

**A Study of the Contribution of Sustainable Natural Resource
Management to Economic Growth, Poverty Eradication and
Achievement of NDP 10 Goals**

Sector Assessments: Tourism & Agriculture

By



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Acronyms

ALDEP	Arable Lands Development Programme
ARAP	Accelerated Rainfed Arable Programme
BCA	Botswana College of Agriculture
BIDPA	Botswana Institute for Development Policy Analysis
BoB	Bank of Botswana
BOBS	Botswana Bureau of Standards
CBNRM	Community Based Natural Resource Management
CEDA	Citizen Entrepreneurial Development Agency
CH1	Community Hunting1
CH2	Community Hunting 2
CSO	Central Statistics Office
DCs	District Councils
DEA	Department of Environmental Affairs
DWA	Department of Water Affairs
DWNP	Department of Wildlife and National Parks
FAO	Food and Agriculture Organization
FAP	Financial Assistance Policy
FMD	Foot and Mouth Disease
GDP	Gross Domestic Product
GoB	Government of Botswana
HIES	Household Income and Expenditure Survey
ISPAAD	Integrated Support Programme for Arable Agriculture Development
LIMID	Livestock Management and Infrastructure Development
LPG	Liquefied Petroleum Gas
LWDP	Livestock Water Development Programme
MDG	Millennium Development Goals
MEWT	Ministry of Environment Wildlife and Tourism
MFDP	Ministry of Finance and Development Planning
MOA	Ministry of Agriculture
NAMPAADD	National Master Plan for Arable Agriculture and Dairy Development
NDMO	National Disaster Management Office
NDP	National Development Plan
NGO	Non Governmental Organization
NWNP	National Water Master Plan
SLOCA	Services for Livestock Owners in Communal Areas
SOER	State of the Environment Report
TGLP	Tribal Grazing Land Policy
UNEP	United Nations Environmental Programme
UNFCC	United Nations Framework on Climate Change
WUC	Water Utilities Corporation
WTTC	World Travel& Tourism Council

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1 Tourism

1.1 Tourism: Introduction

In this section of the Report we consider the financial returns to Botswana from nature-based tourism, the scope this offers to contribute to poverty eradication and some key issues that have to be addressed in order to realise this potential. In ecosystem terms, nature-based tourism is just a small part of the services – cultural services in the TEEB (2010) classification – that are provided by Botswana's natural assets. So before focusing in on nature-based tourism it is worth remembering that the wilderness that provides wildlife for tourism also provides other critical eco-system services for Botswana. Local livelihoods depend on provisioning services (e.g. water and veld products) and Botswana as a whole relies on regulating services (e.g. carbon sequestration and maintaining soil quality).

These regulating services do not have a financial value but they do have a large economic value to the country as a whole. For example, Turpie et al (2006) conservatively estimate indirect use values of 277 million Pula/year (430 million in 2010 prices) from the Okavango Delta Ramsar Site to Botswana of which 58% are attributable to carbon storage and 28% to wildlife refuge services. Arntzen et al. (2010) estimate the carbon sequestration value of the Makgadikgadi is 136 million Pula/annum.

These issues are discussed extensively in Yaron et al (2012) and will not be repeated here. However, a couple of implications do need to be highlighted. Firstly, tourism policy needs to take account of other users of these shared natural resources in order to provide solid foundations for the future and to support human development in economic, social and ecological terms. Secondly, we are particularly interested in ways of developing tourism that contributes to all these aspects of human development and, as such, can be described as providing green growth. For this reason, the latter part of this Section considers community-based natural resource management (CBNRM), how to add value from cultural tourism and diversification and building local skills for nature-based tourism to strengthen the contribution to poverty eradication.

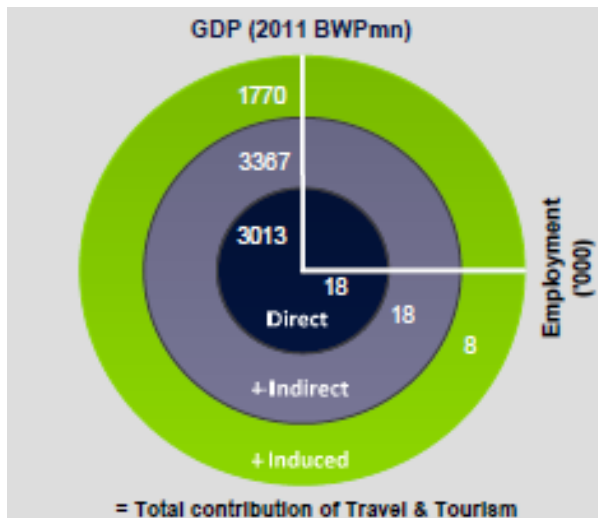
1.2 Tourism and Economic Growth

According to WTTC (2012), the travel and tourism sector in Botswana contributed a total of 6.5% of GDP and 45,000 jobs (11.9% of employment¹) in 2011. As Figure 1 shows the *direct* contribution of travel and tourism was some 3013 million Pula (2.4% of GDP) and 18,000 jobs (4.8% of formal employment)– these are in the accommodation, restaurant and transport sectors that provide foreign visitors and local residents with tourism and travel

¹Based on total employment of 378,877 reported in CSO March 2011 Formal Employment Statistics

services for business and leisure purposes. Government spending to support individual visits, for example on national parks, is included in this measure.

Figure 1: Total Travel & Tourism Contribution to GDP & Employment



Source: WTTC (2012), p1

The direct contribution of travel and tourism is the standard measure reported in official statistics². Note that the direct tourism measure captures the impact of foreign and domestic visitors³. Currently, expert opinion and evidence from other African countries indicates that domestic travelers are most likely to be visiting friends or relatives, for business, medical or religious purposes rather than undertaking nature-based tourism⁴. Anecdotal evidence suggests that a number of workshops are held in lodges and hotels that rely on an attractive natural environment – which could count as domestic nature-based tourism. However, no published survey data is available on the nature of domestic tourism and so for the purpose of analyzing linkages between tourism and the natural environment we focus solely on the statistics for foreign visitors.

As Table 1 below shows, leisure (sometimes known as holiday) spending accounted for a third of all spending by foreign visitors in 2009 and these visits are nature-based. National tourism statistics show that there were more visits to national parks and reserves (284,501 in 2007) than there were foreign leisure visitors (257,145 in 2007), but we do not know if multiple visits or domestic tourism and foreign business/VFR visits account for the difference.

² As specified in the 2008 Tourism Satellite Account: Recommended Methodological Framework

³ Leechor and Fabricius (2005). The UNWTO simply defines Tourists as persons who are "travelling to and staying in places outside their usual environment for not more than one consecutive year for leisure, business and other purposes not related to the exercise of an activity remunerated from within the place visited".

⁴ Leechor and Fabricius (2005), Millington *et al.* (2007)

Table 1: Foreign tourist spend by main purpose of visit, 2009

	Million Pula	Share
Leisure	964	33%
VFR	1259	43%
Business	255	9%
Transit	349	12%
Other	116	4%
Total	2943	

Source: Derived from Department of Tourism (2010)

Given that foreign visitor spending accounts for 70.6% of direct tourism impact according to WTTC (2012) and that at least a third of foreign visitor spending is nature-related, tourism related to Botswana's natural environment *directly* accounts for a minimum of 4,190 jobs and 0.6% of GDP (around 1000 million Pula each year).

Spending by tourists in Botswana creates additional economic activity. For example, a lodge employs staff (a direct effect of tourism) and these staff spend their wages on food, school fees and other household items (indirect effects). Government collective spending on infrastructure, security and other services that is attributable to tourism is allocated to the *indirect* impact category. In addition, direct and indirect spending has a subsequent *induced* economic impact (much as a stone landing in a pond causes a wave to ripple outwards). All of these economic impacts are calculated by WTTC and are shown in Table 2 below.

Indirect and induced tourism and travel contributes 1.7 times as much to GDP and 1.4 times as much to employment as the direct impact. Based on the foreign visitor share of direct tourism GDP, the total financial value of tourism related to Botswana's natural environment could account for as many as 5870 jobs and 1.0% of GDP (some 1700 million Pula each year).

Table 2: WTTC 2012 tourism & travel economic impacts, Botswana

Botswana (BWPmn, real 2011 prices)	2006	2007	2008	2009	2010	2011	2012E	2022F
1. Visitor exports	7373.6	7862.8	6896.9	6527.4	6385.5	6496.1	6927.2	11150.3
2. Domestic expenditure	1601.4	1751.1	1737.0	2069.7	2620.0	2709.3	2980.9	4208.6
3. Internal tourism consumption (= 1 + 2 + government individual spending)	9118.7	9776.1	8818.1	8820.3	9217.6	9428.4	10154.7	15807.9
4. Purchases by tourism providers, including imported goods (supply chain)	-6428.6	-6981.8	-6268.9	-6181.2	-6351.4	-6415.5	-6908.2	-10397.9
5. Direct contribution of Travel & Tourism to GDP (= 3 + 4)	2690.1	2794.4	2549.3	2639.1	2866.1	3013.0	3246.5	5409.9
Other final impacts (indirect & induced)	2497.0	2491.9	2097.5	2002.2	2003.2	2020.3	2176.9	3627.6
6. Domestic supply chain								
7. Capital investment	742.0	795.4	823.6	988.7	1096.6	1181.0	1252.8	1973.5
8. Government collective spending	866.1	929.6	948.6	1093.0	1200.0	1266.3	1329.5	2088.1
9. Imported goods from indirect spending	-538.9	-696.4	-859.9	-1072.4	-1148.3	-1100.1	-1069.2	-1138.2
10. Induced	1640.8	1654.5	1418.0	1508.7	1657.2	1769.8	1914.4	3289.2
11. Total contribution of Travel & Tourism to GDP (= 5 + 6 + 7 + 8 + 9 + 10)	7897.2	7969.3	6977.0	7159.4	7674.8	8150.2	8850.8	15250.1
Employment impacts ('000)								
12. Direct contribution of Travel & Tourism to employment	15.7	15.7	17.3	17.9	18.7	18.5	20.3	27.7
13. Total contribution of Travel & Tourism to employment	52.0	50.5	51.3	40.2	42.6	45.1	49.3	74.5

Unfortunately, the WTTC figures do not distinguish the foreign visitor share of *total* tourism and travel-related GDP and employment (6.5% of GDP and 45,000 jobs) but it is likely to be lower than the share of *direct* GDP and employment⁵. The reason for this is that the money spent by domestic tourists (on food and transport) is likely to stay in the local economy and have a big multiplier effect while a much higher proportion of the money spent by foreign

⁵If domestic tourists become more interested in nature-based local holidays this will raise the overall share of nature-based tourism and is not included in the “32,000 jobs and 4.6% of GDP” figure.

visitors is used to purchase imported food, skills and capital. These imports are referred to in economic terms as “leakage”. An analysis by BTDP (2000) quoted in Mbaiwa (2005) found leakage of 71% of foreign visitor tourism expenditure in Botswana – which is very high by international standards⁶ – nonetheless, Mbaiwa (2005) provides a credible description of ways in which this occurs. This leakage effect tends to overstate the NR-based share of *total* tourism GDP although, as we have seen, the NR-based share of *direct* tourism GDP is likely to be an under-estimate.

As Table 2 shows, leakage from indirect spending accounted for 1,100 million Pula in 2011. Of course, many imports in the tourism sector are required to ensure that high-spending visitors receive a high standard of service but, as we will see, there are opportunities to add value to nature-based tourism that will reduce leakages. By keeping a higher proportion of total tourism spending in local areas this is expected to make the contribution of tourism spending to poverty eradication more effective

Some caution is required when comparing the economic contribution of tourism in Botswana with other countries as differences in the structure of the economy will heavily influence the results. However, reviewing the comparisons in WTTC (2012) we note that:

- Despite rapid growth over the past two decades, tourism contributes a relatively modest share of GDP in Botswana. The direct contribution of travel and tourism to 2011 GDP in Botswana (2.4%) is some way below the world average (5.2%)⁷ as well as countries in the region such as South Africa (2.7%) and Tanzania (5%).
- The contribution of tourism to total employment in Botswana is higher than the contribution to GDP (as tourism is more labour-intensive than mining) but it remains lower than that of regional competitors: 7.6% in Botswana compared to 9% in South Africa and 11.6% in Tanzania.
- Imported goods from indirect spending (one component of leakage) cost Botswana 1,100 million Pula which is 54.5% of all estimated indirect and induced spending in the domestic supply chain. In South Africa, the comparable leakage figure is 10.8%.
- Tourism is projected to become significantly more important as a source of jobs in Botswana. The share of tourism employment in total employment is forecast to grow by 4.2% each year between 2012 and 2022 (compared with 2% per annum in South Africa). By 2022, the total contribution of tourism to national employment in Botswana is forecast to be 9.6% (compared to 7.6% in 2011).

