

Full Length Research

ASSESSMENT OF EFFECTIVENESS AND COMPREHENSIVENESS OF CLIMATE CHANGE REPORTING THROUGH NATIONAL NEWSPAPERS IN KENYA

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This paper examines how effective and comprehensive climate change is reported by national newspapers in Kenya, and the general interest and satisfaction of newspaper readers in climate change stories carried in the newspapers. Through cross-sectional study design, the study involved library analysis of The Daily Nation, The Standard and The People newspapers published during the period January to December 2014. Through survey design, mixed questionnaires were administered to 324 public high school teachers out of the total population of 2003 in Nairobi County, selected from each Sub-County according to the ratio of Sub-County teacher numbers to the total population in the County, to represent newspaper readership. Results indicate that climate change reporting in the newspapers is not significant hence not effective in terms of numbers, sources and regions covered by the newspaper stories. Only the location of stories within newspaper segments is significantly effective. The reported stories are significantly incomprehensive in length and associated illustrations as most of the associated illustrations do not adequately expound on the reported issues. A significant number of newspaper readers are actually interested in climate change stories from the papers, yet the majority of these newspaper readers are not satisfied at all with the stories read while the minority only partially satisfied. These results point to the need by the media houses to improve the content, relevance, depth, simplicity and length of coverage to enhance visibility of climate change stories to enhance ease of understanding by the readers. To achieve comprehensive climate change reports in the newspapers, there is need for more publication of well researched stories with relevant pictorial illustrations for ease of correlation.

Keywords: Climate Change, Awareness, Stories, Newspapers, Readership

INTRODUCTION

Climate change is considered, globally, to be a major threat to sustainable development and is possibly the most significant environmental challenge of our time. In Africa, climate change is a threat to economic growth, long-term prosperity, as well as the survival of already vulnerable population. These threats are mainly significant due to constraints in technological options, limited infrastructure, skills, information and links to markets (Boko et al., 2007). Climate change impacts are already being felt in Kenya, mainly dominated by temperature rises, recurrent droughts and floods, and have led to inconsistent agricultural productivity, reduction and loss of arable lands, increased poverty, disease outbreaks, population displacement, human-wildlife conflicts, land use change and even loss of

livestock, among others (Mutai et al., 2010). This situation is exacerbated by the fact that most vulnerable communities in Kenya have few resource reserves, poor housing and depend primarily on natural resources for their livelihoods (Parry et al., 2012).

Studies reveal that despite their high vulnerability to the impacts of phenomenon, a vast majority of people across the world, especially in developing countries, are still unaware of climate change (Bostrom et al., 1994). This limited understanding has led to most people in Africa, especially sub-Saharan Africa, considering climate change as theoretical, despite their understanding of changing weather patterns within their communities (Godfrey et al., 2009). Close to half of Kenyans have no knowledge of climate change, and even among those

who have knowledge of the phenomenon, a significant number do not understand that it is a threat to human survival if left unmanaged. Unfortunately, a majority of this group are poor rural people who depend on climate sensitive economic sectors such as pastoralism and agriculture for their sustenance. This can be attributed partly to the fact that there is significant inadequacy in the dissemination of climate change information through various modes, including articles and stories on climate change in print media (GoK, 2010; Mutimba et al., 2010; Ochieng et al., 2013). Most climate change actors have not optimally explored the strength of mass media in dissemination of their projects, activities and study findings. These gaps in climate change awareness exist, in addition to the general community, among the public and policy-makers of climate change. Two main needs in managing climate change capacity are environmental education for policy makers and the general public, and outreach programmes to raise awareness in informal settings. It is important to have appropriate systems to disseminate climate change information, enhance awareness creation and to make options and adaptive strategies available for sharing.

The mass media serves three fundamental functions in the society; provision of information, entertainment and education. News and information are essential to foster social engagements, guide on decision-making and provide anchors that shape people's opinions. The print media, especially the newspapers, are powerful tools for climate change education and awareness creation due to their extensive outreach, hence the reason for analysis of climate change reporting by the newspapers to the general public with the aim of identifying its adequacy to enhancing awareness about the phenomenon and triggering effective adaptation and mitigation actions. It is also notable that journalists in print, television, radio and the blogosphere are instrumental in shaping the public debate on climate change issues (Munoz et al., 2011). The newspapers are printed daily and distributed across the country, hence reach millions of readers. Tapping into the above powerful functions, the newspapers have been used as a tool to further important development and social agenda through the years, and can be used as a tool to further the environmental/climate change education and awareness creation.

