Exploring Climate Change Friendly Behavior among Tertiary Students in Promotion of Sustainable Development Goal Number 13: a case of a University in Zimbabwe

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Introduction: - **Climate change and climate variability are presenting new challenges that are threating human livelihoods and sustainability across the globe. Societies therefore need to find coping strategies that work for them to reduce the effects brought by climate change. The main aim of this study was to explore climate change friendly behavior among University students, in promoting Sustainable Development Goal 13 (SDG 13), both in campus and off campus. SDG 13 deals with climate action. Climate change is real and this calls for changes in our actions, attitudes and behavior. According to Smith (2015; 29) 'achieving change in individuals and organizational behavior to meet the challenges of global environmental change will be seen as a defining benchmark for our generation'. Research has shown that societies globally have a basic understanding of what climate change is. The question however, is that with that knowledge, are people changing their behavior to address and reduce the impacts of climate change? This paper therefore addresses climate friendly behavior if any among University students both on-campus and off-campus.**

Key words: **climate change, sustainable development, carbon footprint, climate friendly behavior**

I. BRIEF LITERATURE REVIEW

Sustainable Development Goal Number (SDG) Number 13

The United Nations set up 17 sustainable development goals in 2015 with the aim of achieving a better and more sustainable future for everyone. The adopted theme was 'Transforming our World: The 2030 Agenda for Sustainable Development' (Gratzer & Keeton, 2017). Among the goals is SDG 13 which is aimed at educating young people on climate change thereby putting them on a sustainable path at an early stage in life.

The IPCC (2007) state that global temperatures have been on the increase since the last century, mainly due to increase in greenhouse gases from anthropogenic activities. UNESCO acknowledges that climate change poses a major threat to the humankind existence. Although developing countries are the least responsible for climate change, they are the most vulnerable from its effects (Swim, Clayton & Howard; 2011) and have the least capacity to adapt (Dobbins et al, 2015). Universities and schools have a central role to play by helping students make informed decisions, skills and values for sustainable lifestyles in the era of climate change (Gibb, 2015; Marusic, 2015).

Behavior and Climate Change

The environment is in constant change especially with the inevitable impacts brought by climate change. It is appropriate therefore that people have a business unusual approach where there is change in their behavior if climate change has to be tackled. As illustrated by Kretz (2012) and Bammer (2015) research is important in informing, triggering and driving behavior change when dealing with climatic issues. However, sometimes there is resistance to change among people especially with behaviors, actions and attitudes that have existed for a long time (Bammer, 2015). Inertia is affected by a number of factors such as fatigue (Carnell, 2015), increasing routinisation of activities (Wesley, 2015) and fear of unpredictable outcomes (Bromham, 2015) and lack of knowledge (Vink, Dewulf & Termeer, 2013). Goralnik and Nelson (2011) note that knowledge about the environment and climate change alone does not automatically leads to a positive attitude towards nature. A complex change in human beings involving knowledge, attitude and emotions is therefore necessary for behavioral. Simply put a sense of belongingness is important in order to tackle climate change issues.

Carbon footprint is defined as a measure of carbon dioxide and other greenhouse gas emissions (Weidema et al, 2008). The measure can be at individual, community or country's level. High carbon footprint output result in increase in climate change. Societies therefore have an important role in reducing carbon footprint whether as individuals or collectively. Environmentally-friendly behavior change is widely recognized as important in lowering the carbon footprint (Kerr, 2012).

The rapid changes in climate in the last 50 years are mainly attributed to anthropogenic causes (IPCC, 2007; Swim et al, 2011). Industrial development around the world has brought with it changes in human consumption behaviors and an increase in carbon dioxide which is the main GHG leading to climate change. There is a positive relationship between carbon dioxide increase and countries with high gross domestic product (GDP) (Swim et al, 2011). The differences in carbon dioxide output are a result of the consumer behavior patterns in countries with high GDP per capita and low GDP per capita. Although there is also a link between high population and high carbon dioxide output, there is scientific consensus that the countries with the highest populations are the least contributors to climate change (Carr, Suter & Barbieri, 2006). High consumer behavior in countries like United States, India and China are attributed to the highest carbon dioxide output in the World (Swim et al., 2011).