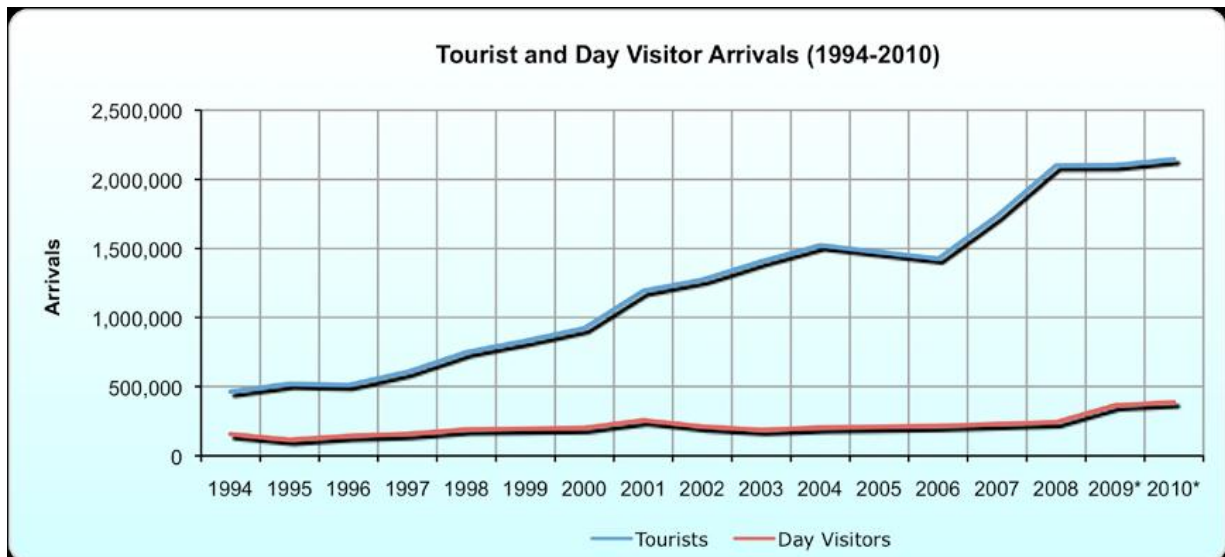
The most important driver of forecast tourism growth is the projected increase in foreign visitor numbers. As Figure 2 shows, tourist (foreign visitor) arrivals went from 500,000 in 1995 to 1 million in 2000 and 2 million in 2008. These arrivals are projected by WTTC (2012) to exceed 3.5 million annually by 2022. We also note that the WTTC forecast shows the

⁶Smith and Jenner (1992) quoted in Wells (1997) report leakage ranging from 11% in the Philippines rising to 60% in pre-independence Seychelles. 10 out of 13 countries had leakage rates below 50%.

⁷Industrialised countries tend to have higher contributions of travel and tourism to GDP because domestic travel and tourism are a much bigger part of the economy

employment share attributed to foreign visitors increasing over this period (70% to 73%). We have already seen that NR-based tourism plays an important role in this and Leechor and Fabricius (2005) argue that this leisure tourism has the “greatest potential for significant, managed tourism growth”. Hence sustainable natural resource management will be essential to realize this projected growth and to maintain employment benefits over time.

Figure 2: Tourist and Day Arrivals; 1994-2010



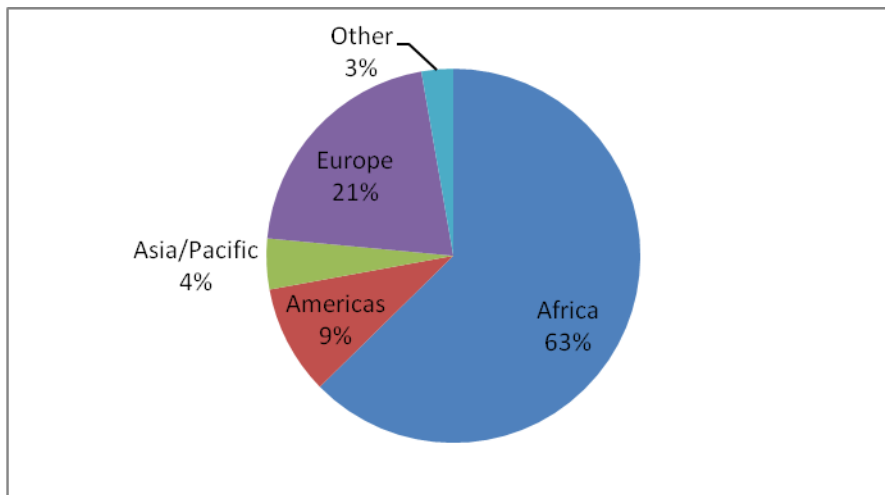
Source: Department of Tourism (2010)

Indeed, Leechor and Fabricius highlight that “Botswana’s major tourism asset is its incredible wildlife resources. Similar wildlife experiences are only to be found in Southern and Eastern Africa and as such Botswana’s potential competitors are located within the region” p69. They provide a convincing argument that “Botswana’s African wilderness status and icons are clearly the brand assets that differentiate the destination from its competitors. These assets have huge emotional appeal to the growing global tourism market that is increasingly in search of enriching experiences by exploring new horizons. The Okavango Delta, the elephants of the Chobe and the San culture are highly marketable brand icons that contribute to the mystique and celebrity status of the destination” p71.

This brand is critically dependent on the ecosystem services of the Okavango Delta and Chobe National Park. For this reason sustainability needs to be at the heart of the national tourism strategy. In practice, this requires addressing issues such as climate change, competition (from other sources) for use of water, environmental degradation in the Okavango Delta caused by open-access and poverty, and the explosion in the elephant population in the Chobe National Park.

In terms of where visitors come from, Figure 3 indicates that most tourists come from Africa (principally South Africa), followed by Europe and the Americas (mainly the USA). However, the results of a visitor survey reported by Department of Tourism (2010) suggest that visitors from the USA, Asia/Pacific and most European countries spend 3-4 times as much per day as visitors from Africa.

Figure 3: Origin of leisure visitor arrivals, 2007



Source: Derived from Department of Tourism (2010)

The analysis of tourism growth sources for the Seychelles (a high-value, low volume destination) holds some interesting findings for Botswana. Currently, their tourism is dominated by visits from Europe (75%) with smaller numbers of visitors from Africa (13%) and Asia (9%)⁸. However, they identify important growth markets as:

- Asia; and
- Russia

These are likely to be important growth markets for Botswana as well because of the rapid increase in tourists who can afford the kind of nature-based tourism that Botswana has to offer.

1.3 Tourism and Poverty Eradication

International Evidence and implications for Botswana

Mitchell & Ashley (2007) review a wide range of literature analysing the impact of tourism on poverty reduction and conclude that the poor gain at best 20%-33% of total tourist expenditure in a given destination. UNEP (2012) cite studies showing the poor gain as much

⁸The Seychelles Tourism Master Plan: Facts and Findings, 2011, Seychelles Tourism Board

as 34% of the total tourism spending in Malaysia⁹ and as little as 10% of total tourism income spent in Zanzibar¹⁰.

In addition, estimates from two separate studies suggest that tourism has reduced the incidence of poverty in Costa Rica by between 1.4%¹¹ and 3%¹². This is in a middle-income country that relies on travel and tourism for significantly more of its GDP than does Botswana (13% Vs 6.5%). So while we can expect tourism to contribute to poverty eradication in Botswana it clearly can only provide one part of the solution.

The international literature suggests factors that are likely to make increased tourism spending in a country more or less beneficial for the poor. At a macroeconomic level the challenge is to reduce leakage and increase the multiplier effect of tourism spending in the national economy – Mill (2002). At a micro-economic level Ashley and Mitchell (2005) argue that companies and government can alter their behaviour in various ways to “sharpen the pro-poor benefits from tourism”.

The Sustainable Tourism for Eliminating Poverty (ST-EP) initiative has identified seven different mechanisms that can help in this regard. These are: (1) Undertaking measures to increase the number of the poor working in tourism enterprises; (2) Maximising the proportion of tourism spending that is retained in local communities and involving the poor in the supply process; (3) Promoting the direct sales of goods and services to visitors by the poor from informal businesses; (4) Establishing and managing more formal tourism enterprises by the poor, either individually or at a community level; (5) Using taxes or levies on tourism income or profits with proceeds benefiting the poor; (6) Supporting the poor in money or in kind, by visitors or tourism enterprises; and (7) Investing in infrastructure that offers local communities the chance to gain new access to available resources¹³

Although the ST-EP recommendations are based on considerable experience of those working in the tourism sector, academic research suggests that other factors also need to be taken into account. Blake et al (2008) use a computable general equilibrium (CGE) model of the Brazilian economy to investigate how the gains from tourism expansion affect different income groups. They find that the greatest gains are obtained by skilled rather than unskilled labour and so, while the poor do benefit from increased tourism higher income groups benefit even more. This skills issue is discussed further below.

CEPAL (2007), although using a much simpler analytical approach with survey data from Costa Rica and Nicaragua, also find that “Tourism, then, contributes to poverty reduction

⁹TPRG (2009): *The Application of Value Chain Analysis to measure Economic Benefits at Tanjong Piai, Pontian, and Johor*. Tourism Planning Research Group. Universiti Teknologi Malaysia.

¹⁰Steck, B., K. Wood, and J. Bishop (2010): *Tourism: More Value for Zanzibar. Value Chain Analysis*. SNV, VSO, ZATI.

¹¹Rojas, L. (2009), *Evolución e Importancia del Turismo en Costa Rica*. San José: Estado de la Nación en Desarrollo Sostenible

¹²CEPAL (2007), *Turismo y Condiciones Sociales en Centroamérica: Las Experiencias en Costa Rica y Nicaragua*, NACIONES UNIDAS COMISIÓN ECONÓMICA PARA AMÉRICA LATINA Y EL CARIBE – CEPAL

¹³UNWTO (2004), *Tourism and Poverty Alleviation: Recommendations for Action*. Madrid: World Tourism Organization.

under certain circumstances, but further policy implementations in terms of education and training are necessary so as to help workers to get the most of tourism employment as the sector grows”.

Research is needed to understand whether these results will apply in Botswana but there are reasons to suggest this is likely. On one hand we know that:

- Women are most likely to gain new tourism jobs;
- Employment income is important as a route out of poverty; and
- Remittances and transfers financed from tourism are important within livelihood strategies of the poor.

Yet, on the other hand we know the primary tourism market is high value and low volume and so relative to mass market tourism we might expect a higher proportion of jobs created to be skilled (e.g. guides and chefs) rather than unskilled (e.g. cleaners). Skilled workers are most likely to have other job opportunities (in the mining, manufacturing or service sectors) and so increased tourism will tend to push up wages for this group. The evidence from Latin America suggests second set of factors is likely to dominate over time.

This does not mean that tourism expansion will fail to benefit the poor but it suggests that international experience is likely to be relevant to Botswana: changes in behavior by government, private companies and CBOs can improve the returns to the poor. We consider what form this might take in the section below.

1.4 Tourism and Green Growth: Opportunities for Botswana

Realising the potential of CBNRM

Community-based natural resource management (CBNRM) – described in Box 1 below - can help tourism to be more pro-poor in a number of ways including:

1. Increasing local income generated by tourism visits
2. Creating skilled job opportunities (e.g. guides)
3. Helping to develop small businesses in rural areas providing services to the tourism industry; and
4. Empowering local people to manage natural resources in *their* locality.

Many of the mechanisms identified by ST-EP (see above) can potentially be provided by CBNRM. In addition, it provides an opportunity for tourism to become a sustainable livelihood for the local community rather than an alien activity that simply provides jobs for some community members. McCulloch (2010) illustrates how this distinction matters for local people in the Makgadikgadi Pan National Park. Currently, wildlife benefits accrue nearly entirely to the State while livestock benefits accrue to the individual. So, while a switch from livestock to more wildlife-based land use would be better for the environment, more resilient to drought and climate change and produce more income for Botswana it is

not in the interest of local people. At the moment the returns to poor households from wildlife are far too low to encourage more sustainable use of land that is in the national interest.

Box 1: How CBNRM works in Botswana

The entire country of Botswana is split up into administrative blocks called Controlled Hunting Areas (CHAs). Each area has a wildlife off-take quota designated by the Department of Wildlife and National Parks (DWNP). Some CHAs, such as protected areas, have a hunting quota of zero. Other CHAs are designated for community-use. Before 1995, only individual community members could apply for Game Licenses to hunt certain game for their personal consumption.

