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Perceptions of College Students Towards Climate Change, Environmental, and Tourism Issues: A Comparative Study in Botswana and the US

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ABSTRACT

This exploratory study used a comparative cross-sectional research design and survey data to describe and compare attitudes of undergraduate students about climate change and environmental issues at the University of Botswana in Gaborone and the U.S. Naval Academy (USNA) located in Annapolis, Maryland during the spring of 2011. Two important patterns emerged in the survey responses. The first was a consistently large percent difference between students in the US and Botswana on issues related to climate change, tourism, and other environmental issues. Batswana students overwhelmingly shared similar perceptions on most issues regardless of their discipline. The only difference between perceptions of Botswana students majoring in Environmental Science and those majoring in Business was with regards to the impact of climate change on future attractiveness of their area. We conclude that climate change issues should be integrated into courses, subjects or programmes in Universities or colleges of education across African institutions and the developed world. Also, college students who live in urban centres should be exposed to rural environs through field-based courses or subjects regardless of their majors and geographic areas of abode. Both governments could use these results to formulate climate change policy with an inclination to nature-based tourism industry.

KEYWORDS
tourism, perceptions, students, climate change, environment, midshipmen, Botswana, USA

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Introduction

There is a global consensus among climatologists that climate change associated with global warming will result in existential threats to many communities worldwide unless significant changes are made soon to reduce CO2 emissions and the rate of global warming (Bond et al., 2003; Chuku, 2010; Du

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Pisani & Partridge, 1990; Incoterms,2007; IPCC, 2000; 2011; Summary for Policymakers of the SRREN 2011). Significant dislocations associated with increasingly frequent and severe cycles of drought and floods have already forced some subsistence communities near the equator to move[1]. Other lines of research indicate that climate change will pose major threats to the economic base of most countries and will eventually impact all spheres of economics, including agricultural and tourism development (Becken & Hay, 2007; Chuku, 2010; Du Pisani & Partridge 1990; Jopp et al., 2010; Gossling et al., 2006; Mbaiwa & Mmopelwa, 2009; Reynolds & Stafford-Smith, 2002; Tsai et al., 2016). When planning to travel, tourists take into account the climate of the destination area (Buzinde et al., 2010; Matzarakis, 2001). Tourism has also contributed to climate change and climate warming. For example, the United Nations World Tourism Organisation (UNWTO 2008) notes that tourism; especially the transport sector contributes around 46% of transport-related emissions. Thus, tourism and climate are intertwined (see Amelung et al., 2010; Becken & Hay, 2007; Gossling & Hall, 2006a; Jopp et al., 2010; Kaenzig et al., 2016; Reddy & Wilkes, 2013; Tsai et al., 2016).

Because tourism is a climate dependent industry, literature reveals that some destinations are likely to experience improved attractiveness due to better weather conditions (Amelung et al., 2010; Gossling & Hall, 2006b; Kaenzig et al., 2016), whilst other areas will be severely affected and become less appealing to tourists (Bigano et al., 2006; Buzinde et al., 2010; Saarinen et al., 2012b; Jopp et al., 2010; Mbaiwa & Mmopelwa, 2009). Hamilton et al. (2005) further note that long haul travel would become unattractive thereby forcing tourists to opt for local or regional destinations. Many developing destinations like Botswana would as a result face reductions in international tourist arrivals and receipts. Most affected by this new development would be communities dependent on tourism who would lose their livelihoods (see Gossling & Hall, 2006b; Sanchez et al., 2012). If the impact of climate change increases, there is a likelihood of Southern Africa losing its unspoiled tourism attractions such as the Okavango Delta hence affecting the tourism industry in Botswana (Mbaiwa & Mmopelwa, 2009; Preston-White et al., 2005; Saarinen et al., 2012a). While all forms of travel and tourism will eventually be impacted by climate change, some of the most devastating impacts will occur in tourism activities built around nature (e.g. wildlife, skiing) (Bigano et al., 2006; Dube, 2003; Moswete & Dube, 2013; Mbaiwa et al., 2009; Saarinen et al., 2012a; Sanchez et al., 2012). Some changes, such as the melting polar gaps, are generally accepted by nearly all as signs of global warming, while other climate changes continue to be topics that are hotly disputed among some groups of non-scientists, especially in the United States. Also, issues related to change of climate have already been documented in the Okavango (Hambira et al., 2013; Mbaiwa et al., 2009; Ramberg et al., 2007) and Kalahari (Hambira et al., 2013; Saarinen et al., 2012b; Stapelberg et al., 2008) regions of Botswana that have impacted negatively on nature-related tourism. Recent increases in the incidence of wildfires in the Kalahari ecosystem