IED's 2011 Policy Brief mentions that journalists

in most African countries, Kenya included, the Government ministries responsible for climate change lacked adequate staff to build relationships with journalists, plan media strategies and act as spokespeople. Therefore, the media outlets place more focus on international politics of climate change against local climate change impacts and measures with more direct implications for people's lives. The focus has often shifted to differences in risk and responsibility between developed and developing nations, with only little mention of how responsibility, risk and ability to adapt vary within countries. The brief promotes the idea of policymakers engaging citizens more through the media, better communication with journalists and by supporting climate change journalism courses that are relevant to local audiences, builds public awareness of the issues and contributes to improved policymaking (Shanahan, 2011).

In terms of climate change representation in Kenyan news media, articles on climate change in Kenya's news media are scarce, possibly due to the fad of reactive reporting and exclusion decisions by the lead editors and programme managers on climate change stories based on issue carrying capacity by media houses. Compared with other social problems, climate change topics remain an off-peak in media, and when covered, are narrowed down to impacts, with a reactive tendency to brand climate-induced incidences newsworthy. This, they argued, explains the absence of climate related stories in our newspapers and also short term peaks in the periodic pattern of reporting in Kenya (Lucy et al., 2014).

Most climate change stories are approached from political angles, diffusing the essential impact to the readership. Stories that do not have political dimension are relegated to the background. Further, there are no follow up to highlighted stories to appraise progress. Further, there is need for newspaper coverage of climate change stories to take a sustained approach, to educate the masses and to provide a framing that sees the stories as part of the global challenge. They should not cover the events as isolated. Journalism is not contributing sufficiently to the discussion on climate change in a way that would sensitize and educate the audience (Obonyo, 2011). In summary, the media, newspapers included, seem not to adequately play a critical role of sensitizing their audience in order to understand the entire context in

subject is essential in informing what is transferred through teaching or shared in other platforms in the society. This is the main reason the study focused on teachers as the respondents representing the newspaper readers in the survey. The public schools were chosen due to their relatively easy accessibility in relation to a number of private schools which might require longer protocol to access, and the fact that they serve a high number of students.

ANALYSIS AND RESULTS

DATA Analysis

The newspaper data used for this study was obtained from the National Library Services, Kenya, Mediamax Ltd (Publishers of the People Daily). Data on the secondary school teachers (representing the readership) was obtained from The Teachers' Service Commission. These institutions have well archived data and were deemed reliable for the newspaper reviews. The Teachers' Service Commission is the national employer of all teachers in Kenya, and keeps data on teachers and their respective schools. It was therefore possible to obtain both reliable data on the teachers and schools.

To assess the effectiveness and comprehensiveness of climate change reporting through national newspapers, all climate change reports contained in each newspaper publication was recorded in a pre-designed data entry excel sheet. The sheet was carried into the library where upon review of each publication, all relevant information was captured. The sheet has sections for each variable objective, and was filled for each of the three newspaper publications separately. To enable recording of non-numerical variables (location of articles, issues reported, length of articles) code numbers with reference to expected options were provided at the bottom of the excel sheet for reference.

To collect data from the sampled daily newspaper readership for addressing questions three and four on their interest in climate change reports in the newspapers and their satisfaction with the same, questionnaires were designed and the variables defined to relate to readers interest and satisfaction, for the

purpose of this study, were explicitly addressed in the questionnaires. Aside from the variables above, standard respondent information including period of service, name of school, position were also captured in the questionnaires.

Out of the six main national newspaper publications in Kenya, three were purposively sampled for the study. Two, The Daily Nation and The Standard, were sampled to represent the sections with high volume of daily circulation, while The People represented the low circulation papers. Due to their bigger readership numbers and the need to have a reasonably convenient sample size whilst still keeping to the need for as much reliability as possible, weekend papers were selected for the study, from each sampled publication.

From the Teachers' Service Commission Secondary Schools teachers' requirement data, Nairobi County has a total of 2003 teachers. To arrive at the appropriate sample size, Cochran's formula was used (Cochran, 1963). Since the variability of the teacher population that would be interested in climate change reporting in the newspapers is unknown, a maximum variability of $P=0.5$ was picked, at a 95% confidence level and a 5% precision. Applying Cochran's formula ($n_0 = Z^2pq/e^2$) on the 2003 teachers in this category, 385 teachers was identified as the maximum valid sample size from Cochran's table. This result was used in determining the actual required sample size for the 2003 teacher population under study. Here, Cochran explains that the maximum sample of 385 teachers (n_0) should be used in the following formula:

$$\text{Actual Sample Size (n)} = \frac{n_0}{1 + \frac{n_0 - 1}{N}}$$

When worked out, this formula resulted in an actual sample size (n) of 324 teachers. This figure was spread across the nine sub-counties.

Data obtained from questionnaire administration was entered into a data sheet designed for this purpose. Obtained data from the data sheets was first classified into various data types i.e Categorical (dichotomous, nominal, ordinal) and numerical (continuous, discrete). The resulting cleaned data was then analysed in relation

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to variables designed to reflect effectiveness (number of stories, sources, issues addressed and location) and comprehensiveness (length and illustrations) for this study, and thereafter presented in form of pie charts, bar charts and tables.