Now, if a community organises itself and forms a representative Quota Management Committee, it can be recognised by DWNP to manage the whole area's quota. The committee will decide how to divide up the quota among families, and send wildlife monitors out on hunting trips to make sure the quota is adhered to.

If the community then forms a legally recognised Trust and develops a Land Use Plan, it can apply for a lease over the CHA from the Tribal Land Board. This will allow the Trust to sub-lease use of their land and their quota to a tourism company for photographic or hunting safaris. This has the potential to bring in substantial income to rural areas.

Veld (forest/non-animal) resources can also be utilised, through co-operative harvesting and marketing ventures. Currently, products such as grapple (devil's claw), herbal teas, phane worms and truffles are being collected by community organisations and sold directly to the private sector or through NGOs. Processing and marketing techniques of various products are still being explored.

Source: www.cbnrm.bw

Mbaiwa (2011a) notes that CBNRM has produced some notable success stories generating 8000 jobs and 52.5 million Pula from 2006 to 2009. The example of Sankuyo – highlighted in Yaron et al. (2012) - illustrates what CBNRM can achieve. However, nationally, the potential of CBNRM for poverty reduction has not been realized. Some 88% of CBNRM revenues have been concentrated in 8 CBOs and nearly 2/3 of revenues have come from trophy hunting which will be lost with the move to photographic tourism. The failure of CBO governance has meant that a small number of Board members rather than poor communities have gained most from CBNRM. This failure can result, as research from the Makgadikgadi shows, in local people feeling they have no stake in tourism - McCulloch (2010).

The evidence from Namibia¹⁴ suggests that there are three categories of CBNRM communities: those that are resource rich (relative to the number of inhabitants), a medium resource/beneficiary and a low resource/beneficiary category. For resource-rich

¹⁴IRDNC analysis quoted by Yaron (2010)

communities CBNRM can provide a route out of poverty but only if there is sustained and significant NGO and Government support over a number of years to build local capacity and if the appropriate regulatory framework is in place.

Given the problems of CBO governance within CBNRM, GoB has felt it necessary to closely regulate CBOs in this sector. This presents a classic “principal-agent¹⁵” problem in which central government is the principal with responsibility for monitoring CBNRM CBOs (the agent) but has to rely on imperfect information as those in charge are not based within the local community. The result is either that CBOs do not act as GoB would like them to (e.g. by excluding many of the community) or that regulation fails to account for local circumstances (making it difficult for CBOs to do a good job).

In Namibia, the government gets around this problem by relying on well-informed NGOs (e.g. IRDNC) that have 20 years track record working with the communities and government on CBNRM. In Botswana, there is much less NGO capacity in this sector¹⁶ and government seems more comfortable relying on MEWT staff based in regional centres to work with communities. However, in order to make this work effectively, local MEWT staff need to have community-level work as a major component of their job description and they need to be based in the community for a significant proportion of their time.

More generally, CBO businesses based on CBNRM need help to build capacity as well as a supportive regulatory environment to become effective tourism businesses. These needs can include basic business and financial management but even where these are in place, more specialist hospitality industry training (e.g. how to run a camp site to appeal to international tourists) will be required. However, hospitality training should build on the comparative advantage that CBNRM has. For example, wild food foraging and cooking has become fashionable in Europe and the USA and local guides have a great deal of knowledge in this area. Despite this, the only food offered by CBNRM operations is often based on imported ingredients. In the same way, there is likely to be a market for bush tracking skills that CBNRM operations may be better placed to deliver than traditional tourism companies.

It is likely to be efficient to have some centrally-provided types of support for CBNRM. Marketing support is obviously needed for CBNRM tourism as a whole. CBOs engaged in negotiations with tourism companies over joint ventures typically have very little experience in this area and also need to be able to draw on expert advice.

The Government, donor partners, NGOs and private sector all have important contributions to make to CBNRM capacity building. GoB has expressed interest in facilitating a better institutional architecture for CBNRM including for support, oversight and marketing. MEWT has established a National Environmental Fund which will have a CBNRM window for funding projects. Against these very positive developments we note a tendency for

¹⁵Stiglitz, Joseph E. (1987). "Principal and agent, The New Palgrave: A Dictionary of Economics, v. 3, pp. 966-71

¹⁶ This is not intended to detract from the important work done by a number of international and local NGOs in CBNRM. These include SNV, Conservation International, African Wildlife Fund, WWF, Kalahari Conservation Society, Komku Trust, Letloa Trust, Thusano Lefatsheng, TOCADI and Veld Products Research & Development.

Government to take a top-down approach to CBNRM in which a lack of consultation can lead to serious unintended consequences. The ban on hunting in a 25-kilometer radius around Protected Areas and the requirement of all CBNRM hunting to be replaced by photographic tourism (without taking into account whether this is realistic for many communities) is an example.

Donor partners have been fairly significant supporters of the CBOs engaged in CBNRM. Johnson (2009) reports that CBOs received Pula 8.8 million between 2006-09 (approximately US\$1.5 million). Further support will undoubtedly be required and is likely to be more achievable if there is a clear strategy for CBNRM development that demonstrates linkages to improved governance, resilience to climate change and poverty eradication.

Mbaiwa (2011b) notes that some private companies have contributed funding to CBNRM. However, private companies in sectors such as mining, financial services and manufacturing could also contribute by mentoring CBO businesses. This relationship might aim to build specific organisational capacity or achieve business plan goals as well as providing an informal “sounding board”.

Adding value from cultural tourism and diversification

An extensive review of the international literature by UNEP (2011) leads to the conclusion that “ecotourism, nature, heritage, cultural and “soft adventure” tourism, as well as sub-sectors such as rural and community tourism are taking the lead in tourism markets and are predicted to grow most rapidly over the next two decades. ... There is empirical evidence that tourists seeking environmental and culturally differentiated destinations are willing to pay more for this experience”.

While Botswana is well placed to gain from nature-based tourism, little has been done to develop cultural tourism, although this need has been recognized for some time¹⁷. In practice, cultural tourism in Botswana covers a number of areas that include:

- Using traditional craftwork such as basket making and weaving to produce items for tourists. This is probably the most common component of cultural tourism in Botswana and is closely linked with CBNRM.
- Opportunities for visitors to gain an understanding of traditional culture. In many African countries, tourism offerings include “traditional food and dance evenings”. This approach can simply be a way of offering tourists an additional experience within a standard “enclave tourism” format in which few benefits are retained locally¹⁸. However, it can be provided within the CBNRM context e.g. the Shandereka Cultural Village next to the Kaziikini community campsite¹⁹. Other examples could include kgotla storytelling evenings with local meals.

¹⁷Leechor and Fabricas (2005), Mbaiwa (2004)

¹⁸Which is the criticism levelled by Mbaiwa (2005) at the current low-volume, high value approach to tourism in the Okavango Delta in Botswana.

¹⁹See: <http://www.kaziikinicampsite.com/Shandereka%20Village>

- New tourism activities that build on bush craft skills and cultural tourism activities from industrialised countries. A good example is cookery using local wild foods. Although this can be an additional offering within enclave tourism, the opportunity of *participating* and learning makes this type of tourism well suited to CBNRM and eco-tourism. So, for example, while one of the most successful CBNRM operations – Kaziikini campsite – provides restaurant meals, they use mainly imported ingredients rather than the fresh veld food such as mushrooms their guides point out to tourists. At the same time, the restaurant voted best in the world for the second time (Noma) has created exceptional interest in foraged food in Europe²⁰ and there is a growing market for courses that teach gathering and cooking combined with comfortable accommodation²¹.

Diversification and encouraging linkages with the local economy should involve:

- Encouraging tourism beyond the Okavango Delta and Chobe. This is a good way of increasing the range of attractions offered to potential tourists and can increase the amount of time tourists spend in Botswana or occasionally attract tourists who otherwise may have gone elsewhere. Cultural tourism provides one way of achieving this. Leechor and Fabricius (2005) argue that “The San interpretation of the natural wilderness and their ancient traditions such as their rock art offer a potentially unparalleled tourism experience. Areas such as Tsodilo Hills and the Central Kalahari offer potentially exceptional experiences in this regard”. They note that this needs to be carefully managed with the communities concerned. There has certainly been some progress in this area²² but additional opportunities exist. Other types of eco-tourism such as avi-tourism also provide important opportunities for diversification and, again, generally will need to closely involve local communities²³.
- Building supply relationships between lodges and local producers of fresh produce as well as, soaps and shampoos and letoisi products (made from local design, although cloth / material is imported).

Building local skills for nature-based tourism

As we have seen in the Discussion Paper, poverty in Botswana is concentrated in rural areas. Yet the international evidence strongly suggests that in order for rural communities to gain fully from the expansion of nature-based tourism local people need access to skilled as well as unskilled jobs.

²⁰See <http://www.spiegel.de/international/zeitgeist/0,1518,759277,00.html>

²¹See, for example, <http://www.tastethewild.co.uk/>

²²Some international specialist safari companies now offer this option. See: http://www.naturalhighsafaris.com/browse/experience/tracking_with_the_bushmen_of_the_kalahari

²³The development of avi-tourism in the Makgadikgadi Pans is one example: see <http://www.birdlife.org/community/2010/09/conservation-breakthrough-in-botswana/>

Further research is required to identify exactly what this entails. However, there is some evidence that existing government policy excludes local community members who wish to build careers in this industry. For example, formal secondary school qualifications are required to become an accredited safari guide. Local community members with many years of bush craft may be excluded while the required training in customer relations and health and safety does not require high levels of formal education.

1.5 The Economics of Tourism and the Environment

Nature-based tourism can only make a sustained contribution to poverty eradication if it is itself sustainable. The 2008 Okavango Delta Management Plan (ODMP) captures many of the issues relevant to nature-based tourism noting:

- There has been minimal or no sustained research on tourism carrying capacities;
- There is little done to monitor tourism activities; and that
- The issues with regard to wildlife use include human-elephant conflict, wildlife-livestock conflicts, declining population of certain species, and lack of baseline information on certain species.

Economic incentives generated by CBNRM play a part in addressing some of these issues. That is to say, communities that benefit significantly from CBNRM will be far more willing to invest in wildlife-friendly solutions to human-wildlife conflict. Mbaiwa (2011b) notes that the CBNRM Policy of 2007 includes a problematic clause that states that “thirty-five percent (35%) of the proceeds of the sale of natural resource concessions and hunting quotas may be retained by the CBO. Sixty-five percent (65%) shall be deposited in the Fund for financing community based environmental management and ecotourism projects throughout the country”. Where communities experience significant losses from wildlife, a requirement to give back 65% of concession income may simply not be viable. Likewise, the removal of hunting quotas may pose a serious threat to the sustainability of CBNRM in areas where the opportunities for photographic tourism are limited.

Climate change represents a serious threat to wildlife-based tourism in Botswana. One problem is the projected increase in extreme climatic events and the direct impact on tourism income. For example, Moswete and Dube (2011) report that the flooding in the Okavango Delta in 2000 resulted in the closure of the Moremi Game Reserve for a period of eight months because roads were impassable.

A 2011 report in the UK Guardian newspaper²⁴ based on an aerial survey identified an alarming decline in wildlife species over the past 15 years. Although the reliability of a one-off survey is contested, Moswete and Dube (2011) identify that a number of interactive factors, among which are drought, fires, habitat fragmentation and encroachment and poaching, have contributed to wildlife population decline. They note scientific evidence

²⁴ June 18th, 2011

points overwhelmingly to the likelihood of increased drought in Botswana as a result of climate change and, by implication, increasing pressure on wildlife.

It is difficult to dispute the conclusion that there is need to diversify away from dependence on nature-based to more inclusive forms of tourism such as cultural tourism. Nonetheless, there are interventions that help adapt to climate change. For example, transboundary parks that make it easier for animals to migrate; fewer subsidies for livestock in areas where water is needed for wildlife; water pricing that reflects economic costs; and waste water re-use and rainwater harvesting that makes the most of increasingly scarce water resources.

