



# **Namibia University of Science and Technology**

**Department of Agriculture and Natural Resources Sciences**

**Bachelor Degree in Natural Resource Management**

## **Project Report**

**An Assessment of Awareness, Knowledge and Attitudes of Swakopmund residents towards Sustainable Development.**

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## Introduction and background

Sustainable development is globally defined as “meeting the needs of the present without compromising the ability of the future generation to meet their needs” (Michalos, Creech, McDonald & Kahlke, 2009). Sustainable development is the spearhead towards development in many countries. It is the convergence between three pillars; economic development, social equity and environmental protection. For the past twenty years sustainable development has been focusing on the environment only, which caused the concept to remain elusive and implementations to be proven difficult (Drexhage & Murphy, 2010) leading to the implementations of the new seventeen sustainable development goals which are in operation since the 1<sup>st</sup> January 2016 (World’s Largest Lessons, 2016).

Environmental protection was the focusing point for all countries who signed the commitment at the United Nations Conference on Environmental and Development summit in 1992 at Rio de Janeiro, Brazil. Namibia was amongst the represented countries and all countries agreed to educate on environmental issues to make humans sensitive to protecting their natural resources (Drexhage & Murphy, 2010).

Environmental education was first declared as a tool to address issues in 1970 at the United Nations Conferences (Endjala, 2013). According to the Tsibili’s declaration (1977), environmental education should prepare opportunities for people to participate in processes that solve environmental problems and to create a sense of commitment to the environment amongst them. The concept behind environmental education was formulated after human and industrial population started growing, putting stress on the natural resources and the environment.

Today environmental education has five main objectives to which its education is aimed; awareness and sensitivity to the environment and its challenges, knowledge and understanding of the environment and its challenges, attitudes of concerns for the environment and motivation to improve and maintain environmental activity, skills to identify and participation in actions that address environmental challenges (Endjala, 2013). This report is based on data collected via questionnaires addressed to residents of Swakopmund in response to environmental education based on the first three objectives awareness, knowledge and attitudes.

Namibia, after signing the commitment at the United Nations Conference on Environmental and Development Summit declared, committed to environmental education through formal and informal approaches in education (Imene, 2010).

This brought about the establishment of the Directorate of Environmental Affairs (DEA), the leading agency in promoting sustainable development. They ensure all industrial and development projects go through the process of Environmental Impact Assessment (EIA) (United Nations, 2002). Namibia Environmental Education Network (NEEN) was established in 1994 to promote the policy of environmental education with their process being formulated through a policy statement “We people of Namibia will actively encourage, support and implement environmental education as a means of achieving Article 95 of the Constitution. Environmental education should aim to empower Namibians from all sectors to critically evaluate environmental information and options to make informed decisions and to take actions that will contribute to the goal of the environment and economic sustainability” (Haindongo, 2013).

Years later, foundations, projects and organisations to educate formally and informally on the environmental issues were established. The Rossing Foundation on Environmental Awareness was improved geared towards local communities in rural areas and is run from the Erongo Region. Project Shine was amongst some projects introduced in the coast town of Swakopmund, it’s a clean-up and creative competition project sponsored mainly by Namibian Brewery Ltd and Rio Tinto mine to ensure a clean and responsible environment through cleaning along the road from Swakopmund and Arandis. Green Environmental Project is working towards sustainability in allowing the youth to teach each other through workshops and develop and support peer-to-peer learning about the environment (The Green Environmental Project, 2014).

Namibia Coast Conservation Management (NACOMA) was formulated to facilitate integrated coastal zone management through the aim to conserve, use sustainability and mainstream the biodiversity of the Namibian coast (NACOMA, 2013). The Namib Desert Environmental Education Trust (NaDEET) has just started operating its head-office in the town of Swakopmund. This organisation's mission is to educate all Namibians and influences their concept to practice and live sustainable lifestyles, and this organisation is set to introduce sustainable activities in Swakopmund.

This project, in collaboration with NaDEET, was aimed to understand assess and evaluate the level of awareness, knowledge and attitudes of residents in Swakopmund towards sustainable development. It is aimed to help new organisations such as NaDEET to formulate and structure programmes and activities to areas in lack of education for sustainability, to create awareness and bring understanding through gaining knowledge that will influence resident's attitudes.

## **Study area**

Swakopmund is one of the fast growing towns in the Erongo Region. It was founded in 1892 and named Swakopmund because of it being located at the mouth of the Swakop River mouth. The town has some of the best tourism attractions from colonial era, beautiful buildings such as the lighthouse, the mole, jetty and Woermann house. The town covers an area of about 200km<sup>2</sup> and accommodate 44 725 residents, but today's estimates might have increased by 50%. It is located 280 km west of the capital city Windhoek with temperatures ranging between 15°C and 25°C. Rainfall is measured to be less than 20mm/year but, the cold Benguella Current supplies moisture for the town in the form of fog that can reach as deep as 140 km inland (Wikipedia, 2016).

