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Impacts of neglecting African Traditional Environmental Conservation Practices and education on the environment: A Case of the Maasai People of Narok County, Kenya

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Abstract

Neglecting African traditional practiceshas contributed to numerous environmental problems inKenya. These include reduced arable land, forests and habitat destruction, loss of biodiversity,pollution and change in weather and climate patterns. This study aimed at establishing the impacts ofAfrican traditional environmental conservation practices among the Maasai people of Narok County, Kenya on environmental conservation. The study adopted a descriptive design. The target population was 215 community leaders from Maasai community in Narok County. Using stratified sampling technique, the study used a sample size of 132 respondents being 30% of the number of community leaders from Maasai community in Narok County. Primary data was collected using open ended and closed questionnaire. Quantitative data was analyzed by descriptive statistics. The findings indicated a significant decrease in Maasai traditional environmental conservation knowledge and education from the old to young Maasai elders. Knowledge of prohibitions on environmental factors such as demonization, declaration of taboos, age and gender restraints as well as use of totems was quite poor to Maasai elders below 45 years. The study indicated that the elder Maasai elders used various indigenous environmental norms in managing different elements of the biophysical environment with varying successes. The reduction in use of this knowledgewas confirmed by records of poor agricultural yields, loss of water sources, forest and vegetation covers and unpredictable weather and climate patterns over the last 40 years.The study concluded that traditional African practices aided in environmental conservation and should be incorporated in the Kenyan education curriculum.

Keywords: African traditions, Environmental conservation practices, Maasai.

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Subject - African traditions and cultural studies

Introduction

Environmental degradation in Kenya and other parts of the world is a global challenge worth curbing by all means possible. Not only does it affect the ecosystem but also our daily lives. The genetic biodiversity is also at risk with many species getting extinct as other completely transform (Wilson and Peter, 1988; 1). Increased rates of environmental pollution also affect our socio-economic behaviors (Hernandez and Blazer, 2006; 2). Productive land and vast vegetation have been completely destroyed in several parts of Kenya. This leads to reduced agricultural productivity and tourism activities. It is thus pertinent to embrace educational, scientific and cultural means of environmental conservation.

Conservation of natural resources aims at preventing degradation of natural resources, especially through anthropogenic activities. These activities include farming, mining, overfishing etc. Over time, valuable natural resources have been over-exploited leading to their decline. Some of these resources include bio-physical resources such as sacred rocks, caves and hills, water sources and catchment areas, animals and fish. The land has also been continuously polluted depleting its available plant nutrients. Conservation of the environment is deemed to mitigate these effects for the longevity of natural resources (Cooke *et al.*, 2013; 1). Whereas scientific means have been extensively applied, educational and cultural means of environmental conservation have been ignored in Kenya. This is regardless of the critical role that cultural practices and education played in shaping traditional African peoples' lives and their environment.

Traditional African education put emphasis on environmental conservation practices (Kanene, 2016; 331; Mazzocchi, 2006; 463-466). Several communities in Africa had ways of protecting nature (Wilson and Peter, 1988; 1). These ways were passed on from generation to generation by community elders and other respectable members of the community. The Maasai community in Kenya is known for its strict adherence to cultural issues. However, this has not been the case over the last few decades. This is due to westernization especially through the current system of education. Inter-marriages and demographic movement of people from different cultural beliefs have also constituted to erosion of Maasai culture (Chege *et al.*, 2015; 131). A good number of Maasai members reside in Narok County, Kenya. This region is a good example of how poor transformation of African conservation practices can lead to environmental degradation.

The ancient Maasai community used to follow traditional environmental conservation practices. These practices prohibited certain people from accessing certain water catchment sources and bio-physical resources, hunting some species and visiting certain natural resources considered sacred. Some plants were only reserved for specific people or cultural occasions to minimize their usage. This happened when elders realized that these plants or animals were scarce and could face extinction if not controlled. Social taboos and totems upon use of prohibited plants, animals or animal parts were religiously observed. These taboos remain the prime factor guiding their conduct towards the exploitation of the natural resources (Pullaiah *et al.*, 2018; 1; Chambers, 1983; 176-179). The present research paper attempts to establish the impact of neglecting African traditional environmental conservation practices and education among the Maasai people of Narok County, Kenya on environmental degradation. Various traditional Maasai environmental practices knowledge was tested for Maasai elders of various ages. The environmental effects resulting from the change in knowledge of these practices were also evaluated.