2 Agriculture

2.1 Introduction

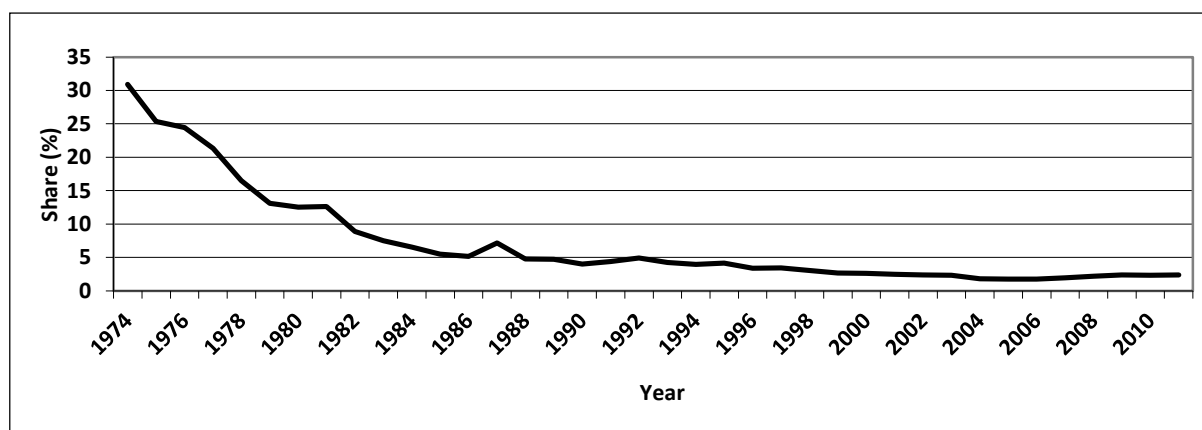
Agriculture in Botswana is highly affected by problems of climate change and environmental externalities and as a result, productivity levels have been falling relative to other economic sectors. This is despite continued government intervention to support this important sector as a contributor to economic growth and poverty eradication. Total export earnings are positive in the livestock sub-sector but the trade balance in the food sector has been negative throughout the years since the 1970s. Following the decline in agricultural productivity, real wages have fallen in this sector compared to the modern sector, and hence labour has moved out of the sector to urban areas. Hence, unemployment remains high in Botswana because the modern sector growth is less than the growth in the labour force looking for employment. In this assessment, government intervention, though necessary, is also found to exacerbate problems of increasing unsustainable natural resource use both in arable and livestock production. However, emerging opportunities such as rapid urbanization are considered to have brought with them increased production of waste water which is currently underutilized, but can introduce a potential for promotion of urban and peri-urban agriculture.

2.2 Agriculture and Economic Growth

Contribution to Gross Domestic Product (GDP)

The share of agriculture sector contribution to economic growth in Botswana has fallen significantly to date, compared to the first 15 years after independence in 1966. Figure 1 illustrates that the share of agriculture to national GDP consistently declined from 31 percent in 1974 to about 2 percent in 2011. The relative decline of agriculture sector's contribution to GDP is primarily a result of climate change effects in the form of recurring drought, and the discovery and mining of high value diamonds in Jwaneng, Orapa, and Damtshaa mines.

Figure 4: Contribution of Agriculture to GDP; 1974-2011



Source: Author computed from CSO National Accounts Statistics (Various)

The second most important factor related to a high decline in the agriculture sector contribution to GDP is a high growth rates of other economic sectors during the period 1974-2011, whose growth rates are statistically significant compared to the insignificant growth rate of agriculture (Table 1). Other sectors experienced growth rates of more than 5 percent during the same period, with *Finance and Business Services*, *Mining*, *Trade, Hotels and Tourism* and *Transport and Communication* recording highest rates of about 9 percent.

Table 3: Annual Average Growth Rate by Economic Sector (1974-2011)

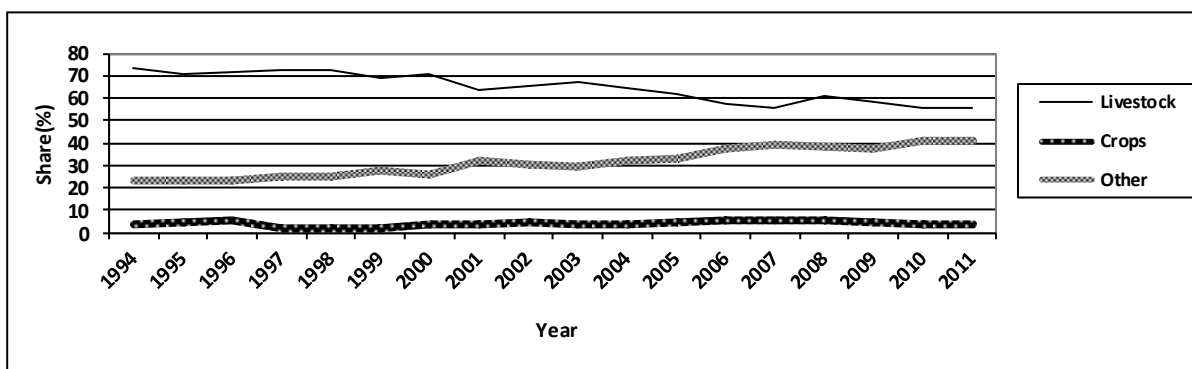
Sector	Growth Rates (%)	P value
Agriculture	0.3	0.3238
Construction	5.7	0.0000 ²⁵
Finance and Business Services	9.1	0.0000
General Government	7.6	0.0000
Manufacturing	5.5	0.0000
Mining	9.0	0.0000
Trade, Hotels and Tourism	8.9	0.0000
Transport and Communication	8.5	0.0000
Water and Electricity	7.2	0.0000
Social and Personal Services	7.7	0.0000
Total	7.2	0.0000

Source: Author computed from CSO National Accounts Statistics (Various)

²⁵ Values below 0.005 indicate that the statistical test is significant at the 5% level i.e growth rate of that sector is statistically different from zero.

The livestock²⁶ sub-sector has consistently accounted for the largest share, of more than 50 percent, to total agricultural GDP (Figure 5). The second position was obtained by “other”²⁷, whose share of total agriculture sector GDP increased from 23 percent in 1994 to 41 percent in 2011. The relative growth and increase in importance of other crops such as horticulture contributed to a decline in the share of livestock contribution to agricultural GDP from about 74 percent in 1994 to 55 percent in 2011. Crops²⁸ (arable agriculture) contribution to total agriculture sector GDP has remained at less than 5 percent in the last 16 years. A study to determine the proportion of subsistence or barter system to household income is required to understand the total estimated value of crop production (and not simply sales that are recorded in GDP).

Figure 5: Trends of Desegregated Shares of Total Agricultural GDP by Type of Activity; 1994-2011



Source: Author computed from CSO National Accounts Statistics (Various)

Climate change phenomena in Botswana such as droughts, desertification, and increases in veterinary diseases, pests and insect infestations are likely to be associated with fluctuating and declining export performance of the beef industry. For instance, the number of cattle slaughtered by BMC declined from about 194 thousand in 1985/86 to 164 thousand in 2010. Whilst some previous studies explained such declines through assumptions of uncompetitive pricing system (BIDPA, 2006), trends in off-take fluctuate in a similar pattern to years that were declared by government as drought years (Ministry of Finance and Development Planning 2008). In addition, some regions such as the Ngamiland and Okavango sub-districts, Bobirwa sub-district and parts of the North East have cut off the cattle populations that supply the BMC, following discoveries of foot and mouth disease in recent years. Cutting off traditional cattle suppliers to BMC could have a contribution to observed declines in the number of cattle sold to BMC, and the growth of the local meat industry who use District or Urban Council operated abattoirs. It could be that increasing problems of lack of water access for livestock production, increased diseases as a result of

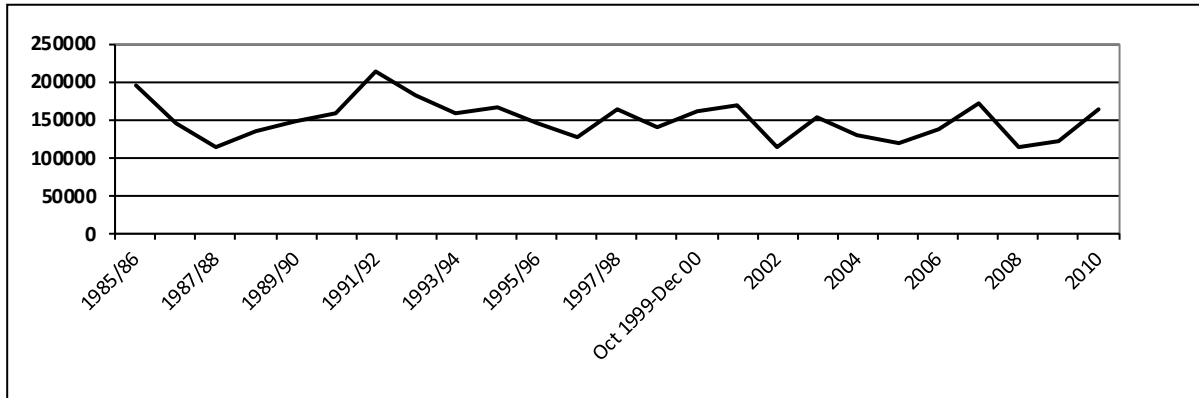
²⁶Livestock include the sales of cattle and net increase in cattle and other livestock information is not available.

²⁷ Include information about hunting, fishing, forestry, poultry and horticulture (CSO, various).

²⁸ Records of the sales of traditional crops

increased insects like ticks as a result of climate change are associated with decreasing numbers of the cattle population.

Figure 6: Number of Cattle sold to Botswana Meat Commission; 1985/86-2010



Source: BMC (Various)

2.3 Agriculture (Livestock, Crops and Natural Resources) and Incidence of Poverty in Botswana

Analysis of the national 2002/3 Household Income and Expenditure Survey (HIES) indicates 62% of households do not own any cattle. In 1985/6 50% of households had cattle and the decrease since then almost certainly reflects increasing urbanization. Marumo and Monkhei (2009) use the 2002/3 HIES data to estimate the proportion of total household income attributable to livestock and find that while most (58%) of the poorest households do not own any cattle, those that do are highly dependent on them for their livelihood.

Moepeng and Tisdell (2009) analyzed the association between three dominant traditional agricultural pursuits as sources of livelihood in rural Botswana and the incidence of poverty in a case study of Nshakazhogwe village in the Tutume Sub-District. The study made a cross tabulation of the incidence of poverty and the dependence of heads of household on livestock sales, and used the Pearson chi-square test. The cross tabulation results revealed that 26.4 per cent of all households in Nshakazhogwe benefited from livestock²⁹ sales. Of those who had sold livestock the previous year, 31.3% were poor (Table 4). Although not statistically significant, this result is consistent with the Marumo and Monkhei (2009) finding.

²⁹ Livestock in this case included small stock.

Table 4: Cross tabulation of Incidence of Poverty of Household Heads whether or not they had Livestock Sales

Livestock Sales		Household Head Poverty		Total
		Not Poor	Poor	
No	Count	177	66	243
	% those without Livestock Sales	72.8%	27.2%	100.0%
	% within Household Head Poverty	75.6%	68.8%	73.6%
Yes	Count	57	30	87
	% those with Livestock Sales	65.5%	34.5%	100.0%
	% within Household Head Poverty	24.4%	31.3%	26.4%
Total	Count	234	96	330
	% of all	70.9%	29.1%	100.0%
	% within Household Head Poverty	100.0%	100.0%	100.0%
Chi-Square Tests				
	Value	df	Asymp. Sig. (2-	
Pearson Chi-Square	1.665(b)	1	.197	
N of Valid Cases	330			

a Computed only for a 2x2 table

b 0 cells (.0%) have expected count less than 5. The minimum expected count is 25.31.

Source: Moepeng and Tisdell (2009)

Results of a cross-tabulation of whether or not household heads who received revenue from crop sales in the previous year were in poverty in Nshakazogwe study have shown that only 8.8 per cent of all heads of household in this village benefited from this source of livelihood (Moepeng and Tisdell, 2009). Thus outside own food production, crop production is beneficial to a small proportion of all households. Further analysis from this study has shown that the relative the proportion of poor heads of household that benefited from crop sales is 10.5 per cent compared to 8.1 per cent of non-poor heads of households. Thus among all the heads of households that benefited from crop sales, 34.5 per cent were poor. A Pearson Chi-square test of the results revealed that these results are not statistically significant (Table 5). Although the difference of the relative proportion of heads of household that benefited from crop sales is not statistically significant, those who sold crops were more frequently poor. Given the problems of climate change, and the recurrence of drought, in Botswana, which are associated with a high risk crop failure, crop production is characterized by results in low returns and the impact the effects of climate change is felt more by poor families.