The town has ten suburbs with eight residential areas. The discovery of Uranium at Rossing about 70km outside the town led to development and created jobs for many residents. The town has six primary schools, two combined primary and secondary schools and three secondary schools (NACOMA, 2010). Swakopmund Municipality council is one of the best run municipalities according to News Archives (2012) and continues to receive clean audits reports from the Auditor General. The town attracts so many people during holidays and this causes their population to double or triple.

## **Objectives**

### **Aim**

Assess and evaluate the progress that environmental education has achieved towards Sustainable Development in Swakopmund over the past 20 years. To use the results to help organisations formulate new programmes /projects.

### **Objectives**

- Investigate and analyse residents understanding of the term sustainable development.
- Evaluate and compare the level of environmental literacy according to gender and age levels.
- Critically analyse the differences in awareness, knowledge and attitudes of residents according to gender.

### **Hypothetical questions**

Specific question: Does age and gender influence the level of awareness, knowledge and attitudes?

**Null Hypothesis:** There is no significant difference in the level of awareness, knowledge and attitudes in residents of different gender and age groups.

**Alternative Hypothesis:** There is a significant difference in the level of awareness, knowledge and attitudes in residents of different gender and age groups.

## **Methods**

Closed questionnaires based on the first three objectives of environmental education was formulated and divided into three sections. The first section was on awareness; second was on knowledge and third on attitudes. A 110 questionnaires were prepared, 10 of which were used during a pilot testing survey which was carried out at Super Spar in town. The pilot test was carried out to assess for errors and other technicalities that would need to be clarified before obtaining actual data from residents.

Four locations were selected to carry out the survey; this was done using the town's residential and road map. The areas were selected looking at availability of a shopping centre and ability to get residents from nearer locations: Mondesa Woermann Brock was used to assess residents from Mondesa, Tamariskia and DRC, Vineta Woermann Brock for residents in Vineta, Tamariskia and Mondesa, Ocean View Super Spar for residents residing in Ocean View, Vogelstrand, Vineta whilst Woermann Brock Town Centre was used to assess all residents of the town and those residing in town.

Surveying took place over four days using Tuesday, Wednesdays and Thursdays only and as from 10h30 to 14h30 with 25 questionnaires per site. The questionnaires were directed to residents age 15 to 60 plus years who must have stayed in Swakopmund for at least 3 years and more. The survey excluded under 15 years as they appear to be too young in understanding sustainable development and their participation could spoil results of the survey.

Sensitive questions such as age group, occupations and residential areas were asked. However respondents were issued with a clip board, pen tied on a recycled string of an orange bag and were given NaDEET stickers and brochures after completion. Transport was required to locate to sites further in town from the office.

### **Data analysis**

Evaluation scores were used to process the residents' responses to survey quantitatively for easy analysing. Each question was given a score and these scores were given based on the environmental education concept, laws and regulations (see appendix 1).

After scoring and entering data into excel sheet, sections were separated for the result. Each section was added up to 30, meaning an environmentally aware, knowledgeable resident with good attitudes would score 30 in all sections.

Data were further analysed using excel and t-tests assuming equal variance were used to find differences between gender for awareness, knowledge and attitudes.