Research Methodology

Research design

The research adopted descriptive research design because the data to be collected is qualitative in nature. The design was concerned with the comprehensive summarization of specific events experienced by individuals or groups of individuals. In the study, a comparative analysis between occurrence of the environment during the childhood days of the Maasai elders respondents and their knowledge on traditional environmental practices versus the current situation and knowledge was assessed. The study main aim being to determine the effects of population growth on African traditional conservation practices amongst the Maasai community, this research design aided in the assessment of these impacts so as to gather the right information. Indicators of environmental change used included vegetation cover, area of water bodies, bird and wildlife population, land fertility and weather patterns The target population was the Maasai elders of different aged between 45-85 years from different parts of Narok county.

The study was therefore conducted at Narok county in Kenya.

Sampling techniques

In this study simple random sampling was used. In this case, a small portion of the total population was selected for the study whereby each individual had equal chance and probability of being selected. This ensured that there was no biasness.
Purposive sampling was also employed where the judgment of the researcher was used to obtain a representative sample. It also saved time and money making it an appropriate sampling technique.

Sample size

The study adopted Slovin's formula (Khalaf *et al.*, 2019; 20) to determine the sample size.
$n = N \div [1 + N (e)^2]$
Where, n-sample size
N-population size
e- Error term (5%) based on 95% confidence interval
Therefore, the sample size of n= 132 respondents was arrived at. This value was 30% of the total number of Maasai leaders present.
132 questionnaires and interviews were thus conducted.

Research Tools used

The data collection instruments to be used are questionnaires, interviews, photographs and observation. Observations was used to assess the situation of the bio-physical landscape, vegetation cover, water bodies and weather patterns relating between the childhood days of the respondents and the current situation. Photographs were used to support the observations made. Aerial and front view photographs were used to capture the appearance of vegetation, water bodies and bio-physical landscape and terrain. Questionnaires were administered to literate Maasai elders or their assistants while interviews were conducted for elders without writing ability.

Validity and reliability of the instruments

Questionnaires were quite reliable since they were easy to administer and encouraged confidentiality thus, reducing biasness. Interviews enabled the use of open-ended questions that aided in acquiring reliable findings and more detailed answers. Observation and use of photographs also ensured gathering of reliable data. A pilot study was conducted to determine the validity of the data collection instruments used. The outcomes were found to strongly favor the use of these instruments.

Data Processing and Statistical Analysis

The data collected was analyzed and presented using descriptive statistics and qualitative methods depending on their nature. The data was presented in terms of tables, bar graphs and pie charts. The data collected was analyzed using [SPSS] Statistical Package for Social Sciences to generate frequency tables, charts and descriptive statistics.

Results and Discussions

Preamble

The findings illustrated there was a large information gap between the ancient and current Maasai elders as far as African traditional environmental practices and norms were concerned. As a result, there was a large margin in the environmental situation. The indicators of environmental situations used i.e, vegetation cover, area of water bodies, bird and wildlife population, land fertility and weather patterns all had a great variance.

4.1 Knowledge of African traditional environmental practices

Several environmental practices were carried out as supported by traditional African beliefs. Some of these practices involved but were not limited to prohibition of bad environmental practices, protection of sacred places, totems and restraints put to specific age groups and genders.

4.1.1 Prohibitions on environmental practices

It was observed that knowledge on different prohibitions placed on some environmental practices were not known by a majority of the young elders. These findings are illustrated in table 1 below. For each age group classified in the table, there were 33 respondents, all totaling to 132 Maasai elders respondents.

Table 1: Variation in knowledge of African traditional environmental practices with age of Maasai elders

Environmental practice prohibition;	Age of respondent with the knowledge (%)			
	45-54yrs	55-64yrs	65-74yrs	>74yrs
Demonization of touching endangered plant species	45.0	60.0	67.0	90.0
Use of specific plants reserved for cultural practices	70.0	79.0	83.0	93.0
Demonization of burning of trees to chase away bees	30.0	48.0	60.0	80.0
Making it a taboo to bathe in water catchment sources	42.0	49.0	58.0	78.0
Demonization of using specific trees to build	59.0	70.0	84.0	94.0
Average knowledge of the practices	**49.2±15.6**	**61.2±13.4**	**70.4±12.4**	**87.0±7.5**

