lives below the poverty datum line (National Vision Council, 2009). The greater proportion is female-headed households which live on less than a dollar a day. These households are over represented amongst those vulnerable to disasters and trapped in poverty. Although all human beings are vulnerable to climate change and related hazards, the poor are the most vulnerable. The Botswana MDG Report (2004) asserts that economic modernization has eroded the traditional support mechanisms and has become a source of vulnerability for households.

The Tswana mafisa system, through which poor families could get a small number of livestock, usually cattle, from those with more resources for purposes of milking, draught power, and possibly seed stock, has all but disappeared. The situation suggests that the United Nation's goal of halving poverty and hunger by 2015 may become a mere dream for African countries, Botswana in particular, when family support systems collapse. Extreme poverty may characterize the period up to 2016 and this may be exacerbated by land degradation, less or heavy rain, crop failure, economic meltdown, and other climate change related factors (Osei-Hwedie, 1998; Abdalla, 2010).

BOTSWANA NATIONAL POVERTY REDUCTION STRATEGY AND THE CLIMATE CHANGE

The Botswana Government has adopted measures to assist economically disadvantaged citizens. These programmes, classified as social security, are threatened by economic meltdown, political instability, and climate change. Their sustainability is fragile and may not equip beneficiaries with basic survival skills to become more resilient in difficult times. According to the Botswana MGD Report (2004) the poverty datum line is based on six items constituting the basic needs of a family in Botswana.

The six elements are: (a) minimum amount of food necessary to maintain physical health; (b) minimum standards for clothing in terms of legality, decency, practicality, and warmth; (c) personal items; (d) household goods; (e) shelter; and (f) miscellaneous items. Therefore, the Botswana approach to poverty reduction is three pronged namely: empowerment through health, education, and skills development; (ii) availability of gainful employment opportunities through growth, incentives for entrepreneurship, and job creation; and (iii) social welfare which addresses trends in patterns of livelihood, employment, education, health, economic growth, and investment. Policies and programmes that fall within this category are the policy on destitution, orphan care, supplementary feeding for vulnerable groups, universal old age pension allowance, World War II veterans benefits, labour based drought relief, and the programme for remote area dwellers. Some of these are examined below.

According to the Destitute Policy (2000), there are two categories of destitute persons. First, those who are affected by natural disasters (drought, earthquakes, floods, windstorms, lightening, fire, ill-health, death of a bread winner, and any other emergency or natural disasters. Second, is an individual who is incapable of engaging in sustainable economic activity and has unreliable and limited sources of income due to old age, mental or physical disability, emotional or psychological disability or is terminally ill with no means of support (Revised National Policy on Destitute Persons, 2002 a). In the event that the economic muscle of the country is affected by climate change, this category, which is dependent on handouts, will become more vulnerable to poverty than before. The universal old age pension provides financial security to elderly citizens who otherwise are without means of support from the extended family system. It was established to ease the economic hardships that the elderly in Botswana experience (Seleka et al, 2007). The records show that the number of beneficiaries steadily increased from 84,577 in 2003 to 86, 859 in 2006, an increase of 2.7 percent in 3 years. The Household Income and Expenditure Survey (HIES, 2002/3) conducted by the Central Statistics Office, indicates that over 95% of the elderly (65 years and above) have been registered for the program.

Physical availability of food is addressed by a national food security policy and strategy that admits Botswana's food production limitations. Its aim is to increase domestic production and ensure adequate capacity to import and store food supplies

to supplement weak domestic production (Botswana Government, 1985). The New National Master Plan for Arable Agriculture and Diary Development (NAMPAADD, 2002) is a bold initiative that seeks to raise agricultural productivity and output through commercialization, modern crop and animal husbandry techniques, and improved infrastructure and extension services. Although a positive action towards the country food sufficiency, there are concerns of possible overcrowding of small farmers which negatively affect the output (Botswana MDG Report, 2004). Botswana nutrition levels have improved in recent years. In 2002, the under fives malnutrition rate was estimated at 6.5%, down from 14% in 1991 (Botswana Government, 1985; Osei-Hwedie, 1998). The figures show a decline of 7.5% which is a significant improvement and achievement but the lack of appropriate strategies to deal with adverse effects of climate may significantly reverse the achievements.