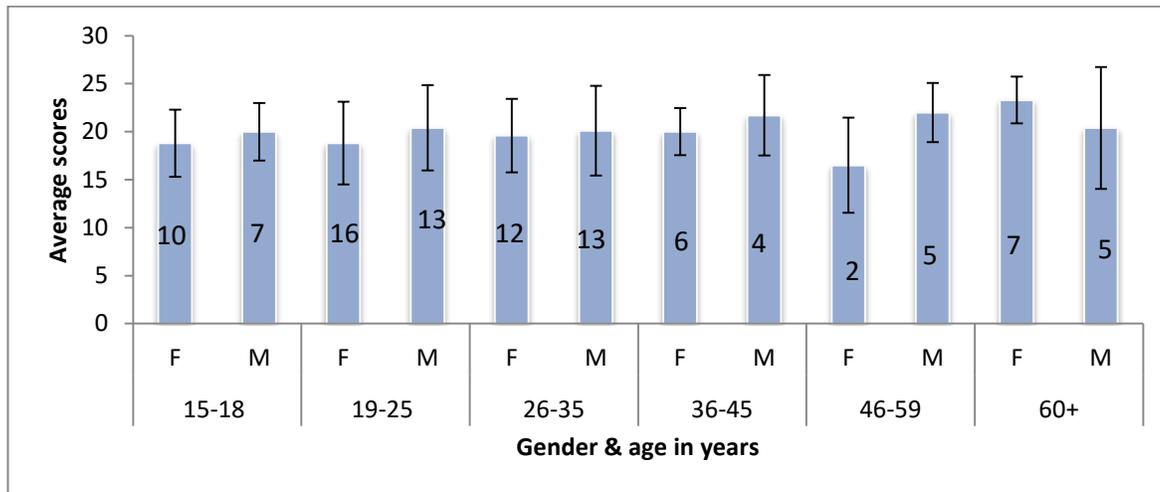
## **Results**

Out of a 100 residents that were surveyed 53% were females and 47% were males. However the majority of residents surveyed were of ages 19-25 years with 30% and 26-35 years with 25%. Children ages 15-18 years were the third largest group of residents surveyed followed by ages 60 years plus, with 11%. The minority of residents surveyed were ages 36-45 years with 11% and ages 45-59 years being the least of all residents surveyed.

Out of 100 questionnaires 4% had some questions that were left unanswered making results out of 96% of answered questions.

## Awareness

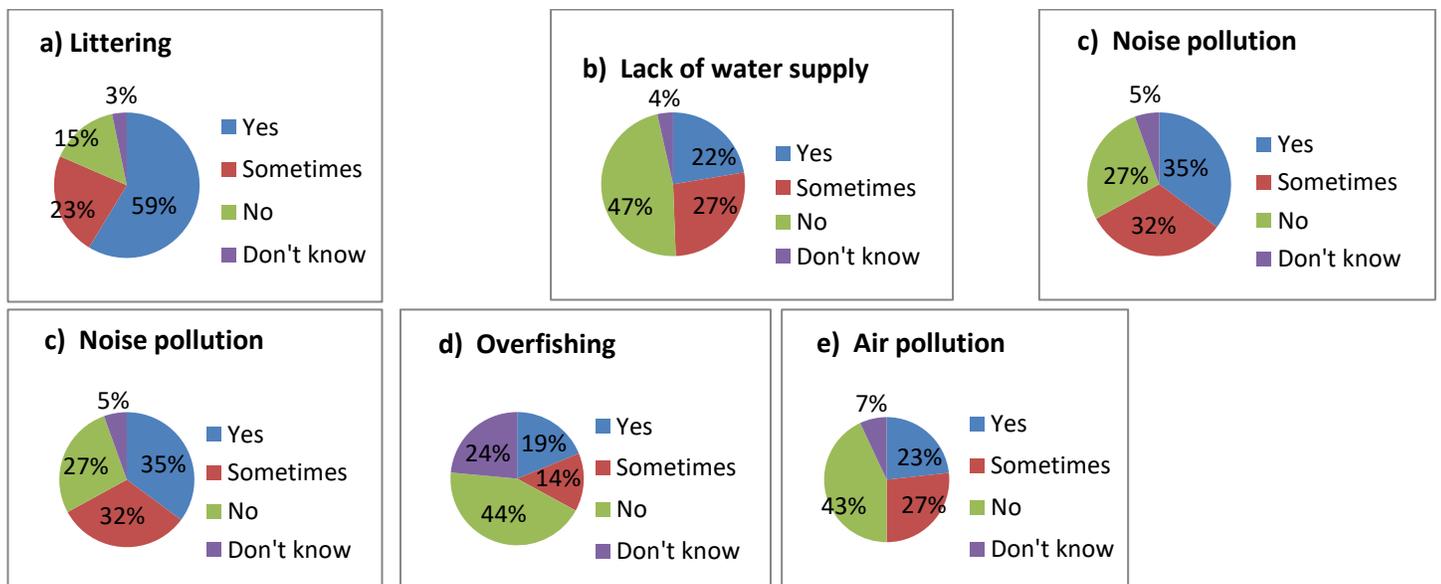
Figure 1 summarises the average scores of residents' levels of awareness towards environmental quality objectives and other problems in the area of environmental education.



**Figure 1: Average scores of Swakopmund residents in regards to awareness. Error bars show standard deviation. Numbers in the middle of bars are sample size.**

Questions asked in the awareness section were to find out the awareness level of residents in response to campaigns, projects and programmes practiced in their town over the past years. Amongst questions asked were; how they do they define environmental education of which 57% responded to the question as being the area around them, will others opt for other possible answers such as; birds and trees, wild animals in national parks and some thinking it was none of the above.

Figure 2 summarises the residents awareness level on environmental problems mentioned in the environmental management plan of the town.