From the table, it is clear that the younger Maasai elders had little knowledge concerning the traditional practices advocating for environmental conservation. Approximately 49.2±15.6% of Maasai elders below 55 years were not aware of the practice whereas about 87.0±7.5% of elders above 75 years were aware of the practices. This deviation has a great effect on the kind of knowledge passed to their immediate community and ultimately their environment. Demonization of burning trees to chase away bees during honey gathering (as done by Ndorobo communities) was the least known environmental practice. This is because The Ndorobo community have since been marginalized and little of their cultural activities can be recalled. It was demonization of use of specific trees for building purposes as well as use of specific plants reserved for cultural practices were the most popular practices in all the age groups. The practice is thus notable even to date in several parts of Narok county as several indigenous trees cannot be used in building. This practice has considerably saved the trees in question, preserving them over several generations.

4.1.2 Protection of endangered bio-physical and geographical resources

Areas or geographical resources quickly diminishing were protected by wise Maasai elders using traditional African practices. These practices included placing taboos and bad omens on individuals violating the practices or even demonizing such regions or resources. Some of the protection activities connected to endangered places or geographic resources are outlined in table 2 below.

Table 2: Variation of Maasai elders knowing protection of endangered places and geographical resources practices with their age

Environmental protection practice	Age of respondent with the knowledge (%)			
	45-54yrs	55-64yrs	65-74yrs	>74yrs
Protection of specific tree in forest by making the entire forest sacred	44.0	51.0	59.0	76.0
Protect culturally and commercially important soils and rocks by making their ecology sacred	41.0	48.0	56.0	69.0
Plant endangered trees in gravesites	20.0	31.0	39.0	54.0
Nomadism	47.0.	60.0	74.0	91.0
Strategic plans of movement during nomadism	32.0	39.0	48.0	60.0
Average knowledge on the practice	**36.8±10.9**	**45.8±11.2**	**55.2±13.1**	**70.0±14.4**

The deviation of knowledge on protection of endangered bio-physical and geographical sites by the Maasai elders differed appreciably with the age of the elders. While 70.0±14.4% of elders above 75 years knew and understood these practices, only 36.8±10.9% of the junior elders (below 55 years) knew about these practices. At least 44.0% of the junior elders understood that protecting a specific tree in a forest by pronouncing the whole forest sacred. This practice was quite effective in protecting several trees facing extinction. Some soils and rocks of cultural or commercial benefit would be used continuously over time until they started facing extinction. The Maasai red ochre is one such soil of cultural importance which was geographically segregated and preserved only for special occasions. However, apart from this soil, the elders did not know much about other types of resources compared to other protection behaviors. Only 69.0% of the old (above 75 years) elders knew about the practices. Planting endangered trees in gravesites to protect the trees was the least known practice by most of the elders. Only 20.0% of elders below 54 years knew about the practice. It was believed that cutting down trees in gravesites was tantamount to cutting the dead person on who's grave the tree was growing. Nomadism was practiced in order to allow overused soil and other resources to heal back. Strategic cultural planning was made by elders to move in calculated convectional manners for optimal recovery time of the over-utilized resources. Other elders arranged families to move to different directions in batches. This knowledge was not very common to the elders below 55 years (only 32.0% of them were aware).

4.1.3 Totems

Totems were used to symbolize significant weather forecasts or events which could influence environmental changes. These symbols occurred in many forms though not many of the elders interrogated were found to be familiar with them. The variation of respondents age with knowledge of these totems are described in table 3 below.

Table 3: Variation of Maasai elders age with knowledge on environmental totems

Environmental protection practice	Age of respondent with the knowledge (%)			
	45-54yrs	55-64yrs	65-74yrs	>74yrs
Studying veins of goats' intestines to forecast future events	23.0	31.0	45.0	51.0
Reading of stars to forecast weather	35.0	43.0	57.0	77.0
Identifying movement of birds as a symbol of drought	70.0	75.0	83.0	95.0
Use of seed ornaments by elders to protect the parent trees	44.0	55.0	70.0	91.0
Average knowledge of the practice	**43.0±19.9**	**51.0±18.8**	**63.8±16.4**	**78.5±19.9**