Table 5: Cross tabulation of Incidence of Poverty and Heads of Household Benefits from Crop Sales

Crop Sales		Household Head Poverty Status		Total
		Not Poor	Poor	
No	Count	215	85	300
	% those without Crop Sales	71.7%	28.3%	100.0%
	% within Household Head Poverty Status	91.9%	89.5%	91.2%
Yes	Count	19	10	29
	% those with Crop Sales	65.5%	34.5%	100.0%
	% within Household Head Poverty Status	8.1%	10.5%	8.8%
Total	Count	234	95	329
	% of All	71.1%	28.9%	100.0%
	% within Household Head Poverty Status	100.0%	100.0%	100.0%
Chi-Square Tests				
	Value	df	Asymp. Sig. (2-sided)	
Pearson Chi-Square	.487(b)	1	.485	
N of Valid Cases	329			

a Computed only for a 2x2 table

b 0 cells (.0%) have expected count less than 5. The minimum expected count is 8.37.

Table 6 depicts a cross tabulation of the incidence of poverty and whether heads of household benefit from the sale of harvested natural resources (Moepeng and Tisdell, 2009). These results, also show that 8.2 per cent of all heads of household, in this village case study benefit from the sale of harvested natural resources. The relative proportion of poor heads of household that benefit from the sale of harvested natural resources is 7.3 per cent while it is 8.5 per cent of non-poor heads of household. However, the poor heads of household are 25.9 per cent of all heads of households that benefit from the sale of natural resources. The reason the poor are in the minority include that harvesting of natural resources require expensive input capital such as tractors for harvesting fuel wood for sale, large trucks for harvesting thatching grass etc. In many cases the poor provide labour and the rich own the natural harvested resources. A Pearson Chi-square test results show the differences between poor and non-poor households are not statistically significant ($\alpha > 0.10$). However, in practice, the relative involvement of the non-poor in harvesting

natural resources is slightly higher than for the poor. Even though, this study did not measure the extent to which each household harvested the natural resources, observations during the case study suggested that the per capita harvesting of natural resources is higher for not poor households than is the case for poor households. This happens because high income households that harvest natural resources use hired labour to harvest natural resource such as grass cutting for thatch, firewood harvesting and river sand harvesting for sale using movable capital such as tractors and trucks to transport these resources from the communal areas to the market place. Conversely, the poor households used natural resources for subsistence and relied on wheelbarrows for their transport. It would be useful for future policy improvement to consider studies to determine the extent of natural resource harvesting in relation to the level of income of households. Such research would provide relevant information about addressing unsustainable natural resource harvesting, emerging environmental problems and the high incidence of poverty.

Table 6: Cross tabulation of Household Head Poverty and the Dependence of Heads of Household on Harvested Natural Resources Sales

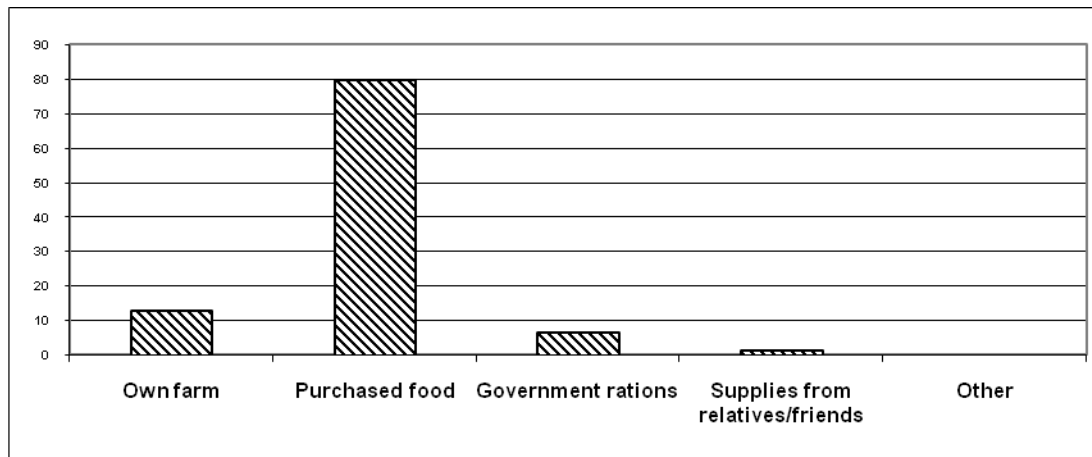
Sale of Harvested Natural Resource		Household Head Poverty Status		Total
		Not Poor	Poor	
No	Count	214	89	303
	% those without Natural Resource Harvest	70.6%	29.4%	100.0%
	% within Household Head Poverty Status	91.5%	92.7%	91.8%
Yes	Count	20	7	27
	% those with Natural Resource Harvest	74.1%	25.9%	100.0%
	% within Household Head Poverty Status	8.5%	7.3%	8.2%
Total	Count	234	96	330
	% of all	70.9%	29.1%	100.0%
	% within Household Head Poverty Status	100.0%	100.0%	100.0%
Chi-Square Tests				
	Value	df	Asymp. Sig. (2-sided)	
Pearson Chi-Square	.143(b)	1	.706	
N of Valid Cases	330			

a Computed only for a 2x2 table, b 0 cells (.0%) have expected count less than 5. The minimum expected count is 7.85.

The agricultural sector remains an important stakeholder in poverty eradication in Botswana. Despite, declining trends of the incidence of poverty in Botswana, this problem remains more pronounced in rural areas than in any other part of country. The poor, especially in rural areas, depend for their daily livelihood on natural and environmental resources such as grazing lands, forests, water and soils for agriculture. The evidence from Table 5 is that a large majority of crop farming households grow crops for their own use. Hence agriculture is assumed to contribute significant amounts of own food production which do not go through the national accounts. Some of the outputs under own food

production that do not find their way into the national accounts include relish (morogowadinawa), watermelons, sweet reeds and others. Thus in terms of food availability, agriculture plays an important role for those who engage in it. The result of an examination of the main source of food for agricultural households in Botswana is presented in Figure 4, where food purchases are identified by 80 percent of all households surveyed as the main source. Own farm production and government ration were each identified by 10 percent of households.

Figure 7: Main source of food for agricultural households



Source: Author computed from CSO (2008a)

However, given that overall, it contributes less about 2 percent of GDP, and the large number of people who are believed to depend on it, the relative contribution of agriculture to household food security and ultimately poverty eradication is a subject that requires further research³⁰.

Contribution to employment

Despite declining numbers of cattle sold to BMC, the trade balance for meat continued to depict a positive trend over the years 2003 to 2010, while the trade balance for other agriculture products was negative (Figure 5). The observations of the performance of the agriculture sector using the trade balance data could imply that livestock is a globally competitive renewable natural resource that Botswana has. There are certainly linkages (such as leather production) that add value to the economy. However, whether the industry produces net economic benefits also depends on the extent of livestock subsidies and the environmental costs generated by localized over-grazing and water abstraction.

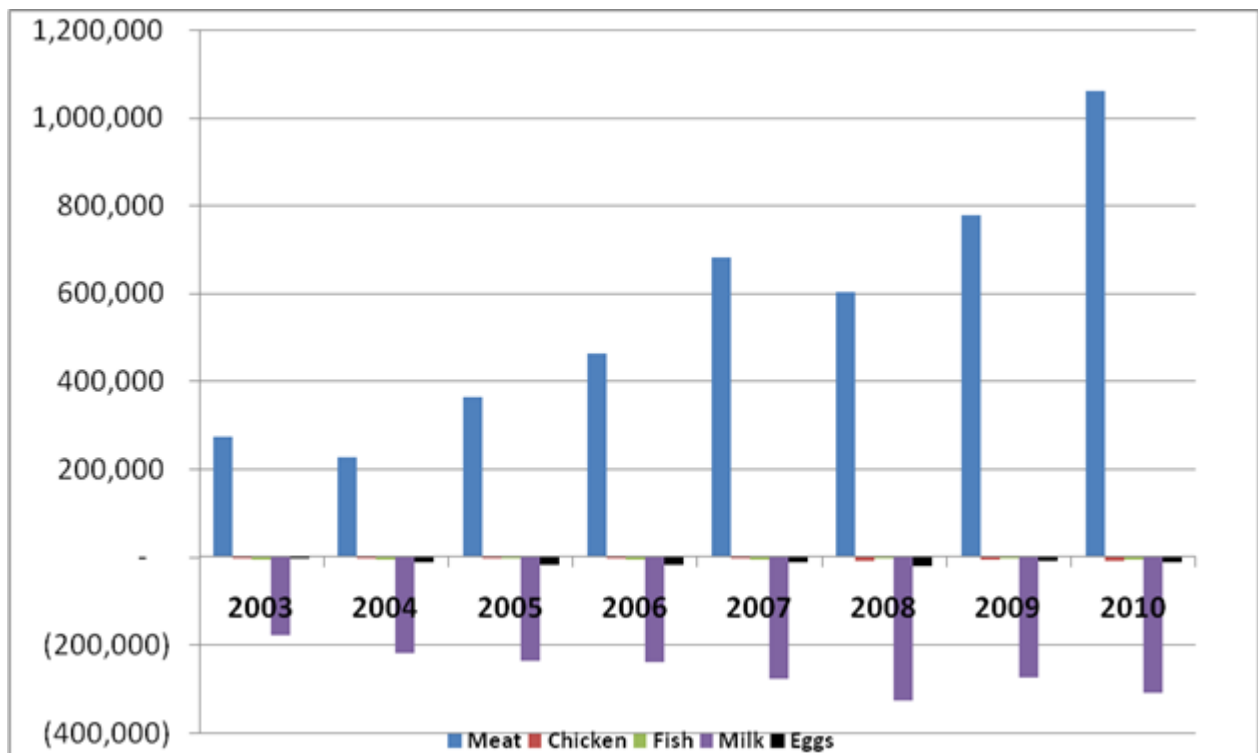
The analysis by Arntzen *et al.* (2010) for the Makgadikgadi Pans attempts to capture the effects of subsidies, environmental damage and multiplier effects from linkages with the rest of the economy. This found that the private value of livestock production should be reduced by roughly 50% to take account of subsidies and environmental costs. However, a significant proportion of the income generated from livestock production is spent in Botswana and this creates jobs (and further spending) in the broader economy. The

³⁰ This research should be able to collect count data and test the significance of income from agriculture as a proportion of total household income.

multiplier effect is slightly more than 2 which means that the total value of livestock production in this area to Botswana is more than the private value when we net out subsidies³¹. In this location environmental conditions actually imply that it would be better to rely more on wildlife than livestock but the general point on net returns to livestock seems to be valid.

Where livestock has the scope to adapt to the risky environment of Botswana, and where it is possible to develop environmentally sustainable support, this sector has the potential to contribute to economic growth and diversification.

Figure 8: Trade Balance: Meat, Chicken and related products, 2003-2010, (P'000)



Source: Moepeng (2011)

The agriculture sector in Botswana has become less sustainable and with increasing exposure to drought conditions the risks of engaging in this sector have increased and productivity has continued to decline. As a result, incomes in this sector have shrunk relative to other sectors as demonstrated by a shift in employment patterns in Botswana, away from agriculture. For instance, Transtec and BIDPA (2010) found that the share of agriculture in total employment fell from 55 percent in 1981 to 12 percent in 2001.

³¹ The same result holds true for arable crops as well.