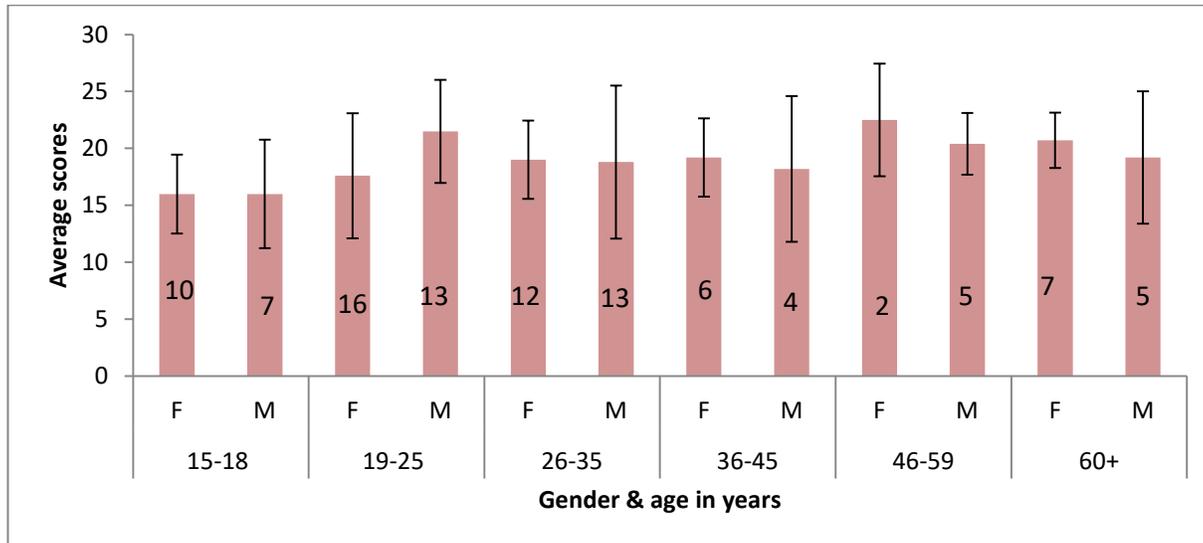


**Figure 2: Respondents answers to the question about various environmental problems in Swakopmund.**

Majority of 59% residents were aware on littering as a problem in Swakopmund. However, many responded that overfishing and air pollution were not really such a problem as compared to noise pollution and lack of water supply.

### Knowledge

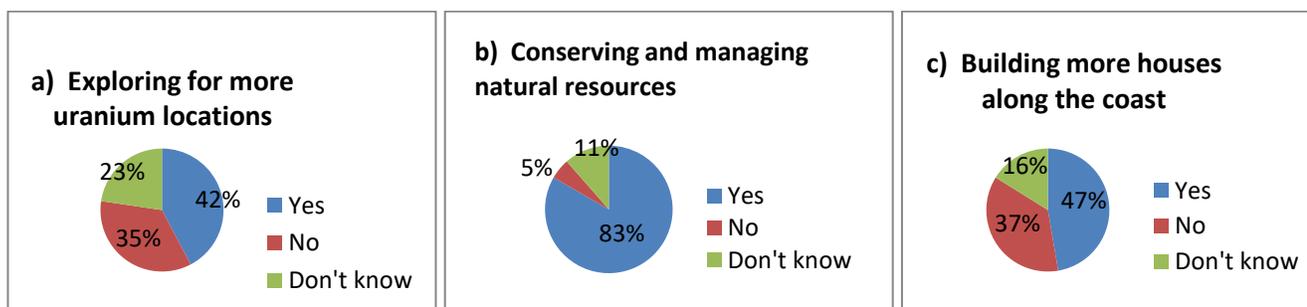
Knowledge is deep understanding of existing problems and their effects on the biophysical environment. Figure 3 summarises the level of knowledge of Swakopmund residents.

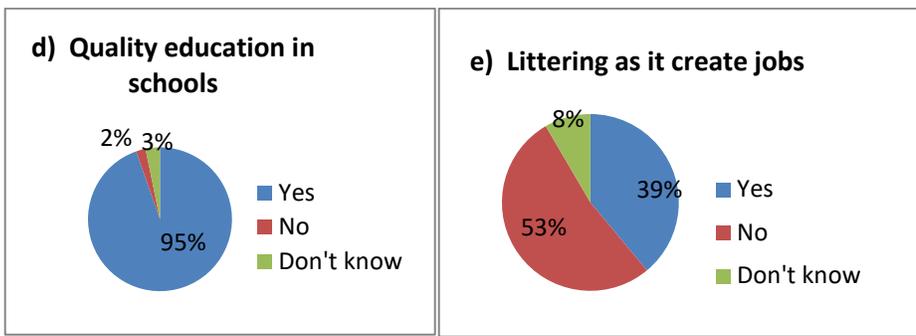


**Figure 3: Average scores of Swakopmund residents' with regards to knowledge. Error bars are standard deviation. Numbers in the middle of bars are sample size.**

The following results tend to be fluctuating between both genders and age levels. Females age 46-59 years show high average scores of 23, followed by males of ages 19-25 with 22 average scores. However, children show less in average with 16 scores in both genders. Elders still show high level scores in understanding compared to children, youth and young adults.