Climate change, HIV/AIDS, and economic decline (unemployment) may deny the 37 percent and others the opportunity to maintain high nutritional levels (Singh, 1999). Furthermore, the Botswana Government has introduced hunger reduction policies, strategies, and programmes that need to be aligned to climate change. The national poverty reduction strategy links and harmonizes anti-poverty initiatives, provides opportunities for people to have sustainable livelihoods through expansion of employment opportunities and improved access to social investment, and monitors progress against poverty. This depends on stable political, climate, and economic development which is not ascertained (Botswana Review, 2010). The Revised National Policy for Rural Development (2002 c) aims at reducing rural poverty, promote sustainable livelihoods, stimulate rural employment and income generation, diversify the rural economy, reduce dependency on government, maintain and improve rural capital, increase agricultural productivity, and promotes participation in development. The initiatives are countered by high rural-urban migration involving skilled, educated, and physically fit individuals leaving behind children and the elderly whose productive capacity is relatively low. The policy ignores rural-urban migration which militates against the achievement of intended objectives. The elderly are already overburdened by care of orphans, the sick, illiteracy, poverty, and physiological or physical limitations (Morris, 1990; Health Task force, 2000; Seleka et al, 2007).

The Financial Assistance Policy (FAP,1982) was administered from 1982-to 2002 to create employment opportunities and encourage investment in a range of economic activities. Although the programme was meant to economically empower Batswana, it was frequently abused. Financial mismanagement is behaviour that may signal economic immaturity of deprived communities, which leads to underdevelopment. The Citizen Entrepreneurial Development Agency (CEDA, 2002) which replaced FAP as well as Small and Medium Entrepreneurs (SMEs), aims to provide financial assistance to enterprising Batswana citizens. It promotes citizen entrepreneurship thus supporting economic diversification and creating employment opportunities. However, the intended positive results are also affected negatively by changes in weather patterns. The

programme has to be aligned to these changes for the purpose of realizing its intended goals. The Industrial Development Policy (1984) was revised in 1998 with the aim of diversifying the economy, fostering growth of the private sector, assisting small scale rural entrepreneurs, supporting growth and employment creation in towns and villages, and thus achieving higher levels of economic productivity. All these efforts need to be evaluated, particularly their sustainability taking into account climate change factors and their impact on the lives of communities (Botswana MDG Report, 2004). These policies and programmes are aligned to the International Labour Organization's poverty reduction strategies that promote high work standards (ILO, 2010). It advocates that work policies and programmes should incorporate poverty reduction strategies by incorporating economic growth with a substantial reorientation in favour of the poor. The focus should be on employment-centered development strategy, comprehensive social safety nets, social transfers, and changes in institutions, laws, regulations, and practices that are part of the process that creates and perpetuates poverty. The principle that is advanced by the Internation Labour Organization is still a missing factor in the labour market system of the country. Decisive action needs to be taken by the leadership of the country and monitoring of its application is essential.

On the other hand, the National Conservation Society (NCS, 1994) recommended veldt products as opportunities for diversification. It considers natural resources as a viable source of income for many people in the rural areas of Botswana, particularly in the west and north of the country where alternative economic opportunities are limited. These communities have, for a long time, used plants and insects as food, medicine, fibres, building materials, and sources of income. The grapple plant *(Harpagophytum procumbens)* which is medicinal contributes about P750.00 per household during the harvest season of three months and the mophane worm *(Gonimbrosia melima)* harvest also yields up to P750, 00 per season. These natural resources are seasonal and vulnerable to climate change as well but this is not mainstreamed in the management process. Therefore, the yields may be frustrated in times of extended drought or heavy rain. UNDP (2003-2007) states that Botswana's stock of natural resources which include land, minerals, water, flora, and fauna are the backbone of the economy and livelihoods. The management of natural resources is guided by national environmental legislation and strategies and multilateral environmental agreements signed between 1997and 2003 and should include communities.

THE AVAILABILITY OF CLIMATE CHANGE PROGRAMS

The Government's efforts to address climate change issues in the country are weak in community preparedness and public education. According to the Botswana MDG's Report (2004) the instrument adopted to deal with adverse climate conditions and managing risk and vulnerability to natural disasters is the National Policy on

Disaster Management (1996) which provides a framework for disaster management but with a limited inclination to climate change. The Botswana Government acknowledges that there is need for joint intensive research by stakeholders to tackle the challenge of climate change at village, district, and national levels. The approach should adopt a multi-sectoral approach as was the case with HIV and AIDS interventions. It is attested that, although Botswana coped well with drought, animal disease, and intermittent low intensity floods, there is need for adequate disaster preparedness capacity by minimizing exposure to natural disasters and responding quickly and effectively when they occur and ensuring speedy recovery. This would require better decision making, improved planning, effective risk management, and innovation in development and environmental protection activities (Botswana MDG Report, 2004).