Table 7: Number of Employees and Share of Employment by Sector for the Period 1981 to 2001

Sector	Number of Employees			Share of Employment		
	1981	1991	2001	1981	1991	2001
Agriculture	153,956	97,626	55,300	55.4	25.70	12.31
Mining & Quarrying	11,178	13,336	13,099	4.0	3.51	2.92
Manufacturing	4,385	27,548	38,968	1.58	7.25	8.67
Construction	17,056	58,050	58,572	6.14	15.28	13.04
Wholesale & Retail	13,520	35,194	61,108	4.87	9.26	13.60
Transport & Communication	5,493	11,495	15,213	1.98	3.03	3.39
Health services	2,163	7,565	14,039	0.78	1.99	3.13
Education	5,544	23,220	37,839	2.00	6.11	8.42
Other Services	63,818	96,381	151,837	22.97	25.37	33.80
Not Stated	715	9,523	3,260	0.26	2.51	0.73
Total	277,828	379,938	449,235	100	100	100

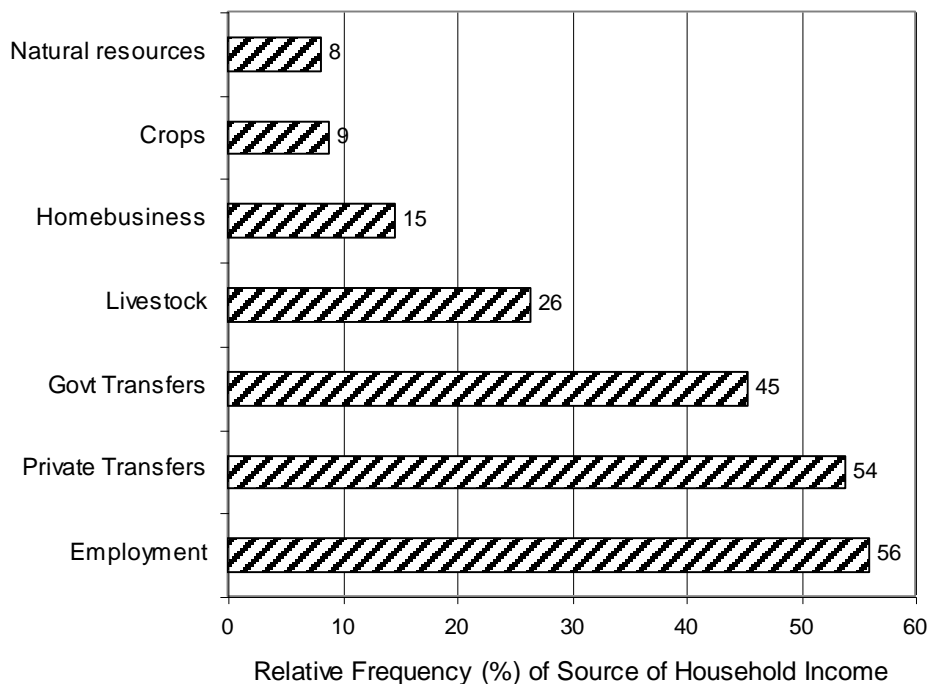
Source: Adopted from TRANSTEC and BIDPA (2010)

However, the share of manufacturing, construction, wholesale and retail, and education, as is that for other services grew by at least more than 5 percent. A majority of employees in the agriculture sector, 63 percent, were employed at lands/cattle post, 14 percent were self employed without employees, 13 percent were in paid employment, 9 percent were self employed with employees while 1 percent were in family business. Given the nature of the livestock sector, very few people are employed and the benefit of this employment by gender could be a subject for further research. Most likely, employment in this sector is biased to males and this could exacerbate rural poverty which is most prevalent among females (Moepeng 2010).

Contribution of Agriculture to Household Income

Agriculture's contribution to household income is generally mentioned as one of the least important sectors (Wikan 2001; Moepeng 2010). Figure 6 shows the relative frequency with which heads of households in a study of rural poverty based in a case study of Nshakashogwe in the Tutume Sub-district of the Central District (Moepeng and Tisdell 2009).

Figure 9: Relative Frequency with which Heads of Household Mention Different Sources (by Type of their Income)³²



Source: Moepeng and Tisdell (2009).

Results from this rural poverty survey, Figure 6, show that more than 50 per cent of all heads of household obtained some income from paid employment, approximately 26 per cent of households kept livestock while 15 per cent of heads were engaged in home businesses. Less than 10 per cent of all the heads of household were engaged in crop production. Some of the reasons for a small proportion of households engaged in crop production include loss of labour to out-migration, and drought. Less than 10 per cent of heads of household were engaged in natural resource harvesting. A different study carried by Botswana Government also revealed similar results in the importance of agriculture as a source of household income for agricultural households (CSO, 2008a). Natural resource harvesting is labour intensive, and if the young and able people have migrated to non-rural areas, may not be very attractive to those who remain in the village. Limited use of natural resources in rural areas of Botswana might also imply that such resources are now difficult to find and the results of environmentally unsustainable production and harvesting of resources are now visible. Thus rural households must adapt to more sustainable management of their natural resources and encourage adoption of technologies that will benefit from emerging opportunities availed by rapid urbanization such as waste water availability and potential for rainwater harvesting to increase productivity in the agriculture sector and ultimately the share of household income from this sector.

³² Crops excludes the value of gains from subsistence that are not included in the national accounts..

In Botswana agricultural activities are not main sources of income for households, including in rural areas, and they less frequently contribute to household income. This observation is valid despite an acknowledgement based on high participation rates of beneficiaries of government input support programmes that a large proportion of households are engaged in agricultural production. Thus the effects of unsustainable production and use of natural resources in this sector, and the problems of the effects of climate change such as recurring droughts have reduced the role of agriculture sector as a significant contributor to household income (cash and food) and therefore limiting the role of this sector in contributing to poverty eradication. There is a need to reconsider the role and importance of agriculture to food availability, taste and quality, food pricing and nutrition and access and how Botswana should respond to problems of climate change to improve productivity of this sector. Improved productivity and growth in agriculture can result in immediate and significant progress to economic growth, poverty eradication and improved social welfare (Motalvo and Ravallion, 2010; Bresciani and Valdes, 2007). Thirtle et al. (2001) found that a 1 percent increase in agricultural productivity reduced the proportion of those below a dollar a day by between 0.6 and 1.3 percent. So clearly it is important to seek improvement in this area. However, in Botswana, farmers face the twin limiting factors of water (common to other semi-arid areas) and very limited access to low cost labour (reflecting urbanisation, Ipelegeng, out-migration, cultural factors and the impact of AIDS)³³. This suggests that new approaches to agriculture are needed.

2.4 Agriculture and the Environment

Natural Resource Degradation Issues in Agriculture

Communal land ownership, a widely practiced property rights system in agricultural production of Botswana, is an important provider of insurance for the poor because it guarantees many of them a last resort source of food and grazing opportunities. However, with increasing concentration of population in formal settlements, the introduction of markets and improved communication technologies, there is observed widespread unsustainable use of natural resources around settlements to a radius of up to 20km (Fidzani 2001). As a result the rural poor are now exposed to higher insecurity now than ever before because of problems of overgrazing in the areas surrounding settlement which results in very low productivity of the livestock sector and eventual impoverishment of small holder livestock owners.

The soil types of Botswana and their suitability to agriculture

About two thirds of the country is covered by sandy soils which are infertile. These are the red and grey desert soils on the Kalahari sands. Further in the eastern part there is a moderately dry red loamy mokata soil on the plains, or mixed chalky and sandy chawana soils, with brownish rocky seloko soils on and around hills. Various types of vegetation cover

³³In addition to the effects of urban job opportunities pulling young people out of rural areas, Bationo *et al* (2011) identify Botswana as having lost 23% of the agricultural workforce to AIDS.

much of the country. These include grassland, natural woodland, forestland, savannah types, bush land, aquatic (wetlands) and man-made plantations (GoB, 2007). Vegetation resources play an important role in livestock farming and wildlife industries by their contribution to the national economy and well being of the citizens.

Various governance and policy instruments that can be used to improve the sustainable management of soils in Botswana

Studies carried out in Botswana show that land degradation is high and causing concern for the government. Thus, soil conservation is the way the government has taken to combat soil degradation. In actual fact, the government introduced the National Conservation Strategy (NCS) in 1990 (Darkoh, 2002) and Soil Conservation section of the Ministry of Agriculture was established in 2006³⁴ (Mokgwathi, 2008) to primarily address issues of soil erosion, declining soil fertility and increasing degradation of range and forest land. The Section is responsible for soil conservation and performs the following functions;

1. Develop and implement policies, strategies and programmes to combat land degradation.
2. Promote adherence to national legislation, protocols, treaties and conventions on land degradation.
3. Develop community based land management programmes.
4. Establish networks and collaboration both national and international on land conservation and rehabilitation technologies.
5. Strengthen national programmes to combat desertification.
6. Develop and strengthen sand dune stabilization programmes.

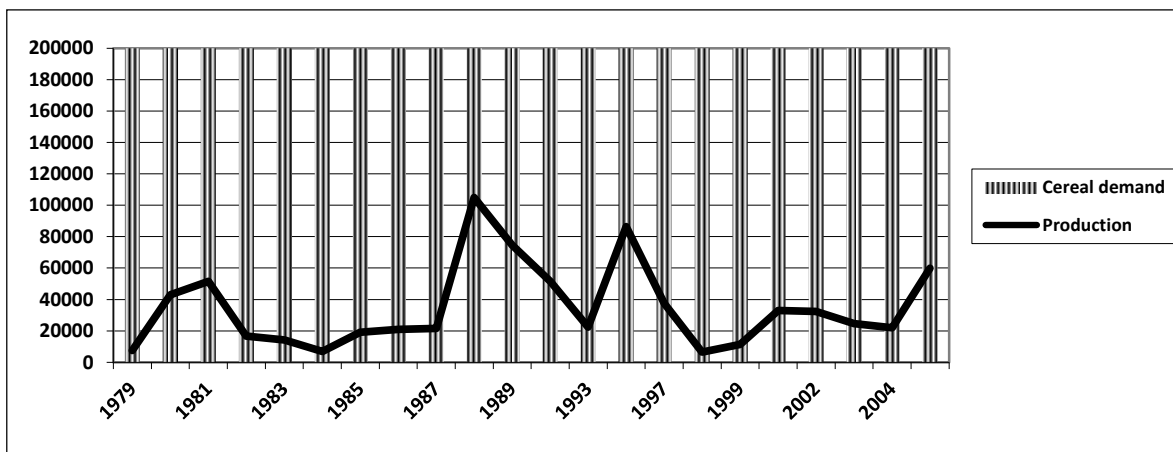
Moreover, there are a number of efforts by communities to combat desertification.

³⁴ Notwithstanding the time of establishing this section, soil conservation activities existed long before 2006 including earlier attempts to deal with gully erosion etc.

The importance of subsidies; and impact on the land/soil quality and the environment

Over the past 30 years Botswana has used substantial amount of capital different Agricultural programmes such as the Accelerated Rainfed Arable Programme (ARAP), Arable Land Development Programme (ALDEP) and others. Regardless of all these interventions these programs have not significantly improved the food security situation in the country (Figure 7).

Figure 10: Trends in total production relative to demand (1979-2004)



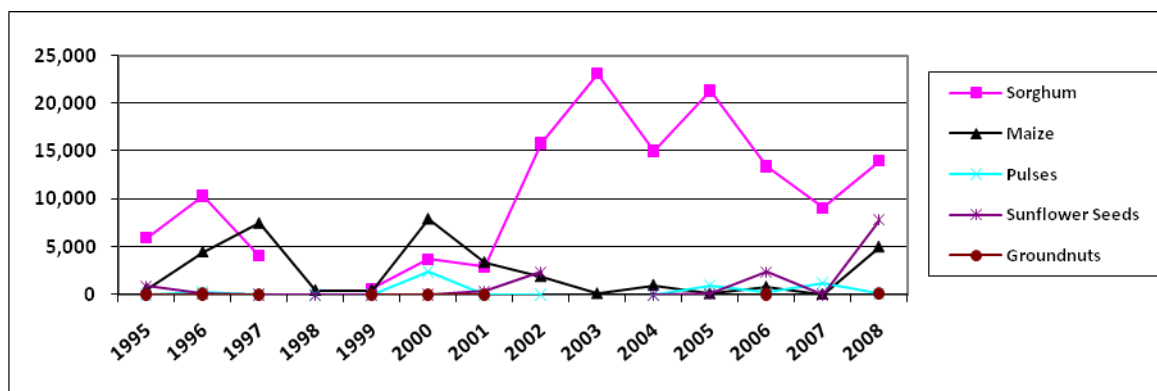
Source: CSO (Various)

On the 30th June 2008, ALDEP III was terminated and replaced with Integrated Support Programme for Arable Agriculture Development (ISPAAD) to address challenges facing arable farmers and the inherent low productivity of the arable sub sector. It was envisaged that the performance of the arable sub-sector would be greatly improved by establishing Agricultural Service Centres and assisting arable farmers to acquire requisite inputs and draught power to undertake tillage operations. The components of the Integrated Support Programme for Arable Agriculture Development include; Cluster Fencing, Provision of Potable Water, Provision of Seeds, Provision of Fertilizers, Facilitation of access to Credit, Establishment of Agricultural Service Centres and Draught Power Provision (Parida and Moalafhi 2008). ISPAAD also has a Horticulture Component that provides input and equipment grants (MoA pers.com 22 May 2012). Input support of the ISPAAD horticulture component includes support of up to 60 per cent grants for purchase of fertilizer, seeds, seedlings and pesticides. Equipment grant support includes purchase of shade nets, reservoirs, piping equipment and irrigation equipment such as drip irrigation equipment.

Trends of Crop Purchases in Tonnes by BAMB³⁵ from 1995 to 2008

Figure 11 depicts trends in crop purchased by BAMB for the period 1995-2008. Sorghum, a drought tolerant crop, is the dominant crop purchased by BAMB in Botswana throughout the years and other crops such as maize constitute a small proportion of crops sold to BAMB. This observation could demonstrate the scarcity of water resource in Botswana, and that efforts need to be considered to improve water availability and access to improve agricultural productivity. The continued decline in maize purchased by BAMB could be attributed to declining maize production as a result of problems of climate change observed through unreliable rainfalls and prolonged droughts. Alternative methods and technologies that promote water storage and access should be the basis for improving patterns of natural resource management and use on the achievement of Botswana's development priorities.