Behavioral change however, can be hindered by certain barriers within the social environment in which an individual or individuals operate in. These constraints include perception about climate change, reluctance to change behavior, norms and values which underpins the way of doing things in that particular society (Jones & Boyd, 2011). Climate friendly behavior can only result when these barriers are overcome by individuals or a community. Knowledge of behavior and attitudes of a society is therefore very important as this determines the amount of greenhouse gas emissions and the potential to change so as to mitigate against climate change. Reduction in carbon dioxide output and positive behavior change today is important for the sustainable development of the world.

Barriers to individual climate mitigation actions and options to lift them

There is a huge literature addressing the individual's pro-environmental behavior in the social sciences fields. Barriers in this paper are categorized in individual, social and institutional. The factors that influence people's behavior to act pro-environmentally, and more specifically to carry out climate change mitigation actions, are multiple and intertwined. Barriers to acting are as numerous and complex to grasp. Still, the reviews of the literature carried out by various authors point to three types of barriers, i.e. individual, social and institutional (Kollmuss and Agyeman, 2002, Patchen, 2006, Liverani, 2009, Norgaard, 2009).

At the *individual* level, the main barriers may be economic, cognitive, psychological, and personal. When dealing with a global public good such as climate, this entails that people will invest in climate change mitigation actions only if the overall monetary benefits drawn from their individual actions outweigh the costs. Individuals are willing to invest were the can see some monetary returns in a short space of time. Cognitive limitations relate to climate change knowledge. They are therefore partly linked to the information that people get. On the other hand, even when people show a relative understanding of climate change and its impacts, they may not act (Norgaard, 2009).

Psychological factors may be at play. The findings of polls conducted in various countries emphasize the denial attitude towards climate change, especially in developed countries (HSBC, 2007, Leiserovitz et al., 2008). Stoll-Kleeman et al., (2001), underscore that climate change denial may help people alleviate their dissonance between their attitude and behavior. The cognitive dissonance relates to the inconsistency between people's attitudes, statements, and their actual behavior when it comes to act (Acharya, 2015). Other barriers that are reported at the individual level in the literature include habits, personal values and characteristics. In terms of personal values, many factors may deter people from acting, depending on the relative importance that they give to egocentric, social, and environmental outcomes.

At the *social* level, social norms, i.e. "established patterns of behavior that most people approve of -or the yardstick individuals use to assess the appropriateness of their own behavior" (Liverani, 2009, p. 8) may also constitute a barrier to individual action. As "people's preferences will be conditional on having expectations about other people's conformity" (Bicchieri, (2006), people will mostly follow the lead of the social groups they belong to. At the *institutional* level, barriers may originate from public policies or infrastructures. Laws, regulations and public policies, or the lack thereof, may prevent individuals from acting or may even be counterproductive in terms of greenhouse gas emissions.

II. METHODOLOGY

The descriptive survey method was used in the study to explore the climate friendly behavior among university students in promotion of SDG 13. A case study is defined as an intensive investigation into particular qualities of an individual or a social unit in effort to gain deeper insights of these traits (Cohen, Manion & Morrison; 2011).

The study employed mixed methodologies of qualitative and quantitative research. Modesto and Muchapondwa (2015) argue that a researcher using a case study approach can apply a variety of methodologies and rely on a variety of sources to investigate a research problem. As such questionnaires with closed and open ended questions were used to gather data in this study. The advantages of this type of data gathering instrument were to reduce bias error caused by characteristics of the interviewer and to provide anonymity for the respondent in the absence of the interviewer (Phellas, Bloch & Scaler; 2013). The target group was students from a university in Zimbabwe. Random sampling was done to select twenty five (25) students for the study, five (5) from each school.