All that the government is advocating for can be achieved by working with community based organizations, churches, the community business sector, community leaders, local associations, and farmers. Each sector must identify its role, make a commitment, and be held to account to other stakeholders (ISDR, 2005). Disasters and hazards risks including climate change are not necessarily the responsibility of government alone but everyone in the country. All approaches that work to reduce vulnerability to disasters and climate change must be comprehensive and inclusive of all stakeholders (Acquah, 2000: ISDR, 2005).

Another government initiative intended to reduce hunger is the labour based drought relief programme. It provides work and income in rural areas for people whose livelihoods are temporarily disrupted by drought. It is a short term measure that does not facilitate recovery from losses incurred by individuals and families neither does it provide adaptation skills for preparedness and establishment measures to address the challenge. The Revised National Food Strategy (1985) is a framework for attaining national and household food and nutrition security. This is envisaged through the attainment of household income security, physical and economic access of households to adequate supplies of safe and nutritionally adequate food, and availability of food through import and production. This is seriously hampered by climate change, economic meltdown, and political instability that characterize southern African countries (Vision Council, 2009: BIDPA, 2010).

In this case, imports and production may not be a reliable source of food security. The strategic grain reserve that seeks to store enough grain to meet the national requirement of cereals for at least three months cannot resolve the crisis either. It might be a good idea but three months is a short period because food insecurity may continue for years (Osei-Hwedie, 1998). The Botswana Agricultural Marketing Board (BAMB) tries to stockpile cereals by buying from local traders. Although it offers favourable prices and extends market services to isolated parts of the country through depots and cooperatives to farmers, they fail to raise sufficient quantities (Botswana

MDG Report, 2004). In addition to government efforts, the UN General Assembly in 1993 established the World Commission on Environment and Development (WCED) to assist and improve the lives of women who experience shortages and use contaminated water, depleted wood resources, unproductive arable land, and suffer the ravages of poverty.

LEVEL OF COMMUNITY PREPAREDNESS TO ADDRESS CLIMATE CHANGE

Community knowledge on climate change and how to prepare against its negative effects is inadequate in Botswana and Africa as a whole. A sustainable strategy is not only a necessity but a requirement for communities to adopt techniques, lifestyles, and behaviour that is climate intelligent. The changes are not only pertinent to communities but also local institutions, households, and governments. There is need for good governance to resolve corruption issues regarding land allocation, resource and water management, and discrimination at all levels. Osei-Hwedie (1998) argues that, although five percent of the surface area in Botswana has the potential for agriculture, it is affected by rainfall variability combined with high evapo-transpiration rates which leads to crop failure. This condition affects the food security of the country especially at the household levels where people cannot afford to buy imported food (Osei-Hwedie, 1998). Though that is the case, no strategy has been developed to educate communities on these realties and assist them to devise new forms of sustainable livelihood which are environmentally friendly. The Government of Botswana Poverty Reduction Strategy (2002b) focuses on small scale horticulture development, expanding rural employment opportunities through rain fed crop production, increasing small stock production, strengthening community based natural resource management programmes, refocusing social safety nets, creating employment opportunity in the tourism industry, and balancing capacity for small and medium citizen business. All these need to be linked with climate change policies and programmes.

Sitton (2000) states that the Israeli Government's major transition from traditional to modern agriculture was based, from the beginning, on changing attitudes with regard to the supply of water to arid regions, combined with sustainable adaptation and implementation of advanced agricultural methods based on research and development. The country is arid (like Botswana) with serious problems of water shortage because of stronger solar radiation and higher levels of water evaporation from the ground surface. Similar decisive action by the Government to provide water in the arid area and ensure that agricultural activities continue despite weather conditions should be taken in Botswana.