Figure 11: Trends of Crop Purchases by BAMB (tonnes) for the Period 1995 to 2008



Source: CSO (2011)

Impact of Agricultural Subsidies on the Environment

The problems of climate change, environmental externalities and the important role of the agricultural sector to the eradication of poverty, GDP and sustainable natural resource management has attracted attention of government support. There is abundant evidence that where available, input price subsidies/taxes and output price subsidies/ taxes will promote intensification of production processes (Lingard, 2002). As has been the case in Botswana, agricultural input subsidies increase the exploitation of natural resources and sometimes lead to unsustainable use of natural resources. For instance, the loan schemes supporting purchase of livestock for keeping in communal lands that are already overgrazed around settlements tend to exacerbate the problems of overgrazing and diminish the productive potential of those rangelands.

Following lack of grazing and desertification, the poor might tend to adopt desperate means of survival and begin to overharvest the fuel wood for sale as energy, overharvest other veld products that are available such as phane caterpillar to unsustainable levels and in some cases engage in illegal mining of riversand which can be detrimental to the environment and ecosystems. In association with this changing farmer/land user behavior will be different

³⁵Botswana Agricultural Marketing Board

patterns of environmental impacts having both local and wider implications; that is, the environmental impacts will be felt at local, river catchment, regional and global levels. Examples include nonpoint pollution effects of agricultural activity, water quality and sedimentation, and the global effects due to the carbon balances of agriculture. There is some ambiguity about the role of subsidies and environmental change; subsidies by changing price signals may lead farmers to substitute polluting inputs for non-polluting ones, or to change from production processes which give low emissions (e.g., cereals and sheep) to those giving high emissions (e.g., dairy cows) (Lingard, 2002).

Most of the empirical work or analysis of the environmental and economic impacts of agricultural subsidies is exceptionally complex, but many are undeniably damaging, for example, the practice in forested tropical countries of providing cash incentives for clearing forest land for agriculture and livestock production. Likewise, subsidies to irrigation water, in the form of less than full-cost recovery pricing, encourage over-use of scarce water, and hence, water logging and soil salinization. In contrast, a subsidy to promote and encourage kerosene consumption may be environmentally beneficial if it reduces the demand for fuel wood and deforestation. Deciding which subsidies are, or are not, environmentally benign is extremely hazardous. Boldly stated, agricultural subsidies can encourage the production of environmentally harmful pollution, lead to the excessive use of natural resources and often impose high costs on consumers, taxpayers and government budgets (OECD, 1998; Lingard, 2002). However, in a country like Botswana where poverty incidence is highest in rural areas, support for agricultural activities is a necessary but not sufficient meant to reduce or eradicate poverty. Many poor people use agriculture as a fall back option and indeed it is socially more acceptable to provide government transfers through a productive activity than feed the poor when they have nothing to do to benefit from government hand out. Policy dealing with poverty eradication is most effective when it avoids the development of a dependency syndrome of a society.

2.5 The Economic Costs of Natural Resource Degradation

Continued land degradation in Botswana as a result of climate change and increasing unsustainable use of the natural resources has continued to exacerbate problems of increased depreciation of the stock of natural capital. More than half of Botswana is covered with the Kalahari Desert sand which has poor water retention capacity, low nutrient levels, and low organic matter and is marginally productive. Despite that most arable farming practiced in the eastern part of the country where soils are relatively more fertile soils than the other parts, very little technologies are adopted and nearly no fertilization is practiced to regenerate the soils. Therefore, overtime land degradation has become a stern environmental problem, especially in the eastern parts as a result of climate change, increased number of livestock, overgrazing, tree-felling, inappropriate farming techniques and, mining activities.

Botswana is also experiencing increasing health costs in mining town of SelibePhikwe as a result of negative impacts from mining operations that include high levels of emissions

(especially sulphur dioxide emissions), and risks to human and animal life as a result of unused mining sites, which have not been rehabilitated. In 2004, the level of pH, total dissolved solids, sulphates and nickel exceeded allowable concentrations although later reviews found that contamination had fallen within acceptable levels except for nitrate and sulphate levels (University of Gothenburg, 2008). Thus, for the poor, the cost of environmental degradation has been disproportionately higher in terms of lost production as a result of poor health related to polluted atmospheric air, loss of bread winners and household income, loss of production as a result of increasing fragile lands and in some cases loss of productive land beyond possibility of repair and renewal. For the most part it affects the rural poor as it reduces the productivity of soils, reduces ground water recharge due to increased runoffs and results in the replacement of perennial grasses with grasses of low nutrient value which contributes to high livestock mortality in periods of droughts.

The Outmigration of labour

Natural resource degradation in Botswana has led to labour resource redistribution in favor of urban areas (the modern sector) where the marginal product of labour is higher than in rural areas (Taylor 2001). The costs of outmigration of labour from rural areas to urban areas has been increased unemployment in the formal sector because the urban areas are not able to absorb increasing numbers of people looking for jobs. At the same time, there is increasing lack of labour in the agricultural sector of Botswana as many young people in the labour force migrate to urban areas. The effects of outmigration from agriculture sector in Botswana is similar to those of brain drain or human capital flight as people who remain in agricultural production are less educated, are older and mostly women who are also looking after young children and the sick (Moepeng 2010). Thus there is shortage of labour during cultivation, weeding and harvesting times. The costs of these to sustainable natural resource management has been lowering productivity of the agricultural sector, and hence stagnant or declining wages relative to increasing prices of goods and services and a failure of the agricultural sector to effectively contribute to poverty eradication in rural areas³⁶. Thus, the opportunity cost of migration to modern sector jobs by young able bodied people is the loss of net income from labour-based agricultural production such as crop production. **Further research is recommended to consider the per capita benefits from crop sales by income status of households in rural areas of Botswana and to identify the costs and benefits from the expanded use of foreign migrant labour in this sector.**

The role of Ipelegeng and agriculture productivity

In response to problems of high unemployment, particularly among the youth in rural areas, Botswana has introduced government interventions such as Labour Intensive Relief Public Works Programme (LIRPWP) or Ipelegeng³⁷ to serve as a vehicle that creates temporary employment and income transfers. The cost on this government intervention on agricultural productivity has been very high because instead of complementing the Agricultural

³⁶ Agriculture is therefore typically seen as a fall-back option and an element of a multi-pronged 'livelihood strategy' in the rural areas.

³⁷ Note that although the focus of Ipelegeng is officially on "short term employment support and relief", Ipelegeng is a continuous programme and people can be engaged in it anywhere in the country. Hence some rotate with the jobs in the different areas and hence can be engaged continuously.

programmes, the intervention draws away poor farmers and agricultural labour from the risky agricultural pursuit to more certain, though minimal, reward from working in the LIRPWP. In some extremes, some farmers could cultivate their lands through the ISPAAD programme and then join Ipelegeng programme, leaving the fields un-weeded and not harvested. Hence, government intervention is a negative cost to agricultural productivity because it could motivate households to migrate and leave farming operations as agriculture labour is provided with equally or competitive employment reward opportunity.

Climate Change and its impact on agriculture

The wellbeing of the people, economy's performance, and the condition of the environment in Botswana are all very closely linked to the climate. Government of Botswana (2001) already acknowledges that the country is "highly vulnerable to climate change" due to its fragile ecosystems and (semi-) aridity. Yet climate change is most likely to add to existing stresses in Botswana and cause significant changes in prevalent vegetation and rangeland cover, and affect species types, composition and distribution, as well as those depending on them. The major threats arising from these climate change problems are the high costs of unsustainable use of rangelands, agriculture land, harvesting of, woodlands/forests, water resources and pollution of the environment through emitting of gasses that are contaminate the atmospheric air quality.

Desertification is a major concern to Botswana and water scarcity and land degradation are most likely to have negative impacts on GDP, poverty, health and food production (Boko, et.al, 2007). Already, the costs of different basic natural resources are rising in Botswana including water, river sand, and others. On the other hand changes in climate are likely to shock Botswana's ecosystems, especially the Okavango Delta, with a probable negative impact on tourism as well as livelihood opportunities for the peoples residing in the area especially the CBNRM Organizations. Climate change impacts are expected to increase over years and decades to come, which will constitute a threat to development and diminish the chances of achieving the MDGs. **Further work is needed to answer questions of whether Botswana is growing the right crops, and if ISPAAD provides the right seeds, or whether available water is used to its best competitive advantage.**

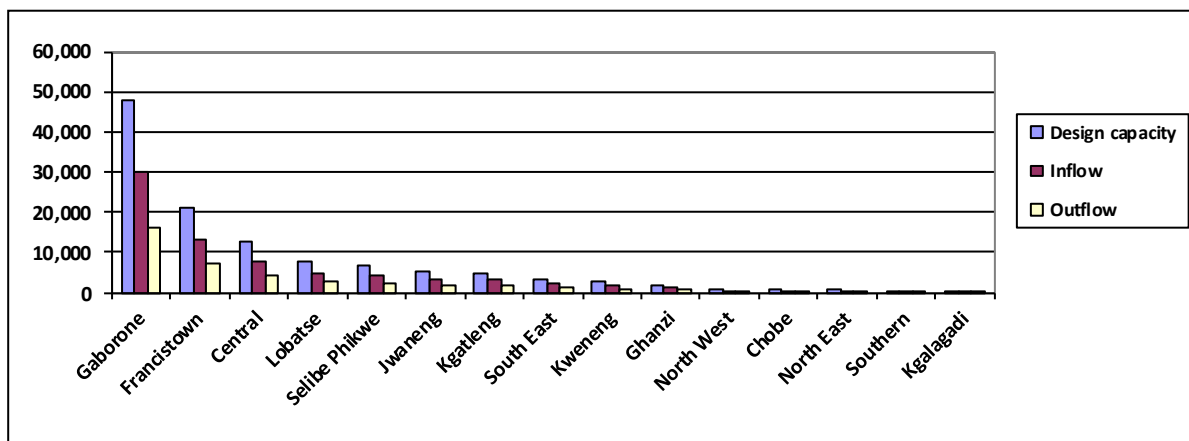
2.6 Agricultural policy and opportunities for technology adoption

Agricultural policy in Botswana has concentrated in input support of draft power and seed distribution; and the human resource development, especially for focusing on agricultural extension. But despite extensive subsidies to support both arable and animal production, productivity in this sector have been highly affected by scarce water resources as a result of poor rains due to recurring drought and lack of labour in this sector. Lucrative livestock sector and the biotechnology adoption support programmes, development of boreholes, prevention and control of animal diseases through boundary or cordon fences, building of modern abattoirs, and providing support services have led to expansion into marginal and fragile lands. The livestock ownership is however considered to be positively associated with incomes. Therefore, support for this sector among others, serves to widen income

inequality which is already high in the country and has limited contribution to poverty eradication because it is not a labour intensive sector.

Despite continued climate change problems which manifest as recurring drought, changing rainfall patterns and advent of diseases the rapid urbanization of the country has brought with it the growth of waste water resources that can be utilized for irrigation especially in commercial urban agriculture. In Figure 9, current capacity of treatment plants, amounts of waste water inflow and outflow a day are illustrated. Gaborone, Francistown and the Central Districts have relatively large design capacity to collect at least 10,000 m³/day. Nearly all the treatment plants in the three areas collect more than 50 percent of their capacity. However, there is limited amount of outflow and this study's consultations with different stakeholders, including the Department of Waste Water Resources and the Department of Crop Production do not suggest a larger proportion of the available waste water is put for productive use in agriculture. This is a new opportunity for addressing problems of water scarcity and the other is the need to consider rainwater harvesting to complement the unreliable rainwater sources and promote sustainable natural resource management.

Figure 12: Availability of Waste Water Resources by Treatment Plants by Design capacity, Inflow and Outflow in m³/day by Districts



Source:DWMP (2012).

Promotion of urban agriculture in Botswana is consistent with the changing demographic patterns in Botswana as today more than 60 percent of the population is in cities and urban villages. Urban agriculture, including horticulture is very critical in promoting nutritional support and food security. In addition, women also participate in the formal sector business using the urban agriculture products and are able to earn income to support their households and escape poverty. Availability of waste water and the development of institutions and infrastructure required to distribute such water would contribute highly to economic growth and poverty eradication. Further, when the promotion of this agricultural opportunity occurs, there is also need to consider the introduction of land markets to

provide incentives for those who have skills and not land in the accessible areas to where waste water is produced, to enter this market.