III. RESULTS AND DISCUSSIONS

A survey was carried out among all schools to access how students behaving in tandem with climate change friendly behavior. Results were quite varied from one school to

another with notable results from the schools of education and natural science.

Figure 1: Students Climate Change Friendly Behavior per school

Examples of Schools at the University
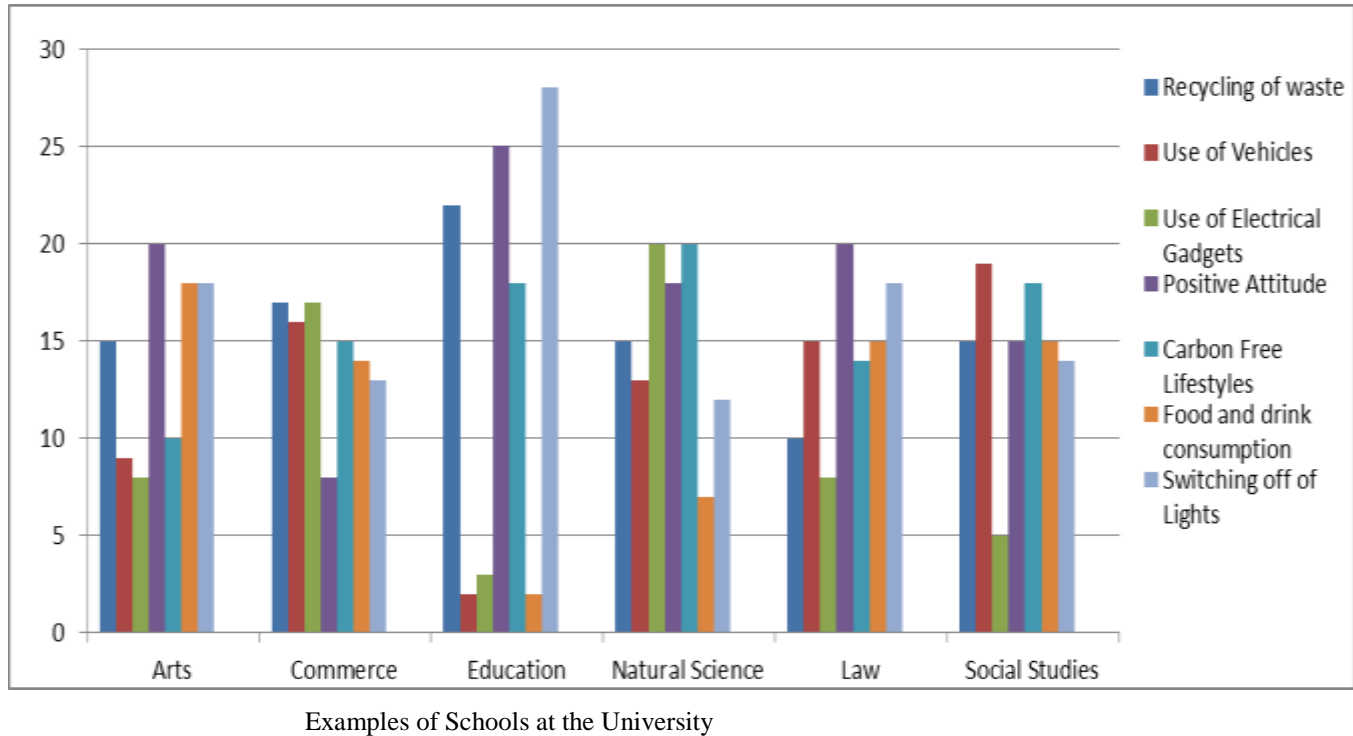
Students from the school of education showed that they behaved in a climate friendly manner than all other students from other schools. Switching off of lights among the education students is of paramount importance but not very popular with the social studies students. Students from the school of education also indicated that they practiced recycling of waste paper more than other students from schools.