[1] For example, in southern Zambia several hundred subsistence farmers have had to relocate to the north due to increasingly severe and frequent cycles of drought and floods. Statements by Zambian officials and researchers on May 19, 2011 at the *Meeting the Challenges of Climate Change to Tourism in Africa and the Developing World* conference held in Lusaka, Zambia. The conference was hosted by the Zambian Ministry of Tourism, Environment and Natural Resources and the International Institute for Peace through Tourism.

are a challenge to communities residing in the area and the government (Dube, 2003; GoB, 2003; Saarinen et al., 2012a). Meanwhile, evidence of fundamental changes in the earth's ecosystems tied to climate change and increasing environmental degradation and scarcities is growing. Given the importance of these problems as policy issues (see Hambira et al., 2015) it is surprising how little research has been conducted to understand better the attitudes and information levels of citizens, especially young adults worldwide (see McKercher et al., 2013). A few studies on climate change in Botswana focused on farming, Okavango Delta ecosystem, nature tourism in Kalahari and Maun. These studies did not cover students' perception of climate, environmental and tourism issues. This cohort or population is important as these individuals will be leaders of tomorrow and likely to play important role in decision making regarding climate change, mitigation, adaptation and policy. Research shows that college students are underrepresented on research dealing with environmental attitudes and perceptions as noted by Wilcox (2014).

Our study seeks to help fill this gap in the literature by studying the attitudes of college students enrolled in two very different types of public universities in the US and Africa: the University of Botswana in Gaborone, Botswana, and the U.S. Naval Academy (USNA). The objectives of the study were:

1. To determine whether there were differences in perceptions of climate change, environment and tourism issues between students in an African country and those from developed countries

2. To determine whether there were differences in perceptions of climate change, environment and tourism issues between students who majored in Environmental Science and those from other disciplines

Students enrolled in Environmental Science or Business courses at the University of Botswana and students enrolled in a senior Political Science research course and an African International Relations course were surveyed during the spring of 2011. While these samples were not random samples of their university populations, the exploratory study nevertheless is interesting as a first look at how undergraduates across very different cultural contexts perceive current and future problems and challenges related to climate change and the environment.

Research Methodology

The aim of this study was to examine the perceptions of college students towards climate change, environmental, and tourism issues. This exploratory study used a comparative cross-sectional research design and survey data to better understand the perceptions of college students at the University of Botswana (UB) in Gaborone and the U.S. Naval Academy (USNA) located in Annapolis, Maryland. The survey instrument was constructed by professors at both institutions and administered at approximately the same time during the spring of 2011. The same questionnaire format and wording were used in Botswana and the US, except for a few differences in the terminology for the following three individual characteristic variables:

1) Education level (different terminology used to designate lst-4th year in college);

2) Faculty for UB students and military service selection (e.g. naval or marine

Specialty) for USNA midshipmen;

3) Programme of Study for UB students and Major for USNA respondents.

The format and answer format for all other questions were identical on the two versions of the questionnaire. Pre-tests of the questionnaire were administered to students drawn from the target groups of students to ensure that respondents would understand the questions and statements.[2]

The survey instrument contained close and open-ended questions about the climate change, tourism and the environment. Five-point Likert-type statements; with 1= strongly disagree to 5 = strongly agree (climate change and tourism) and with 1 = unimportant to 5 = very important (environmental issues) were used to assess the students' level of awareness, understanding, and perceptions about policy issues related to climate change, tourism and the environment. The open-ended question reported here was designed to find another way to obtain perceptions of the most serious climate change and environmental problems facing the area students considered their home.

Profiles of the Botswana and US samples

Since none of these samples were random, key attributes of each sample are summarized below.