Sustainable development was explained to residents to the level that their understanding was improved during the survey. Within the knowledge section residents were asked to specify if the following activities will contribute towards sustainable development. Figure 4 summarises the results of residents.

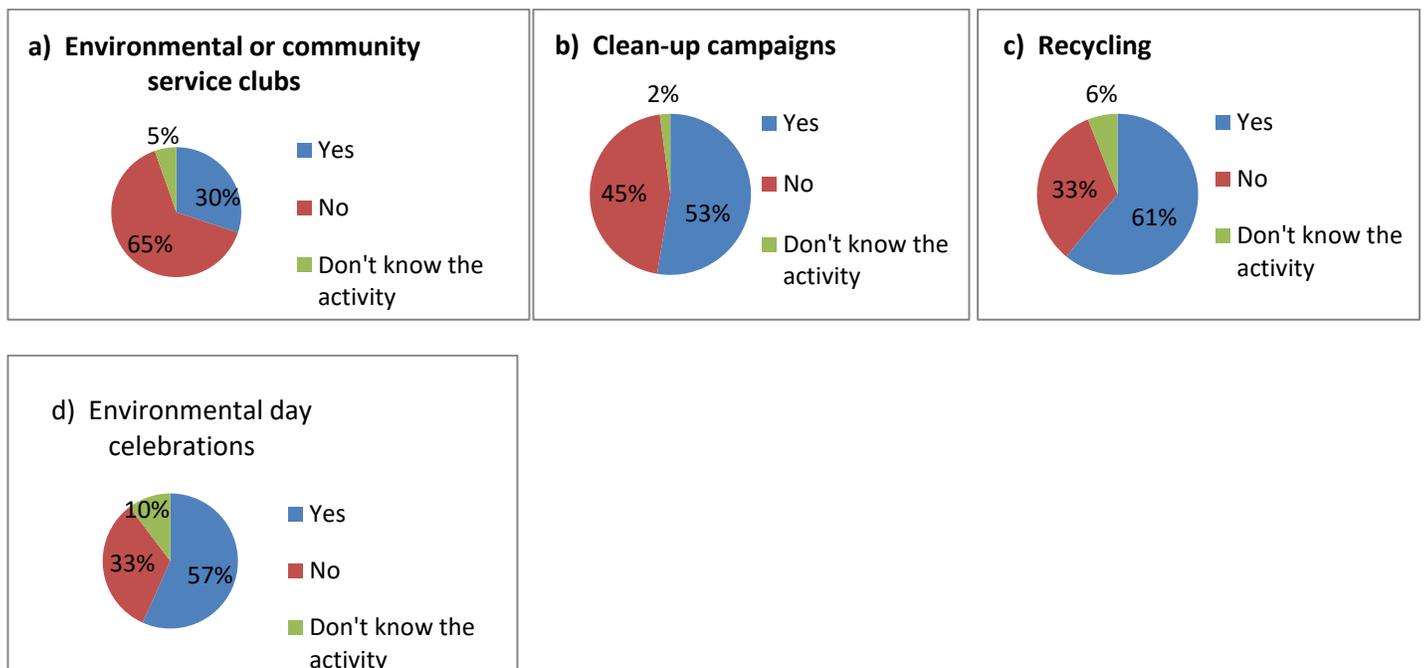




**Figure 4: Residents response to the question that asked to indicate if various activities would contribute to sustainable development.**

Ninety-five percent of residents responded that quality education will contribute highly to sustainable development. Residents also selected conserving and managing natural resources to be a contributing factor towards sustainable development with 83% responses. However, residents did not favour exploring for more uranium location and littering as a job creation to be factors contributing towards sustainable development.

Environmental education has brought about the celebration of many international events and has influenced the establishments of various environmental clubs and services. Residents were asked if they had partaken in any activities regarding or honouring environmental protection. Figure 5 give the summarised results of residents' responses.