Students from the school of natural sciences had better practices of climate change behavior where majority behave in a carbon free styles. All schools showed that they have a positive attitude towards climate change behavior. Recycling of waste was also done by all schools contributing a significant percentage. Use of vehicles was popular among social studies students and in a way contributing towards climate change due to the production of nitrous oxides and carbon dioxide.

The law students were prominent on switching off the lights and positive attitude towards climate change behavior. Students from the school of commerce behaved almost in a similar way with the exception of their attitude towards climate change behavior which showed the lowest percentage.

Waste material from food and drink showed very little contribution especially amongst the education students.

The general perception portrayed by the results is that students from the University behave in a climate change friendly behavior in general. However, the school of education and natural science students showed that they were proactive in their climate change behavior. The possible reason for this is that most of the students who were in the schools of education and natural science took climate change module in their curriculum. In addition these students were involved in training in recycling and sustainability starts with teachers program at the University. Future educators from the school of education all emphasized that they were well versed with the 7Rs (Refuse, Reduce, Reuse, Repair, Repurpose, Recycle, Rot). Refuse pertains to thinking before purchasing certain materials which are not needed, reduce; buying items that can be used for a long time and has minimal packaging, reuse; avoiding single use items, repair; repairing items when they break instead of throwing them away. Repurpose entails using items for other purposes, recycle; donate, give or make different items instead of throwing away, and rot; using all organic waste for manure.

Fig. 2: Barriers to climate change friendly behavior according to schools
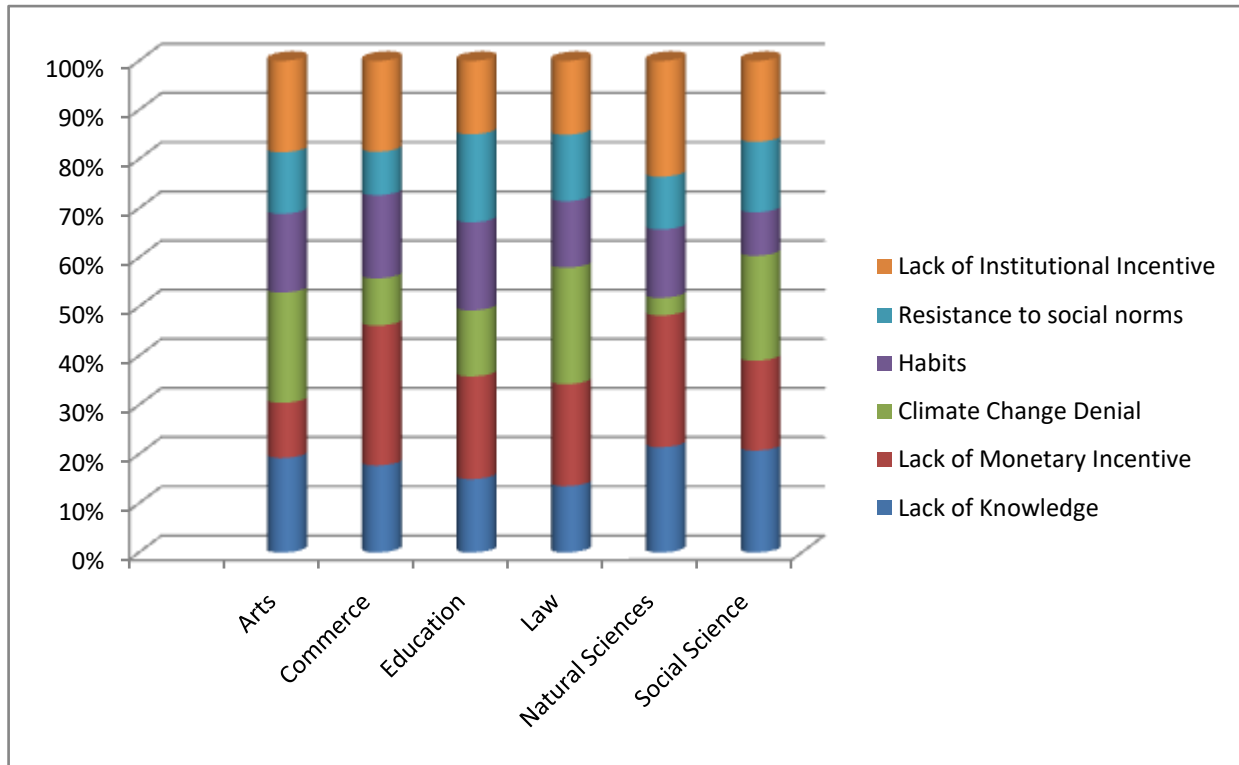
From the compound bar graph Fig. 2, it is clear that the school of education had a better knowledge of climate change friendly behavior compared to the rest of the schools. The school of law showed that most of the students were in climate change denial stage. Habits as barriers were significant amongst the commerce students. The natural science students indicated that the most common barrier was the lack of institutional incentive by the University and very few students who were in the climate change denial stage. For social sciences, the greatest barrier is the lack of knowledge of the climate change friendly behavior. The arts students show that climate change denial is the greatest barrier.