Botswana

The sample consisted of undergraduate students in the faculties of Science and Business of the UB. The total sample of 345 included students enrolled in classes offered by the Department of Environmental Science and Faculty of Business majoring in Tourism and Hospitality, Management and Marketing. Two groups of students were surveyed in the Environmental Science courses; those who were enrolled in tourism programme and those who were non-tourism majors.[3] We administered 232 surveys to undergraduates in the department of environmental science of which 220 questionnaires were useful, representing 94.8%.

In the Faculty of Business, all students were studying Business Administration but each student also chooses a subject of specialisation. Students could therefore specialise in Accountancy and Finance, Information Systems, Management, Marketing and Tourism and Hospitality Management. Purposive sampling was undertaken whereby we targeted only students

[2] All statistical analyses reported in this study were completed using the statistical package for social sciences (SPSS). A copy of the questionnaire is available upon request.

[3] Non-tourism students were those who were not majoring in or taking a concentration in tourism and had not previously taken a course in tourism. Students were asked if they had taken any tourism class for screening.

specialising in Tourism and Hospitality, Management and Marketing. We administered a total of 131 surveys to undergraduate, and in all 125 questionnaires were returned representing 95% response rate. This was by no means a representative sample of the students registered in the Faculty of Business.

The students enrolled in Environmental Science courses were a diverse group in terms of social-demographic characteristics such as age but very homogeneous in terms of other key characteristics such as nationality: 97% were from Botswana. The youngest student was 19 and the oldest was 40 years of age. The majority (N= 166) of the students were between 21 and 24 years old. Almost all of the respondents were in third (59%) and fourth (39%) year at college. All of these students were enrolled in the School of Humanities (73%) or Social Sciences (13%). Their program of study or major included Bachelor of Arts Humanities (55%), B. Environmental science (27%), Bachelor of Arts social science (12%) and Bachelor of Business Administration (4%). In terms of their early personal experiences, most of the respondents (48%) grew up in both rural and urban areas while nearly a third (31%) was raised entirely in rural areas.

Students majoring in Business were older than those in Environmental Science with a mean age of 24 and a median of 22. All of these respondents were Batswana citizens. This is a true representation of nationality of students majoring in Business where less than 1% was non-Batswana. Business majors included students in the first year of study (19%). The other years were as follows: 37%) third year, 31%) fourth year. The majority of students (46%) were specializing in tourism and hospitality management, 34% specialized in Management, and 21% specialized in Marketing. There were negligible percentages of students from outside the Business major. Although 96% of the Business sample was living in the capital city Gaborone, 49% had been raised in mixed environments, (rural and urban), 28% had been raised in the rural areas and 21% had been raised in an urban setting.

United States

The United States' sample consisted of 45 midshipmen enrolled in Political Science elective courses on African International Relations or a senior-level research seminar for Political Science majors who were studying criminal and terrorist networks in Africa. The survey was taken in-class and was voluntary. There was a 100 per cent response rate.

These 45 students represented 10% of all Political Science majors and slightly less than 1% of the Brigade (i.e., student body). The composition of the Brigade is very homogenous with the majority of midshipmen holding conservative beliefs. Midshipmen majoring in Political Science, especially those taking African Politics courses tend to be slightly more liberal or have had more diverse life experiences before entering the Academy. Thus, the sample probably represented more diversity in terms of political beliefs than among the majority of midshipmen in the overall Brigade. All but one respondent, who was an exchange cadet from Haiti, were American citizens from diverse ethnic backgrounds. All were majoring in Political Science, except for one History student. There was only one respondent who was an exchange student from a sister service Academy, the U.S. Military Academy. None of the midshipmen in the sample were majoring in either the sciences or engineering major. Within

Political Science, the major concentration area was pretty evenly split between those concentrating in American or Comparative Politics or International Relations. Many of these respondents are students who have an interest in Africa and/or emerging types of security threat and are likely to have followed climate change, environmental, and tourism issues more closely than other midshipmen. However, since this is a non-random sample, the extent of error or bias is unknown. This caveat should be kept in mind in reading the attitudes of the American youth.