The overall knowledge of totems used for environmental practices was found to be quite lower compared to knowledge on prohibitions, but relatively higher than knowledge on protection of bio-physical and geographical resources. From table 3 above, most of the elders were not familiar with studying goat's intestines to forecast future weather events. Only 23.0% of elders below 55 years and 31.0% of elders below 65 years were aware of such totems. Only 51.0% of Maasai elders older than 74 years were also aware of it. However, 35.0% of elders younger than 55 years could comfortable read stars to predict future weather outcomes. Such totems were used to foretell on an oncoming drought or floods. The information could then be passed on to the community to prepare by either shifting to other areas or stocking enough food and water as well as strengthening their Manyatta's. The most popular totem was identification of movement of birds and other wildlife game as a symbol of drought. Birds fly high and for wide regions. They are thus able to note environmental changes quickly, reorganize themselves and fly to better places. During such movements, wise Maasai elders could note their movements and pass on the knowledge to the rest of the community. Some birds fly in cyclic convectional manners when its just about to rain, possibly in merry. About 70.0% of elders younger than 55 years and 95.0% of elders older than 74 years could comfortably read and interpret such totems. When elders realized that some trees were becoming endangered species, they would find seeds of such trees and use them to make precious ornaments worn during specific occasions only. These activities implied that the trees were protected by the rest of the community. A good percent of the elders knew about this practice.

4.1.4 Age and Gender restraints

Ancient Maasai elders could successfully protect usage of specific animals, birds or endangered plants by put age and gender restrictions. Such restrictions have been strongly rooted into their culture and are still effective even to date. The variation of knowledge of these restrictions with age of Maasai elders is summarized in table 4 below.

Table 4: Variation of knowledge of age and gender restraints on environmental protection with age of Maasai elders

Environmental protection practice	Age of respondent with the knowledge (%)			
	45-54yrs	55-64yrs	65-74yrs	>74yrs
Women should not eat game meat	67.0	78.0	86.0	96.0
Only young boys can eat birds	60.0	71.0	82.0	94.0
Women and children should not visit sacred places	58.0	70.0	79.0	93.0
Specific plants only be used by pregnant women, boys graduating during initiation or during naming ceremonies	69.0	80.0	90.0	97.0
Average knowledge of the practice	**63.5±5.3**	**74.8±5.0**	**84.3±4.8**	**95.0±1.8**

Knowledge of age and gender restraints as an environmental protection measure was the most popular amongst all traditional environmental practices in all age groups of Maasai elders. The research showed that about 63.5±5.3% of Maasai elders younger than 55 years knew about such restrictions. About 95.0±1.8% of Maasai elders above 75 years also knew of these restrictions. Women were prevented from eating game meat and bush birds. Those doing it were made to think that they had done a great taboo with affiliated effects and had to seek means to cleanse themselves. Some of the bad omens associated with such taboos included a girl not finding a suitor to marry her or a woman becoming barren. These were serious issues during those days making women and girls to keep away from game animals and bush birds. As a result, these species were protected. About 60.0% of elders younger than 55 years knew that only young boys could kill and eat bush birds. There were specific plants attached to specific genders or age groups during the life of Maasai people. Some of the plants were only used during birth-rite, during naming ceremony, during initiation and graduation to 'Moran-ism', marriage and death. Therefore, these plants were attached more respect and the community was prevented from using the plants in ordinary days. More than 69. % of elders below 55 years and 97.0% of elders above 74 years knew such restraints. This had an effect of preserving the plants and thus conserving the environment.

4.2 Environmental effects as a result of reduced African traditional environmental practices

Western civilization, increased human population against scarce resources, demographic movements especially towards urban areas, religious influence which 'demonized' African traditional practices amongst many other factors have slowly degraded African traditional environmental practices. As a result, environmental pollution has been on the rise leading to extinction of plants and animal species, endangerment of species, reduced food and water as well as many other factors. This research put emphasis on tracking some of the environmental indicators variation over several years in Narok county. The indicators of environmental change used included land fertility, bird and wildlife population, water bodies coverage area, vegetation cover area and precision of weather patterns.

4.2.1 Land fertility

Environmental pollution has slowly reduced the fertility of land in Narok county as illustrated by figure 1 below.