Botswana should revisit its framework on sustainable use of environmental resources which focuses on: (a) land degradation and the related issues of desertification, soil erosion and biodiversity loss; (b) conflicting land uses; (c) climate change; (d) access to water for household, livestock, arable and industrial use; (e) water scarcities; (f) fuel wood depletion and lack of alternative forms of energy; and (g) the protection

of cultural and natural heritages (UNDP, 2003-2007). The following critical issues must be addressed with involvement of communities for climate change preparedness:

a) Water is a scarce resource in Botswana, but the country is on course to ensure universal access to safe drinking water. The proportion of the population with sustainable access to safe drinking water has increased from 77% in 1996 to 97.7% in 2000 (UNDP, 2003-2007). The major problem is that water coverage does not include a provision for irrigation but only for domestic and industrial purposes.

b) It is assumed that environmental concerns, public education, and awareness activities are undertaken by environmental organizations within and outside government and that there has been an increase in public participation in management and use of natural resources. This is motivated by government's decision to devolve natural resources management and user rights to local communities. Public education in terms of the policy is lacking because not all communities are aware and utilize it (UNDP, 2003-2007). The policy has to incorporate climate change and be intensively disseminated to the wider community.

Among some of the strategies to arrest the decline of wildlife populations was the devolution of use and management of wildlife to local communities. However, the management capacity of many rural communities is low and the provision of necessary technical support is a mammoth task. Participation by the private sector in environmental management has been limited (UNDP, 2003-2007). Based on a global understanding of climate change, it is not only necessary to capacitate communities but it should be a mandatory process.

THE WAY FORWARD TO SUSTAINABLE PROGRESS

According to Sitton (2000) desertification affects arid regions throughout the world, inflicting destitution on the populations of vast areas and threatening them with famine. The writer further asserts that confronting the problem caused by desertification requires tremendous efforts like dedicated leadership that is aware of the problem, willing to allocate adequate financial resources and to introduce effective agro-technological methods, and the endowment of perseverance (Acquah, 2000). This is meant to develop resilience in communities to ensure food security. Twigg (2007) asserts that community resilience is established when communities have the capacity to absorb stress or destructive forces through resistance or adaptation, the capacity to manage or maintain certain basic functions and structures, during disastrous events; and the capacity to recover or bounce back after the event. He states that the emphasis must be on what communities can do to strengthen their capacities rather than concentrating on their vulnerability to disaster or their needs in an emergency. As such, the thematic areas drawn for building resilience are governance, risk assessment, knowledge and education, risk management and vulnerability reduction, and disaster

preparedness and response. These have to be incorporated in government policies that seek to promote the progressive livelihoods of communities.

In this particular case the focus must be on knowledge and education with specific emphasis on: public awareness, knowledge and skills; information management and sharing; education and training; culture, attitudes, and motivation; and learning and research. ISDR (2005) shows that the Hyogo Framework for Action augments recommendations that both communities and local authorities should be empowered to manage and reduce disaster by having access to necessary information and resources and the authority to implement actions for disaster risk reduction.

In addition, Reddy (2010) argues that the global and national agenda should include mitigation and adaptation to climate change, finance, and technology to support these efforts. At the national level, governments must restore environmental laws, hear the voices and struggles of communities experiencing the impact of climate change, and collectively raise the level of consciousness in dealing with the issues. There are several legal instruments that protect the environment and natural resources that are not known to intended relevant communities. It is time that public education is given a central focus in policies and strategies developed by all stakeholders.

CONCLUSION AND RECOMMENDATIONS

Botswana and other African countries experiencing persistent drought and changing patterns of rainfall must activate community climate change preparedness. The focus of government policies in Botswana is on economic empowerment and, to a lesser extent, the use of natural resources without incorporating climate change strategies. Emphasis on economic poverty without taking into account other factors that may adversely affect the sustainability of such programmes is proving to be problematic. Botswana can no longer rely on rain fed agriculture to attain a sustainable livelihood for communities. Without research based approaches and provision of water to rural communities for arable farming, subsistence agriculture will not be a viable economic activity in this age of adverse climate change.

There should also be widespread Climate Change Community Education and intensified advocacy at all levels of government in Botswana and the African Continent. Communities should lead the process of making adjustments in their lifestyles and caring for their environment. This should not exclude the efforts of the Government in assisting the citizens but climate change strategies should be incorporated in all programmes (especially that addressing poverty alleviation) as an overarching issue. Finally, It is, therefore, appropriate for countries to mobilize action, stimulate dialogue, and work towards mitigating the negative impact of climate change at national and community levels. Such measures should strengthen strategies against poverty and the building of a local resource base. Without this consideration positive results will be challenged and the society's future development threatened.

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