While the survey was not a random sample of the entire Brigade, it was a diverse convenience sample of young college students ages 18-24 (average age of sample was 21. While the Academy draws from all parts of the US, this sample was skewed towards midshipmen who grew up in the local area. Over 30 per cent (N=14) came from the local Annapolis area. This area includes the historic town of Annapolis, neighborhoods adjacent to rivers running into the Chesapeake Bay and suburban neighborhoods. All of these areas are orientated around water sports, nature areas, and tourism. The other two-thirds of the sample came from urban or rural areas.

In terms of early personal living experiences, 58% (N=26) grew up in urban, 20% (N=9) grew up in rural areas and 22% grew up in both urban and rural areas. The sample contains a majority of respondents with an urban experiential base and only a few with experiences in rural areas. While this is fairly representative of the experiences of the majority of Americans, it is an important difference to keep in mind when making comparisons. In Botswana, 79% of all the respondents spent their early life in rural areas or a mix of urban and rural environments while only 42 % of the American students came from rural or a mix of rural and urban localities.

Most of the students in the three groups shared several important characteristics including being undergraduates who have studied or have an interest in social science or humanities topics and some interest in questions related to changes in the environment. Since nearly all are citizens of the US or Botswana, it is possible to compare the views of these young people in two countries even though none of the samples should be viewed as necessarily representative of their nation-state age cohort.

Results

Two important patterns emerged in the survey responses to both the fixed choice and the open ended question. The first was a consistently large percent difference between students in the US and Botswana on issues related to climate change. A second pattern showed differences in the responses of students majoring in Environmental Science and Business at the University of Botswana to some questions. These two patterns were evident in questions about climate change, tourism, and other environmental issues and are described in detail in this section.

Table 1 summarizes the response to fixed choice questions about climate change for students at the U.S. Naval Academy and the University of Botswana. While there is a remarkably high degree of agreement in responses for many items among University of Botswana students enrolled in Environmental Science and Business classes on the seriousness of climate change and its

potential adverse impacts on tourism and the environment the large difference with students in the American student sample are striking.

Table 1. Perceptions towards Climate Change

Statement/Items	**U.S. Naval Academy * (Political Science)**		**University of Botswana (Environ. Science)**	
	%	**(N)**	**%**	**(N)**
(C1) "Climate has recently changed in my region"				
Agree or St Agreed	22%	(10)	89%	(193)
85% (106)				
Neither Agree/Disagree	36	(16)	8	(18)
8 (10)				
Disagree or St Disagree	36	(16)	3	(6)
6 (7)				
No response	7	(3)	0	(3)
1 (2)				
	101%	(45) *	100%	(220)
100% (125)				
(C2) "Climate will change in the future in my region"				
Agree or St Agree	51%	(23)	90%	(198)
79% (99)				
Neither Agree/Disagree	29	(13)	8	(17)
14 (18) Disagree or St Disagree			20 (9)	1
(3) 5 (6)				
No response	0	(0)	1	(2)
1 (2)				
	100%	(45)	100%	(220)
100% (125)				
(C3) Climate and tourism are interlinked				
i				
Agree or St Agreed	71%	(32)	95%	(205)
85% (106)				
Neither Agree/Disagree	11	(5)	4	(8)
10 (12)				

Disagree or St Disagree	16	(7)	0	(0)
2	(3)			
No response	2	(1)	2	(3)
3	(4)		100%	(45)
101%	(216)	100%	(125)	
(**C4) Climate change will impact the tourism industry**				
Agree or St Agreed	71%	(32)	92%	(203)
89%	(111)			
Neither Agree/Disagree	20	(9)	2	(5)
3	(4)			
Disagree	9	(4)	1	(1)
8	(10)			
No response	0	(0)	5	(11)
0	(0)			
	100%	(45)	100%	(220)
100% (125)				
(C5) The tourism industry should invest in adaptation strategies to manage climate change now				
Agree or St Agreed	44%	(20)	94%	(206)
94%	(116)			
Neither Agree/Disagree	38	(17)	4	(9)
4	(5)			
Disagree or St Disagree	16	(7)	1	(2)
2	(3)			
No response	2	(1)	1	
(3)	0	(0)		
	100%	(45)	100%	(220)
100 % (124)				
(**C6) Recent temperature and rains have been normal**				
Agree or St Agreed	53%	(24)	15%	(33)
19%	(24)			
Neither Agree/Disagree	20	(9)	16	
(34)	15	(19)		
Disagree or St Disagree	27	(12)	68	(149)
65	(81)			
No response	0	(0)	2	(4)
1	(1)			