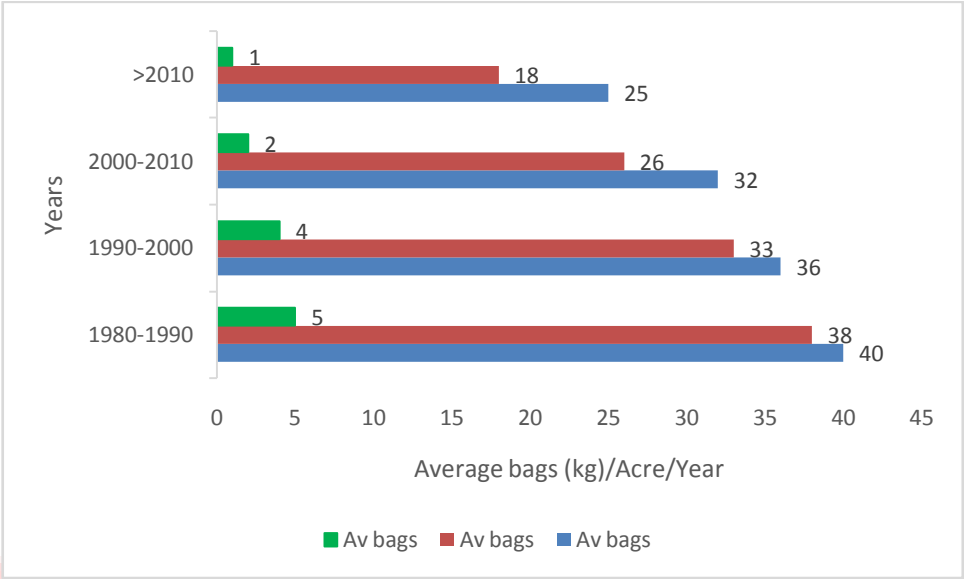

Figure 1; Variation of selected crop output in Narok county over years

There was a linear trend in reduction of the crop output over the years. The Maasai people used greens to complement 'ugali' and other carbohydrates and meat. The production of such greens, usually indigenous in nature have over since reduced drastically from 5 sacks to merely a single bag between 1980 and the time of study. On the other hand, production of grains has been adversely affected. Over-usage of inorganic fertilizers to boost maize and wheat production have only temporarily worked for the farmers. During 1980-1990, one acre of land in Narok county could produce about 40 bags of maize and 38 bags of wheat, according to the respondents. Little fertilizer was used to meet such standards. Reduced traditional African environmental conservation practices led to land pollution. One of the reasons for such pollution might have been reduced nomadism practices, as people concentrated on settling on one area due to education and reduced land. This effect led to over-utilization of land without giving the soil time to heal. As a result, less crop outputs have been harvested over time. By the time the research was being conducted, only 25 bags of maize and 18 bags of wheat could be harvested in the same piece of land and duration. This trend calls for serious environmental reforms.

4.2.2 Bird and wildlife population

Reduced food as a result of uncontrolled hunting, poaching and ignorance of traditional African environmental conservation practices have resulted to extinction of birds and wildlife species and dramatic reduction in their population. These findings are illustrated in figure 2 below. In the figure, the Maasai elders named the number of types of birds and wildlife that they could remember over the years.