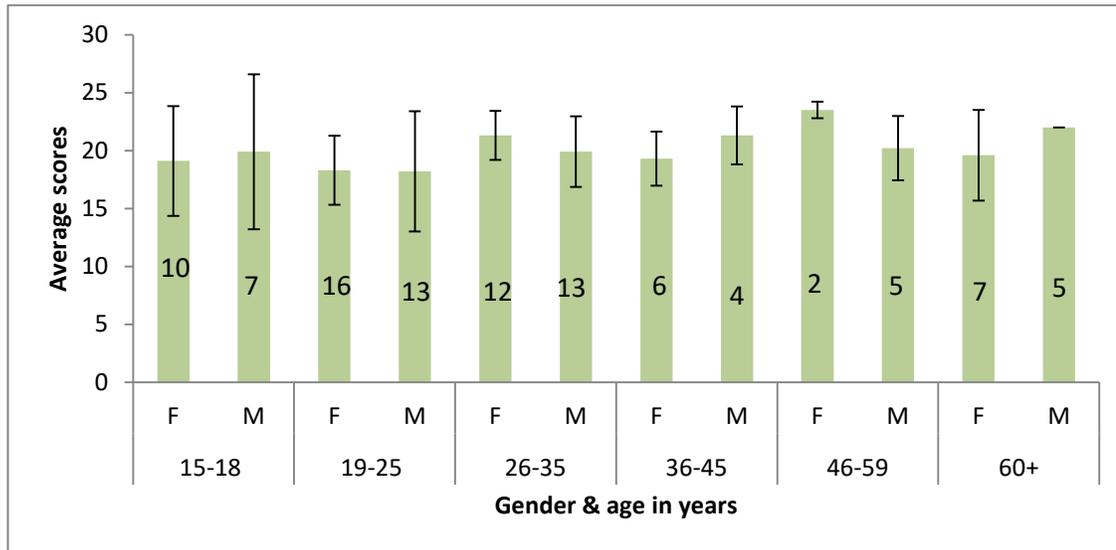


**Figure 5: Respondents participation in programmes, services and other environmental activities.**

Results show that 61% of residents do practice or have participated in recycling programmes and 65% know about the recycling programme but did not partake. However it was surprising to see results of 10% of residents who had no idea of any Environmental Day celebration.

## Attitudes

Attitude questions were based on emotional feelings and opinions of residents towards environmental problems. Figure 6 summarises the average scores of residents on their level of attitudes towards sustainable development and environmental protection.



**Figure 6: Average scores of Swakopmund residents with regards to attitudes. Error bars show standard deviation. Numbers in the middle of bars are sample size.**

Results shows fluctuating average scores between age levels observed with ages 46-59 years scoring the highest in average and the youth ages 19-25 years scoring the least with 18 in both genders.

To evaluate the level of attitudes in residents, sensitive question on environmental protection, laws and behaviours were asked. Table 1 summarises the reaction of residents under certain situations.

**Table 1: Residents' responses, after encountering a leaking tap situation in a playground or park.**

Attitude choice	Respondents
a) Just pass by it and pretend you did not see it	1
b) Close it tightly and go	66
c) Call the kids playing at playground/park and tell them to keep it closed at all times	31
d) What is a leaking tap?	2

Sixty-six of residents choose to close the tap and go about their way. However 31 of the residents during survey choose to rather call the kids playing in the playground or park and tell them to keep it closed at all times, in addition 2 residents did not know what a leaking tap is and only 1 resident responded negatively to the question.

The survey was to assess and evaluate the level of awareness, knowledge and attitudes of residents towards sustainable development. In the attitudes section residents were asked to critically evaluate their understanding of the term sustainable development after completion of the questionnaire. Table 2 summarises the residents self-rank on sustainable development.

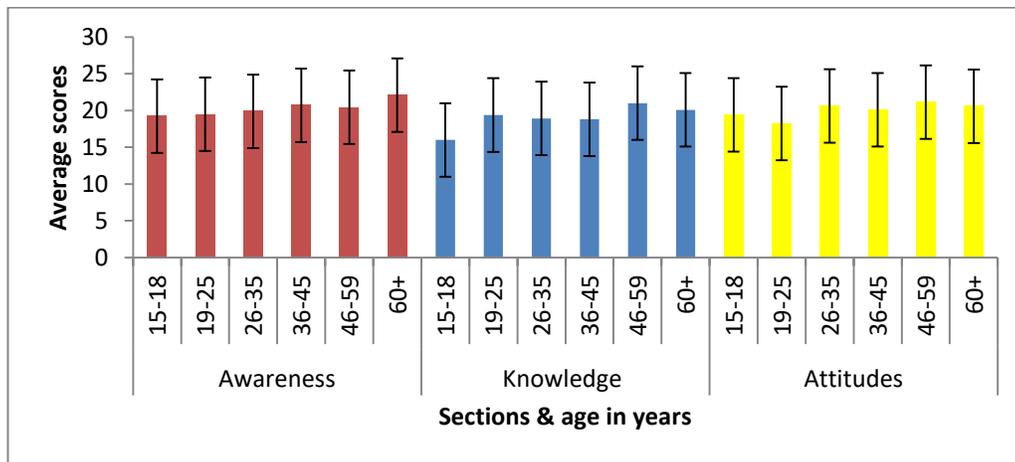
**Table 2: Residents self-rank on sustainable development after completion of questionnaire.**

Rank	1	2	3	4	5	6	7	8	9	10	Total
Responders	2%	4%	2%	3%	6%	6%	12%	20%	17%	27%	100%

Majority of residents tend to have improved their understanding of sustainable development after completing the survey questionnaire. The results shows that at least over 89% of residents ranked themselves above 5 and 11% ranked themselves between one and four respectively.