	99%	(45)	101%	(220)
100% (125)				
(C7) Climate change has reduced the attractiveness of my region				
Agree or St Agreed	7%	(3)	46%	(100)
31% (39)				
Neither Agree/Disagree	18	(8)	28	(61)
40 (50)				
Disagree or St Disagree	73	(33)	26	(56)
27 (34)				
No response	2	(1)		(3)
2 (2)				
	100%	(45)	100%	(220)
100% (125)				
(C8) Climate change will reduce the attractiveness of my region in the future				
Agree or St Agreed	4%	(2)	71%	(155)
52% (65)				
Neither Agree/Disagree	38	(17)	20	(44)
30 (38)				
Disagree or St Disagree	56	(25)	9	(20)
16 (20)				
No response	2	(1)	0	(1)
2 (2)				
	100%	(45)	100%	(220)
100% (125)				
(**C9) I do not know what impacts climate change will bring.**				
Agree or St Agreed	53%	(24)	27%	(59)
32% (40)				
Neither Agree/Disagree	24	(11)	15	(33)
20 (25)				
Disagree or St Disagree	22	(10)	55	(121)
48 (60)				
No response	0	(0)	3	(7)
0 (0)				
	99%	(45)	100%	(220)
100% (125)				
(C10) Tourism has negative impacts on local environment				

Agree or St Agreed	36%	(16)	57%	(124)
35%	(44)			
Neither Agree/Disagree	24	(11)	18	(39)
16	(20)			
Disagree or St Disagree	38	(17)	23	(51)
47	(59)			
No response	2	(1)	3	(6)
1	(2)			
	100%	(45)	101%	(220)
99%	(125)			
(C11) Tourism attractiveness in our country is based on nature				
Agree or St Agreed	24%	(11)	87%	(191)
92%	(115)			
Neither Agree/Disagree	36	(16)	7	(16)
2	(2)			
Disagree or St Disagree	38	(17)	4	(9)
6	(8)			
No response	2	(1)	2	(4)
0	(0)			
	100%	(45)	100%	(220)
100%	(125)			
(C12) Every course should have some coverage of climate change topics				
Agree or St Agreed	38%	(17)	75%	(163)
58%	(73)			
Neither Agree/Disagree	18	(8)	15	(33)
24	(30)			
Disagree or St Disagree	45	(20)	10	(21)
18	(22)			
No response	0	0)		(3)
0	(0)			
	101%	(45)	100%	(220)
100%	(125)			
(C13) Government should invest in adaptation strategies to reduce the impact of climate change				
Agree or St Agreed	56%	(25)	93%	(203)
85%	(106)			

Neither Agree/Disagree	27	(12)	5	(12)
13	(16)			
Disagree or St Disagree	18%	(8)	2	(4)
2	(3)			
No response				(1)
0	(0)			
	101%	(45)	100%	(220)
100% (125)				
(C14) Human causes of climate Change				
Very important	36%	(16)	72%	(156)
57% (71)			Somewhat important	
	27	(12)	16	(36)
22 (27)			Neutral	
18	(8)	6	(14)	14
(18)				
Not that important or neutral	13	(6)	5	(10)
6	(7)			
No response	7	(3)	2	(4)
2	(2)			
	101%	(45)	101%	(220)
101% (125)				

Specifically, Table 1 indicates that the overwhelming majority of respondents in University of Botswana courses (89% Environmental Science; 85% Business courses) agreed that climate change has recently changed in their region of abode (C1), while only 8% did not agree or disagreed.[4] Most of these students (90% Environmental Science; 79% Business) also agreed that climate change will change in the future. In sharp contrast, only 22 % agreed with the statement that "Climate has recently changed in my region." The large difference between these two national groups on a simple factual question about whether the climate has changed at home seemed to mirror the wider gap in international discussions about whether recent extreme weather patterns reflect long-term change related to climate change worldwide. More midshipmen (51%) agreed with the statement "Climate will change in the future in my region (C2) compared to 90% University of Botswana (UB-ES) students majoring in Environmental Science and 79% of UB students majoring in Business. These may reflect the fact that large number of citizens in the southern hemisphere were willing to accept the validity of predictions made by most climate models while many citizens, especially conservatives in the United States did not in 2011.