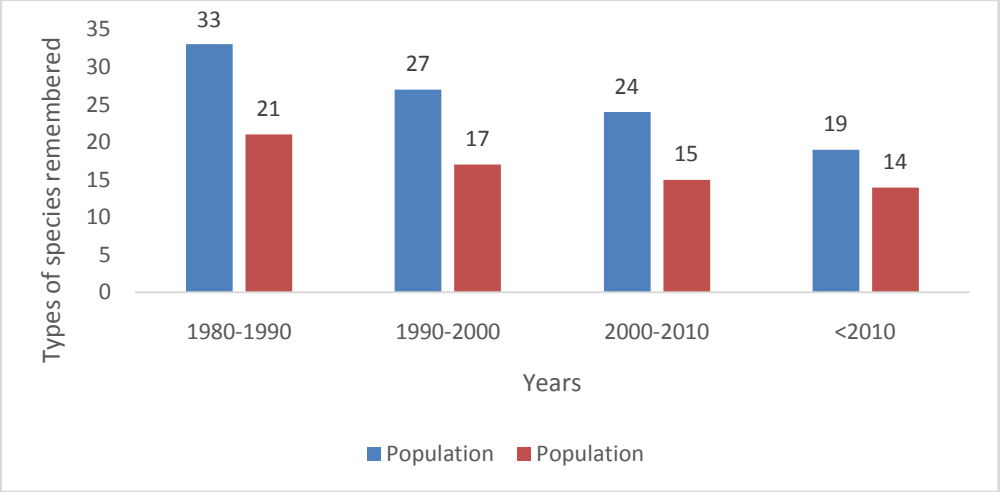

Figure 2; Number of birds and wildlife species remembered over the years

There was a general trend of decline in species of birds and wildlife remembered by the respondent over the years. Some of the species might have become extinct, others migrated away from Narok county due to human disturbance and poaching while others are very few to notice. From figure 2 above, the number of bird types reduced from 33 to 19 between 1980 and 2010. This is a strong indicator of the extents by which civilization and more specifically abandoning traditional African environmental practices has done to Mans environment. Such trends are quite alarming and lead to reduction in tourism activities. Narok county is popular due to the famous Maasai mara game reserve. Reduction of bird and wildlife species is a major blow to this game reserve, which draw millions of money globally. It is worthwhile noting that all regions with strong traditional African practices have at least one game park or game reserve in Kenya. The cornerstone to such wealth of bird and wildlife species is strong adherence to traditional African environmental conservation practices. The respondents could only remember an average of 14 different wildlife species that they see occasionally after the year 2010. This is a reduction from 21 types of wildlife species in 1980.

4.2.3 Water bodies coverage area

Invasion of water catchment areas due to varying reasons, most notable non-adherence to traditional African environmental conservation practices has led to massive reduction in seasonal swamps, depth and volume of rivers and loss of tributaries in Narok county. Most of these water bodies originated from the Mau forest, which has since been invaded by people with differing benefits. Measures to remove the residents from such water catchment areas have intensely draw political battles, with more fierce repercussions such as promises of ethnic wars and truces further complicating the issue. Figure 3 below summarizes the coverage of water bodies in Narok county over the years between 1980 and 2019, as per the memories of the respondents.

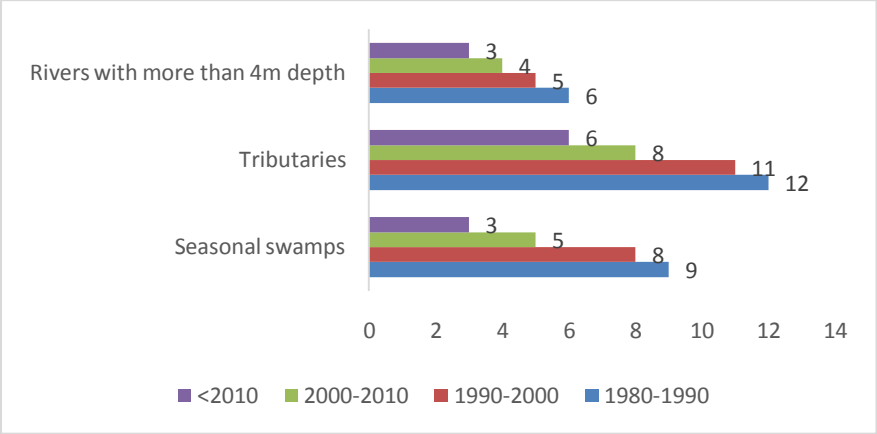

Figure 3; Variation of water bodies over the years in Narok county

The number of rivers with more than 4m depth have gradually decreased from 6 in 1980 to 3 by the time the respondents were being interviewed. The trend was similar in the number of tributaries in Narok county. Traditional African environmental practices barred people from bathing at water catchment sources thus preserving this resource. The loci of water source on mountains was viewed as a sacred place and only few elders had the right to visit such places. These places were regarded with a lot of respect. Actually, it was a taboo to point to such places. This practice safeguarded water catchment areas leading to more tributaries. Most elders grew up seeing more than 9 seasonal swamps. By the time of data collection, respondents could only remember an average of 3 swamps. This clearly highlights the effects of abandoning traditional African environmental practices.

4.2.4 Vegetation cover area

There were many large forests, bushes and other green cover in the 1980s. The situation is totally different as of now, according to findings illustrated in figure 4 below. Most of the forests and bushes were cleared to give way for farming. The variation of number of forests and bushes in Narok county as remembered by respondents over the years is illustrated in figure 4 below.