**Differences in awareness Knowledge and attitudes between age levels**

Different results in average were encountered by different individuals under different age groups. Figure 7 summarises the difference in average of awareness, knowledge and attitudes of residents towards sustainable development with regards to age levels.

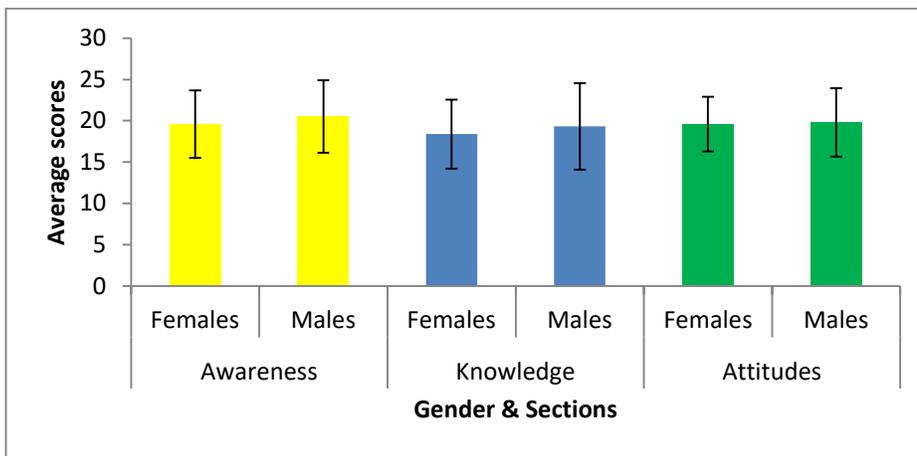


**Figure 7: Average scores of Swakopmund residents in regards of Awareness, knowledge and attitudes. Error bars represent standard deviation. Numbers in the middle of bars are sample size.**

The results show that ages 36-60 years plus show much greater awareness scores than children, youth and young adults. However results do not show any difference in age levels scores in the other two section either, 36-60 years plus elders show good awareness, knowledge and attitudes. Error bars on the graph give the slit difference between average scores and actual scores of residents.

**Difference in awareness, knowledge and attitudes between genders**

Gender plays an important role in environmental protection. Females appear to be more aware on issues than males. Figure 8 summarises the average difference scores of residents according to gender.



**Figure 8: Average scores in gender of Swakopmund residents with regards to awareness, knowledge and attitudes. Error bars represent standard deviation.**

The graph does not really show a difference in level of awareness, knowledge and attitudes of residents with regards to gender. However in awareness and knowledge males show a difference of 1, but in attitudes both genders scores the same average.

Using a t-test assuming equal variance, residents' gender was the only variable used to critically prove the differences in awareness, knowledge and attitudes.

Table 3 summarises the results obtain after the t-test assuming equal variance was carried out on awareness, knowledge and attitudes with regards to gender.

**Table 3: Difference in awareness (a), knowledge (b) and attitudes(c) statistically.**

a) Awareness

t-Test: Two-Sample Assuming Equal Variances

	<i>Females</i>	<i>Males</i>
Mean	19,60377	20,53191
Variance	16,58999	19,21092
Observations	53	47
Pooled Variance	17,82022	
Hypothesized Mean Difference	0	
df	98	
t Stat	-1,09735	
t Critical two-tail	1,984467	

b) Knowledge

t-Test: Two-Sample Assuming Equal Variances

	<i>Females</i>	<i>Males</i>
Mean	18,39623	19,31915
Variance	17,4746	27,39593
Observations	53	47
Pooled Variance	22,13155	
Hypothesized Mean Difference	0	
df	98	
t Stat	-0,97914	
t Critical two-tail	1,984467	

c) Attitudes

t-Test: Two-Sample Assuming Equal Variances

	<i>Females</i>	<i>Males</i>
Mean	19,60377	19,80851
Variance	10,89768	17,20167
Observations	53	47
Pooled Variance	13,85669	
Hypothesized Mean Difference	0	
df	98	
t Stat	-0,27451	
t Critical two-tail	1,984467	

T-test critical value = 1.984

n=100

df=98

Using a critical value of t-test under 95% confidence interval it shows that there is no significant difference in level of awareness, knowledge and attitudes in regards to gender of residents towards sustainable development. Therefore using the t-statistics obtain and the degree of freedom of a 100, there is no significant difference in level of awareness, knowledge and attitudes of residents according to gender, accepting the null hypothesis.

## Discussion

Swakopmund development is based on uranium mine found about 70km outside the town. The survey had a high proportion of females than males and the majority of residents surveyed were between ages 19 to 35 years. These individuals appear to be dominating the town in search for better opportunities as they are the active group in society.