The global aim of community-based social marketing is that individuals of a community develop a pro-environmental behaviour within their community. Various tool sets are suggested by McKenzie-Mohr et al. (1999). The first one is similar to the techniques advocated by the psychologists of commitment. A second set uses repeated visual or oral messages, so that individuals do not forget to adopt a virtuous behaviour (e.g. turn the light off when leaving a room). A third set advertises the desired behaviour as the obvious social norm of the community: individuals who are part of the community may feel prompted to adopt the social norm advertised. Incentives, personal rewards visible by all the members of the community may also be used to drive behaviour change. A climate-friendly guidebook has been created for the University based on interviews of staff and faculty by students. This paper therefore, recommends a paradigm shift from 'Carbon footprint' to 'mindprint. The

idea of corporate responsibility should be broadened to include an understanding of the values that the University promotes, and how they affect behaviour. A business that has taken important steps to reduce its direct environmental impact (or 'footprint') may still wreak environmental havoc through the values that it promotes in its marketing materials (its mindprint), (Crampton, 2017). The University should be both an experimental territory and a showcase, a forerunner to show other communities that adopting low- carbon behaviour is actually feasible. In addition, its values in cooperate efforts to educate students, who are future consuming adults, adopt a low- carbon behaviour by young generations may entail a significant spill over effect to the next generations.

IV. CONCLUSION

Climate change mitigation is urgent. It requires a collective action world -wide. The 'polycentric approach' proposed by Ostrom (2009) calls for actions and experimental efforts at multiple scales at the local, regional, and national levels. This paper explored how individuals may contribute to mitigate climate change at the University level, what are the barriers that may prevent them from acting, and which options are at hand to bring them to act. Individual, sociological, and institutional elements influence people's attitudes and behaviours. The fact that climate change is a highly complex phenomenon, almost abstract for lots of people, and comprises uncertainties about its future impacts in terms of exact location, timing, magnitude, intensity, etc. also contributes to the denial process: people tend to act more to fight against

tangible, local, short-term risks, rather than against global, long-term risks blurred in an array of unclear climate change patterns. The University Mission or Vision is very silent about the climate change friendly behavior hence, no serious enforcement of SDG N^{0}13. However, Education for Sustainable Development (ESD) Community of Practice at the University has embarked on initiatives to sensitize the communities in the proximity about the value of climate change friendly behavior. The University Community of Practice also aims to equip student teachers with ESD skills and knowledge climate change friendly behavior with its 'Sustainability Starts with Teachers' (SST) whose aim is to support capacity building for Southern African Teacher Educators to respond to sustainable development concerns and opportunities, and to fulfill sustainable development goals. The ESD in partnership with Southern African Regional Universities Association (SARUA) is spearheading the SST project under the auspice of the UNESCO.

In brief, the main barriers to climate change friendly behavior at the university are manifold and rely upon multidimensional factors, including economic, psychological, personal, sociological, and institutional components. Various options may open pathways to lift those barriers.

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