To test for framing effects (i.e., changes in responses due to minor changes in the wording of a question) we asked a number of questions that were very similar to the above ones after first asking questions on the survey about climate

[4] Agreed (strongly agree and agree responses combined). Disagree or Strongly Disagree were also combined unless noted in the text. Some percentages in Table 1 do not total 100% due to rounding.

change and tourism. There were some differences in responses across all the subgroups but overall the basic differences across national samples remained. For example, (C7) asked whether "climate change has reduced the attractiveness of my region". In response, only 7% of midshipmen while 46% of UB Environmental Science majors and 31% of UB Business majors agreed or strongly agreed. When asked to predict the impact of climate change on the future attractiveness of "my region" (C8) the same pattern emerged; 4% of midshipmen, 71% of Environmental Science majors and 52% of Business majors agreed/strongly agreed. The trend was also apparent across the two national samples to the question (C9), "I do not know what impact climate change will bring (USNA 53%, UB-ES 27%, UB-Business 32% Agreed/Strongly Agreed). The consistence responses across these questions increased our confidence that these questions had tapped real differences in the attitudes of the American and Batswana students in this sample.

We also asked questions about the linkages between climate change and tourism. Almost all the University of Botswana students (95% Environmental Science; 85% Business) agreed that climate and tourism are interlinked (C3). A smaller but sizable number of midshipmen (71%, N=32) also agreed with this statement although a larger percentage answered "neither agree/disagree (11%) disagreed/strongly disagreed (16%) with the statement. These differences may reflect a growing awareness of the possibility that climate change may have an impact on tourism in other parts of the world among Americans. When asked whether climate change will impact the tourism industry (C4), the vast majority of University of Botswana students (92% Environmental Science; 89 % Business) agreed with the statement. The majority of midshipmen (71%) once again agreed. But when the topic returned to questions solely related to climate change the basic pattern of differences between the two national samples again surfaced. For example, most University of Botswana respondents (68% Environmental Science; 65% Business) disagreed that recent temperatures and rains have been normal within their communities, and 15-16% of them were neutral while 53 % of the American midshipmen respondents agreed with this statement (C6).

In order to find out if college students understand the importance of the tourism industry and the challenge that the industry faces, respondents were asked if the industry should invest in adaptation strategy to manage climate change (C5). Nearly all the University of Botswana respondents (94% Environmental Science; 94% Business) agreed with the statement indicating the urgent need for an adaptation strategy. Among midshipmen only 44% agreed with this statement while 38% neither agreed nor disagreed. A similar wide gap in perceptions between USNA and Batswana students was elicited when students were asked about governmental desired responses to climate change. In response to the statement, "Government should invest in adaptation to reduce the impact of climate change. 56% of the midshipmen compared to the overwhelming majority of UB students (Environmental Science 93%, 85% Business) agreed or strongly agreed with this statement. Given the pattern of responses to the above questions, it was hardly surprising to find differences across these two national groups on the question of whether humans cause climate change (C14). Only 36% (N=16) of the midshipmen strongly agreed with this statement compared to 72% (N=156) of Environmental Science and 57%

(N=71) of UB-Business students. However, when combining the categories "Very important" with "Somewhat Important," 68% of the midshipmen (N=28) and most UB students (UB-ES 89%, N=192; UB-Business 79%, N=98) agreed on the importance of human-induced climate change.

Although the basic pattern of differences between the two national samples was pervasive, it is interesting to note that some of these questions elicited differences between UB students studying Environmental Science when compared to those majoring in Business. As discussed above, Questions seven-nine (C7-9) elicited similar differences between UB and USNA students. However, when the topic referenced students' own region, there were also detectable differences between students at UB studying Environmental Science compared to those majoring in Business. In response to the question of whether "climate change has reduced the attractiveness of my region," nearly half of the Environmental Science respondents (46%) agreed, 26% disagreed and 28% were neutral (C7). Only a third of Business students (31%) agreed with the statement. A larger percentage of Business students (40%) had no opinion that is they neither agreed nor disagreed with the statement and 27% disagreed or strongly disagreed with the statement.