Another way of helping agriculture adapt to climate change is to use rainwater harvesting. Botswana has experience in this area summarized by Kumanti (undated) as follows:

- “Construction of rainwater tanks in schools, clinics and administration buildings. These tanks utilize the large roof surface areas of the roof blocks. The water is then used by the kids in washing their dishes after eating.
- Ministry of agriculture conducted a program assisting farmers in constructing rainwater tanks country wide. The initial objective of this program was to provide water for draught animals to allow for early ploughing. People however went on and used the harvested water for drinking and other domestic purposes
- Ministry of agriculture have also embarked on the construction of earth multi purpose dams for livestock watering.
- Rural Industries Innovation Center (RIIC), a multidisciplinary organization involved in research and development of technology, pioneered a project in Zutshwa Kgalagadi. In this project, brick tanks were constructed to collect run-off from the pan. This water is used for small stock watering”. p7

There is considerable scope to use water collected in this way for low-cost drip-irrigation. Excellent overviews are provided by Andersson (2005) - for rural South Africa; Awulachew et al (2009) for generic use in Africa and Alabama A&M and Auburn Universities (2009) for the southern USA.

3 The Scope of Tourism and Agriculture to Contribute to Poverty

Eradication in Botswana: Some Conclusions

Cross-cutting themes

Botswana faces increasing water scarcity from the combination of rising demand from urbanization and declining supply as a result of climate change. This threatens to undermine the potential for peri-urban agriculture (horticulture in particular) and wildlife-tourism to make a sustainable contribution to poverty eradication.

Solutions to these problems have been developed by other countries facing similar pressures. They lie in managing water demand (through pricing that reflects the cost of supply) and using innovative ways to improve supply (such as rainwater harvesting and re-use of treated waste water). Government has recognized these in various policy documents but an overarching and strategic focus on this issue is urgently required.

Agriculture

In contrast with every other major sector of the economy, there has been no growth in the Agriculture sector since the mid-1970s. Current data on subsistence production is unavailable (and should be collected and published) but data on cash sales of livestock (accounting for more than 50% of agricultural GDP) and crops (around 5%) shows the negative impact of drought, desertification, and increases in veterinary diseases, pests and insect infestation – often described as climate change phenomena. Within agricultural GDP, the share of livestock has fallen from approximately 75% to 55% (1994-2011) with the expansion mainly of horticulture from approximately 22% to 42% over this period.

Results from Moepeng and Tisdell (2009) show that more than 50 per cent of all heads of household obtained some income from paid employment, approximately 26 per cent of households kept livestock while 15 per cent of heads were engaged in home businesses. Less than 10 per cent of all the heads of household were engaged in cash crop production but the large majority of crop farming households grow crops for their own use. This is often a component of their livelihood strategy and government support to this sector (e.g. ISPAAD) is widely used. As arable agriculture is typically a “last resort” and those that can migrate or access other employment do so, policy support to this sector could well be pro-poor although this has not been rigorously evaluated.

Policy interventions in this sector have certainly had some unintended consequences. In response to problems of high unemployment, particularly among the youth in rural areas, Botswana has introduced government interventions such as Labour Intensive Relief Public

Works Programme (LIRPWP) or Ipelegeng to serve as a vehicle that creates temporary employment and income transfers. Unfortunately, instead of complementing the agricultural programmes, the intervention tends to draw away poor farmers and agricultural labour from the risky agricultural pursuit to more certain, though minimal, reward from working in the LIRPWP. In some extremes, some farmers could cultivate their lands through the ISPAAD programme and then join Ipelegeng programme, leaving the fields un-weeded and not harvested.

In Botswana, farmers face the twin limiting factors of water (common to other semi-arid areas) and very limited access to low cost labour (reflecting urbanisation, Ipelegeng, out-migration, cultural factors and the impact of AIDS). This suggests that new approaches to agriculture are needed. Further research is recommended to consider the per capita benefits from crop sales by income status of households in rural areas of Botswana and to identify the costs and benefits from the expanded use of foreign migrant labour in this sector.

Communal land ownership, a widely practiced property rights system in agricultural production of Botswana, is an important provider of insurance for the poor because it guarantees many of them a last resort source of food and grazing opportunities. However, with increasing concentration of population in formal settlements, the introduction of markets and improved communication technologies, there is observed widespread unsustainable use of natural resources around settlements to a radius of up to 20km (Fidzani 2001). As a result the rural poor are now exposed to higher insecurity now than ever before because of problems of overgrazing in the areas surrounding settlement which results in very low productivity of the livestock sector and eventual impoverishment of small holder livestock owners.

The wellbeing of the people, economy's performance, and the condition of the environment in Botswana are all very closely linked to the climate. Government of Botswana (2001) already acknowledges that the country is "highly vulnerable to climate change" due to its fragile ecosystems and (semi-) aridity. Yet climate change is most likely to add to existing stresses in Botswana and cause significant changes in prevalent vegetation and rangeland cover, and affect species types, composition and distribution, as well as those depending on them. The major threats arising from these climate change problems are the high costs of unsustainable use of rangelands, agriculture land, harvesting of, woodlands/forests, water resources and pollution of the environment through emitting of gasses that are contaminate the atmospheric air quality.

Desertification is a major concern to Botswana and water scarcity and land degradation are most likely to have negative impacts on GDP, poverty, health and food production (Boko, et.al, 2007). Further work is needed to answer questions of whether Botswana is growing

the right crops, and if ISPAAD provides the right seeds, or whether available water is used to its best competitive advantage.

One way of helping agriculture adapt to climate change is to use rainwater harvesting. The experience of Botswana in this area appears to be mainly for livestock watering. In Tanzania, rainwater harvesting has been used in semi-arid areas to significantly improve grain yields, particularly in low-rainfall years. However, this is labour intensive and we have already seen that there is a serious labour shortage in Botswana agriculture. The most promising opportunity is likely to be using rainwater harvesting with drip irrigation for horticulture. The Botswana Technology Centre (BoTec) has considerable experience with rainwater capture and it is strongly recommended that this is brought together with low-cost drip irrigation solutions that have been successfully used in South Africa and elsewhere.

Although urbanization is increasing the demand for water in Botswana it also offers the chance of using secondary treated waste water for irrigation. There is potential both to increase horticultural production and to generate new livelihood opportunities. For this reason we focus on this as a case-study which is produced as a stand-alone document.

Tourism

As foreign visitor spending accounts for 70.6% of direct tourism impact according to WTTC (2012) and that at least a third of foreign visitor spending is nature-related, tourism related to Botswana's natural environment *directly* accounts for a minimum of 4,190 jobs and 0.6% of GDP (around 1000 million Pula each year). No data exists on how much domestic tourism is nature-based but taking account of the indirect and induced spending that results from nature-related foreign visits, the total financial value of tourism related to Botswana's natural environment could account for as many as 5870 jobs and 1.0% of GDP (some 1700 million Pula each year).

International evidence suggests that tourism has reduced the incidence of poverty in Costa Rica by between 1.4% and 3%. This is in a middle-income country that relies on tourism for significantly more of its GDP than does Botswana (13% Vs 6.5%). So while we can expect tourism to contribute to poverty eradication in Botswana it clearly can only provide one part of the solution.

Nonetheless, the share of tourism employment in total employment is forecast to grow by 4.2% each year between 2012 and 2022. This might even be an underestimate as there is scope for Botswana to more effectively target tourism from rapidly growing Asian economies and Russia. In any event, this employment growth depends on attracting foreign leisure visitors to Botswana's natural environment which is in competition with many other countries. We concur with Leechor and Fabricius (2005) that "Botswana's major tourism asset is its incredible wildlife resources. Similar wildlife experiences are only to be found in Southern and Eastern Africa and as such Botswana's potential competitors are located within the region". They provide a convincing argument that "Botswana's African

wilderness status and icons are clearly the brand assets that differentiate the destination from its competitors. The Okavango Delta, the elephants of the Chobe and the San culture are highly marketable brand icons that contribute to the mystique and celebrity status of the destination. Consequently, sustainable natural resource management is essential to realize this projected growth and to maintain employment benefits over time.

Imported goods from tourism indirect spending (one component of leakage) cost Botswana 1,100 million Pula which is 54.5% of all estimated indirect and induced spending in the tourism domestic supply chain. In South Africa, the comparable leakage figure is 10.8%. We find there are a number of opportunities to add value to nature-based tourism that will reduce leakages. By keeping a higher proportion of total tourism spending in local areas this is expected to make the contribution of tourism spending to poverty eradication more effective. These opportunities include:

- Building supply relationships between lodges and local producers of fresh produce as well as, soaps and shampoos, basket making, weaving and letoisi products (made from local design, although cloth / material is imported).
- Increasing opportunities for visitors to gain an understanding of traditional culture. In many African countries, tourism offerings include “traditional food and dance evenings”. This approach can simply be a way of offering tourists an additional experience within a standard “enclave tourism” format in which few benefits are retained locally. However, it can be provided within the CBNRM context e.g. the Shandereka Cultural Village next to the Kaziikini community campsite. Other examples could include kgotla storytelling evenings with local meals.
- New tourism activities that build on bush craft skills and cultural tourism activities from industrialised countries. A good example is the international “fashion” for cookery using local wild foods. Although this can be an additional offering within enclave tourism, the opportunity of participating and learning makes this type of tourism well suited to CBNRM and eco-tourism. So, for example, while one of the most successful CBNRM operations – Kaziikini campsite – provides restaurant meals, they use mainly imported ingredients rather than the fresh veld food such as mushrooms their guides point out to tourists.
- Encouraging tourism beyond the Okavango Delta and Chobe. The San interpretation of the natural wilderness provides a unique opportunity for cultural tourism provided this is carefully managed with the communities concerned. Other types of eco-tourism such as avi-tourism also provide important opportunities for diversification.

CBNRM provides the greatest potential for nature-based tourism to contribute to poverty eradication and for this reason we have focused on a successful example of CBNRM in a stand-alone case study. However, to realize the potential of CBNRM more generally, changes are required in a number of areas including:

- Strengthening CBO governance to ensure that poor communities as a whole rather than a small number of Board members gain from CBNRM. Top-down regulation by central government is not an effective way of dealing with varying local conditions. Local MEWT staff play a critical role in supervising CBOs but to be effective they need to have community-level work as a major component of their job description and they need to be based in the community for a significant proportion of their time.
- Government support for capacity building. On a positive note, GoB has expressed interest in facilitating a better institutional architecture for CBNRM including for support, oversight and marketing. MEWT has established a National Environmental Fund which will have a CBNRM window for funding projects. Against these very positive developments we note a tendency for Government to take a top-down approach to CBNRM in which a lack of consultation can lead to serious unintended consequences. The ban on hunting in a 25-kilometer radius around Protected Areas and the requirement of all CBNRM hunting to be replaced by photographic tourism (without taking into account the variation in local opportunities to do this) is an example.
- Developing a clear strategy for CBNRM development that demonstrates linkages to improved governance, resilience to climate change and poverty eradication. Donor partners have been fairly significant supporters of the CBOs engaged in CBNRM and further support will be more achievable if such a strategy is in place.
- Mentoring for CBO businesses from private companies in sectors such as mining, financial services and manufacturing. This relationship might aim to build specific organisational capacity or achieve business plan goals as well as providing an informal “sounding board”.

Nature-based tourism can only make a sustained contribution to poverty eradication if it is itself sustainable. The 2008 Okavango Delta Management Plan (ODMP) captures many of the issues relevant to nature-based tourism noting:

- There has been minimal or no sustained research on tourism carrying capacities;
- There is little done to monitor tourism activities; and that
- The issues with regard to wildlife use include human-elephant conflict, wildlife-livestock conflicts, declining population of certain species, and lack of baseline information on certain species.

Economic incentives generated by CBNRM play a part in addressing *some* of these issues. That is to say, communities that benefit significantly from CBRNRM will be far more willing to invest in wildlife-friendly solutions to human-wildlife conflict.

More generally, the evidence suggests that climate change represents a serious threat to wildlife-based tourism in Botswana. One problem is the projected increase in extreme climatic events such as floods or droughts - and the direct impact these have on tourism income. In addition Moswete and Dube (2011) identify that a number of interactive factors, among which are drought, fires, habitat fragmentation and encroachment and poaching, have contributed to wildlife population decline. The increased likelihood of drought in Botswana as a result of climate change will result in further declines in wildlife numbers. Although there is need to diversify away from dependence on nature-based to more inclusive forms of tourism such as cultural tourism, there are also interventions that help adapt to climate change. For example, transboundary parks that make it easier for animals to migrate; fewer subsidies for livestock in areas where water is needed for wildlife; water pricing that reflects economic costs; and waste water re-use and rainwater harvesting that makes the most of increasingly scarce water resources.

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