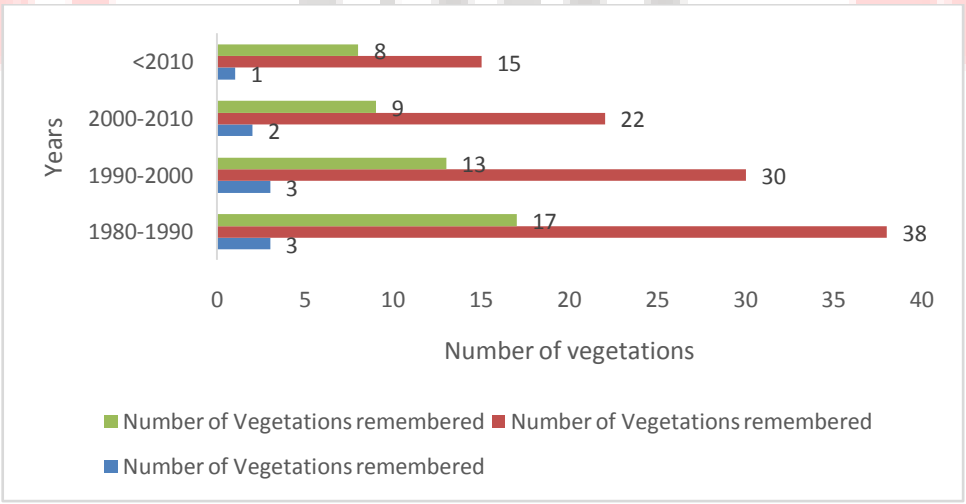

Figure 4; The total number of forests and bushes remembered by the respondents over the years

The number of forests decreased from 3 in 1980 to only 1 by the time of data collection. This implies that massive tree logging has been on-going for various reasons. The respondents also admitted that the total number of indigenous tree species had drastically reduced from 17 to only 8. This was because the indigenous trees were strong and quite durable compared to the exotic types of trees. The number of bushes had dramatically reduced from 38 in the 1980s to only 15 by the time of data collection.

4.2.5 Weather and climatic patterns

All the Maasai elders interviewed agreed that there was change in weather and climatic patterns. However, there were deviations in the exact knowledge of the climatic patterns followed in the 1980s. These patterns governed seasons of planting, what to plant, animal population as well as human cultural events and festivals. Weather patterns involved changes in sunlight duration and clouds. Climatic patterns involved knowing the trend in rainfall and temperatures throughout the years, from January to December. Table 5 below summarizes the extent by which elders of different ages knew the climatic and weather patterns of the year.

Table 5: Variation of knowledge of climatic and weather patterns with age of Maasai elders in Narok county

Age of elders	Elders with knowledge of patterns (%)	
	Weather patterns	Climatic patterns
45-54yrs	20.0	49.0
55-64yrs	33.0	60.0
65-74yrs	51.0	78.0
Above 74yrs	70.0	90.0

From the table, it is evident that the older Maasai elders had more knowledge on weather and climatic patterns of years. This enabled them to accurately predict activities to be taken, both economic, political and social. There was a large deviation of knowledge in weather patterns between old (above 74 years) and young (below 55 years). These deviations are as a result of environmental pollution which have totally confused weather and climatic patterns. Actually, weather forecasting is no longer reliable in by most residents of Kenya at the moment. This has even led to removal of the previously famous 'Weather Forecast' section of news in most broadcasting corporations in the country. About 90.0% of elders above 74 years old could accurately determine which months of the years had short rains, long rains, severe dry spells and extremely cold temperature. However, climatic patterns have gradually changed with the environment and only 49.0% of elders younger than 55 years can recall that.

Conclusions

There was a sharp contrast in Maasai traditional environmental practices and education knowledge between young and elderly Maasai elders. Knowledge of prohibitions of certain environmental factors, especially demonization of some trees, decreased with the age of the Maasai elders. Protection of endangered bio-physical and geographical resources was poorly understood by elders below 55 years. Use of totems was very poorly understood by elders below 65 years. However, age and gender restraints put to prevent use of some trees

or animals was well understood by both young and old Maasai elders. The decrease in Maasai traditional environmental practices and education over time had severe effects on the environment in Narok county, Kenya. There was a gradual decrease in land fertility, bird and wildlife distribution from the early 1980s to 2010. The same pattern was observed in water bodies. Tributaries and seasonal swamps which were abundant in the 1980s had significantly reduced. There was also reduction in the overall vegetation cover, more popularly The Mau forest. Some trees had also gone extinct. Weather patterns had completely become unpredictable while seasons and the climate in general had changed.

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No funding was received for this study.

Conflicts of Interest
The authors declare to have no conflict of interest whatsoever.

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