When asked whether climate change will reduce the attractiveness of their regions in the future (C8) there was nearly a 20 percent difference between Environmental Science and Business students; 71% of Environmental Science respondents agreed, whilst 20% did not agree/disagree with the statement. Only 52% of Business respondents agreed with the statement and 30% disagree with the statement. In a similar vein, in response to the question (C10) "Tourism has negative impacts on the local environment," only 35% of Business agreed or strongly agreed compared to 57 percent of Environmental Science majors. But when it came to understanding what was the type of tourism most important in their local region most UB respondents (87% ES, 92% Business) agreed that "Tourism attractiveness in our country is based on nature (C11). This high level of agreement among UB students probably taps the fact that the tourism industry in Botswana relies mainly on natural attractions such as Wildlife and wilderness well entrenched in most urban as well as rural areas of the country. Whilst many of the respondents in Environmental Science (75%) agreed or strongly agreed with the statement, "Every course should have some coverage of climate change topics" (C12), only 58% of Business respondents shared this view and a sizeable number neither agreed nor disagree and disagreed or strongly disagreed respectively (24%, 18%). One plausible explanation for the difference among these cohorts of Batswana students could be the degree focus where Business students are required to take both majors and minor subjects from the main stream Business and do not therefore see the need to add an unnecessary load of courses. Environment Science students come from diverse academic disciplines (Science, Humanities, Social Science) which make it possible to add courses from other disciplines.

All of the respondents were asked to answer an open-ended question about the most serious environmental problem facing the area you consider

home. Answers were thematically coded for up to three themes and grouped in categories inductively. The results are summarized in Table 2.[5]

Table 2. What is the most serious environmental problem facing the area you consider home?

	USNA		***University of Botswana (ENV Science)***		***University of Botswana Business***	
	%	N	% N		%	N
Unreliable rainfall	2	1	3	6	0	0
High/extreme temperatures	7	3	7	14	10	12
Drought	2	1	1	1	11	14
Deforestation	4	2	17	32	14	18
Floods	0	0	2	4	6	7
Trash disposal(waste)	9	4	18	34	22	27
Pollution	20	9	29	56	33	41
Other	31	14	23	44	4	5
Missing	16	7	13	29	0	0
Water Degradation	9	4	0	0	0	0
	100%	45	100%	191	100%	125

Sample size n=361

The answers to this question are interesting both for the differences and similarities between midshipmen and among UB students. Among the UB-Environmental Science sample 29% indicated that pollution was a concern in their areas, 18% identified trash disposal waste and 17% identified deforestation as the most serious problem in their home region. An even larger percentage of UB-Business students, 33% (N=41) identified pollution as the number one problem and 22 % (N=27) identified trash disposal (waste). The third most frequently mentioned local problem for UB-Business students was also deforestation. Among midshipmen the largest number (31%) wrote-in other problems including 10 that were non-environmental problems. These results are interesting because they highlight one important problem area--pollution and waste disposal—of common concern to students in both countries. However, a qualitative analysis of these answers made clear that students across the two

[5] The unit of analysis for this frequency distribution was the theme or themes mentioned in the answers to the question.

nations typically identified different types of pollution problems. Air pollution was frequently mentioned by US respondents while Batswana respondents mentioned water and waste problems more often. Several Batswana students across the two disciplines mentioned problems related to deforestation while midshipmen focused a wide variety of environmental problems.

Discussion and Conclusion

The most surprising and interesting finding from these surveys was the very large and consistent differences in the perceptions of students in the U.S. and Botswana in their assessments of the seriousness of climate change-related problems and environmental issues currently and in the future. While most students in Botswana agreed that climate change would be a problem in the future and many felt it was already a problem, only half of the Americans in this sample felt it would be a future problem and only a quarter viewed it as a significant problem today. Similarly, environmental problems in the two countries were very different and seemed to reflect primarily what was reported in the media or had been experienced first-hand in the area they considered home. For the American midshipmen this included such problems as extreme weather and fluctuating weather temperatures that were viewed as seasonal or manageable pollution problems rather than environmental problems with serious, long-term consequences. The consistency of differences across the two national samples whether the question focused on the causes or current and future impacts of climate change were quit large. This consistent pattern across so many different questions suggests that the survey may have tapped substantively important and policy significant results. In another study on college students on knowledge about climate change, Mckercher et al. 2013 uncovered that a large number of postgraduate students in 22 economies were knowledgeable about climate change and the related issues on the environment..