Awareness questions were constructed based on the programmes, projects and activities that had taken place in Swakopmund. Results in figure 1, shows that elders age 45 to 60 years plus are more aware of environmental problems and situations than children, who get involve in many campaigns, projects and have subjects relating to environmental education in their school. This complements a study done by Michalos, et al. (2009), which suggested that environmental education should aim mostly towards adults so that their attitudes could influence that of their children.

In the environmental management plan of Swakopmund (NACOMA, 2010), environmental quality objectives were outlined. Amongst these objectives discussed with stakeholders in Swakopmund were; littering, air pollution, lack of water supply, overfishing and noise pollution. In the awareness section residents were asked on opinion if any of these objectives are problems in the town, using closed answers of; yes, no, sometimes and don't know.

Five-nine percentage of residents suggested littering to the biggest problem in town. However residents did not see problems in overfishing and air pollution as compared to other activities. Littering being quite a big problem in the world, the Swakopmund municipality has in partnership with Rent-A-Drum launched a recycle plant to advice, assist, and supply measure to reduce, re-use and recycle waste since August 2015 (Steenkamp, (2015).

Many of the knowledge questions were based on sustainable development. This term is often used in programmes and project educating and creating awareness in the field of environmental education. Residents, understandings were tested by constructing questions seeking deep thoughts on situations and problems encountered in the town of Swakomund and if possible beyond.

The average scores of residents on level of knowledge, shows that elders understand situations and problems in the area of the environment better than children, youth and young adults. Children shows a relatively lower average score than any other age level in the survey with females in ages 46-59 years scoring the highest. Elders were the youth of the 1980's when environmental education practices started. Years ago people were not influenced by technology as the generation of today. People then did more reading, research on published materials and many have experience the changes in climate and the environment over years. In addition ancient people used stories telling to educate and raise awareness in their children, which could be the reason why elders show greater understanding than children, youth and young adults of today.

Amongst one the questions asked of residents was to incorporate if certain activities will contribute towards sustainable development. Ninety-five percent of residents responded to quality education as one the prior target towards sustainable development. However, residents disagreed with exploring for more uranium locations as a contributing factor towards sustainable development but rather 83% agreed to conserve and manage natural resources. This could be that after explaining the term sustainable development residents were able to understand the framework of sustainable development better and this helped them make the right choices.

Residents were also asked if they had partaken in any environmental programmes, services, projects and or if they have ever honoured or celebrated an Environmental Day. Ten percent of residents said they did not know of any Environmental Day celebrations, 61% of residents do recycle and 65% know about environmental or community service clubs but, did not partake. The survey expected to get more residents responding to recycling as this is a new and running project in the town from which residents were supplied with orange bins motivating them to practice recycling their wastes.

Attitudes are feelings or opinions about certain situations. In many a cases attitudes of people change after understanding the effect of something and taking initiatives as an individual to end it or practice to overcome it.

Figure 6 clearly shows that females' ages 46-59 years have more attitudes level scores of 23 than young adults who received 18 in both genders at average. These results are highly influence by individual thinking and emotional capability. The children, youth and young adults of today appear to be very ignorant, self-centred and very demanding. Often they are described to be the generation of technology and laziness.

## **Difference in gender and age level of awareness, knowledge and attitudes**

The t-test used concluded that there is no significant differences in gender and age in years with regards to awareness, knowledge and attitudes.

Looking at error bars used in figures 7 & 8. The variance between average scores and actuals scores do not show any differences either. This could be that programmes ran in the town of Swakopmund, had progressed in creating awareness, bringing understanding and contributing to changes in attitudes of residents towards understanding environmental issues and challenges for environmental protection and sustainable development.

## **Conclusion**

For the past 20 year's sustainable development has focused on environmental protection. After independence environmental education in Namibia grew with establishing programmes, projects and organisations to extend the formal and informal practices of environmental literacy to the citizens of Namibia.

According to the results presented children, youth and young adults scored lower in awareness, knowledge and attitudes for environmental protection, compared to elders who received environmental education in the colonial era. Although statistically no difference in levels of awareness, knowledge and attitudes was found, educating adults could influence the behaviour of children and youth.

Many residents did not have an understanding of sustainable development but after completing the questionnaire residents' awareness, knowledge and attitudes were influenced positively. However, progress in environmental education in Swakopmund town could be seen, because both ages surveyed had basic understanding of the environment. These will make it easier for projects, programmes and activities to be implemented because there is basic understanding and residents show great results although not significantly.

## **Recommendations**

- Develop programmes and activities which will favour both ages when educating on sustainable development and environmental protection.
- Spread awareness, knowledge and change attitudes through media series and other technologies such as social media and cell phone or develop an environmental app.
- Encourage reading in society and announce national commemorations of various celebrations beforehand and through different forms of communications.
- Develop television competition to create awareness, knowledge and change attitudes of citizens through media and in interesting ways.
- Educate and spread awareness from a younger age especially on environmental wicked problems to enable children to grow changing attitudes and influencing others.

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