While few inferences can be drawn from non-random samples, it is interesting to speculate about whether these data are mirroring differences in the political attitudes of young people or all citizens in the United States and Botswana and worldwide. The consistently large differences between these two different national samples may reflect wider disagreements about the seriousness of climate change and what nation-states should do to mitigate or prevent further climate change or environmental degradation (*see* Christensen & Knezek, 2015; Mckercher et al., 2013). Whether a similar pattern would emerge among more representative samples of American and African youths is an important question that merits further investigation.

It remains unclear whether one would find such a large gap between Batswana (Botswana citizens) and midshipmen or American students generally today. Although the partisan divide among national politicians is even wider today than in 2011 in the United States, 75% of Americans polled in November of 2015 said that global warming was already having a serious environmental impact or would in the future. Nine out of 10 Democrats and 58 percent of Republicans agreed with this statement while one-third of Republicans in this same poll believed global warming would never have much of an impact. Popular concern about the environment in the US is now back to pre-recession levels. A bare majority of 52% respondents in this same poll agreed that protecting the environment was more important than stimulating the economy. Thirty-four

percent said the economy was more important. These numbers are similar to those found prior to the Great Recession during the spring of 2007. However, by 2009 during the depths of the recession Americans favors stimulating the economy by more than two to one (Russonello, 2015). This recent poll is useful for reminding us just how quickly popular opinions can change with the "temper of the times." Thus, it would certainly be interesting to replicate our study to see if the large differences between midshipmen and Batswana persist today in a very different economic and political environment.

The differences among Botswana students across the two majors of environmental sciences and Business-related subjects were an interesting find. The fact there were difference between students majoring in Environmental Science and Business about such basic questions as the future impact of climate change on one's home region may be important if found in future studies. There was a 22 percentage difference between the two groups about whether there had been negative impacts on the local environment. It would be interesting to see if there were similar differences between University of Botswana students majoring in Environmental Science and Business today. Whether or not differences in attitudes about climate change and environmental problems are among students across major areas of concentrations at universities throughout the world is an important question that should be addressed in future studies.

This was an exploratory study which used a non-random sampling to explore the attitudes of college students from two different backgrounds developed and developing country on their perceptions towards climate change, environmental and tourism issues. Specifically to explore whether there were differences in perceptions between students from a developing country and a developed one. The results show that students from Botswana were aware of the seriousness of the climate change related problems and environmental issues in the current state, and in the future whilst students from the U. S. attributed changes to be normal fluctuations in weather patterns which could easily be managed. Such differences could be attributed to mass media as well as political climate prevailing in each country. Where in the US at the time the voices of climate change denialism were very strong whilst in Botswana and many other developing countries governments and the public media have taken climate change as a serious issue which must be mitigated.

The second objective of this study was to determine whether there were differences in perceptions of climate change, environment and tourism issues between students who majored in Environmental Science and those from other disciplines. Our study showed congruency between Botswana students who majored in Environmental Science and those from other disciplines in this case, Business students. The only difference in perceptions was on the impact of future attractiveness in their area. Where slightly over half of Business students compared to the majority of Environmental Science students agreed that climate change would in future impact on the attractiveness of their area. This could be because the majority of Business students lived in urban areas which have not been the mainstay of Botswana's tourism which has traditionally been nature and wildlife-based. However, all college students regardless of their geographic location echoed their perception that climate change will have negative impacts on the tourism industry.

With these interesting implication points, our findings suggest that more information on climate change, environment and the tourism industry should be integrated into courses, subjects or programmes in Universities or colleges of education across developing and the developed world. Also, college students who live in urban centres should be exposed to rural environment through field-based courses or subjects for hands-on activities as regards climate change and the natural environment. Thus, both governments (US and Botswana) could use these results to justify the speedy formulation of climate change policy with an inclination to nature-based tourism industry. As well, should emphasize the inclusion of climate and environmental issues in school and college curricular.

Disclosure statement

The Authors reported that no competing financial interest.

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