Data from respondent questionnaires was transferred into a data entry matrix. Each column of the matrix represented a separate measurable variable for which data was obtained. Each matrix row contained the individual research questions for which data was obtained. Data entered into the matrix was cleaned by meticulously counterchecking against individual questionnaire. All identified errors were corrected to ensure validity of the resulting output. The final edited data was then analysed using MS Excel, subjected to Tests of Significance, discussed and presented in pie charts and tables under the findings section.

RESULTS AND DISCUSSIONS

Newspaper Review and Questionnaire Response Rates

The newspaper target of 336 papers was wholly achieved (100%). From the 324 sampled teachers, 17 returned blank questionnaires. The response rate achieved was therefore 95% (n=307), well within expected range for this type of surveys.

The respondents' distribution by gender is as shown in Table 1 below:

Table 1: Respondents' Distribution by Gender

Gender	Respondent Numbers
Male	87
Female	44
Unknown	176

The Effectiveness of Climate Change Reporting

Numbers of Reported Climate Change Stories

The climate change stories reported is largely insignificant by numbers. From the chi-square analysis, the numbers in relation to other stories are significantly

minimal and are unlikely to effectively influence climate change information dissemination and education. See Table 2 below.

Table 2: Effectiveness of Climate Change Reporting by Numbers

Sampled Newspaper	Recorded stories	Expected stories	χ^2	p-value
Daily Nation	37	29.6667	1.813	
Standard	31	29.6667	0.006	
The People	21	29.6667	2.532	
Total	89		4.404	1.111

Significance $\alpha = 0.05$

Sources of Reported Climate Change Stories

Despite sourcing for climate change stories across a wide and reputable arena by the media houses, sources of climate change stories provides significantly effective numbers of stories to the newspapers. Each individual source, by numbers out of the total reported stories, is insignificant to achieving effective reporting. Overall, a combined chi-square analysis further proves the insignificance, as shown in Table 3 below.

Table 3: Significance of Reported Climate Change Stories by Source

	Daily Nation	The Standard	The People	χ^2	p-value
UN System	4/50	3/44	2/30	081	0.96
GoK	9/50	11/44	6/30	735	0.692
NGO (incl. Media)	31/50	20/44	18/30	992	0.232
Individual Researchers	6/50	10/44	4/30	221	0.329
Total				3.777	0.707

Significance $\alpha = 0.05$

The Climate Change Topical Issues Addressed In Reported Stories

Occurrence of droughts tops the most reported climate change aspect, at 46% of the reported stories. These numbers are, however, less than half of the overall reported climate change issues and do not indicate effective attempts at passing a message on the need for appropriate drought adaptation mechanisms at all levels of the society. In fact, tested for significance, it is confirmed that reporting on drought is not significant, and as such may not be effective in enhancing climate change information dissemination and education through the newspapers.

Newspaper stories on floods and temperature changes are much less, despite the significance of these aspects to livelihoods and weather events currently and in future. In fact, the chi-square tests confirm that they are significantly inadequate to spur effective climate change outreach to the readership.

It is, however, commendable that most of the reported climate-induced drought and flood stories are within the affected counties and local communities. These include the successes in enhancing adaptation, attempts at increasing resilience and general awareness, especially in a year deemed to have been the hottest in history.

The combined statistical significance of climate change reporting by issues across the three newspapers indicates overall insignificance, as shown in Table 4 below.

Table 4: Significance of Climate Change Reporting by Topical Issues

	Daily Nation	Standard	People	χ^2	p-value
Droughts	27/50	18/44	12/30	3.12	0.21
Floods	1/50	8/44	4/30	5.697	0.058
Temperature changes	2/50	0/44	1/30	2	0.368
Other	20/50	18/44	13/30	1.529	0.465
Combined test				9.067	0.17

Significance $\alpha = 0.05$

From the above findings and analysis, it is evident that more emphasis on reporting is required for the floods and temperature changes which, together with drought, are the most critical climate change aspects relevant to the African region, and specifically Kenya. More localized stories on these aspects of the phenomenon, especially on well researched adaptation options, will most likely effectively ensure wider knowledge, increase adaptive capacity and see less detriment to human life and property when these phenomena occur.

Location of Climate Change stories within the Papers

In practice, the main story segments in the newspapers are often reserved for the key stories that readership would most likely prefer. This enhances their visibility and increases chances of being read. However, as confirmed by the chi-square test of goodness fit test, the number of climate change stories reported under this segment is not statistically significant in each of the three sampled newspapers, as well as all of them combined ($\chi^2=4.149$, $n=67$, $df=2$, $s=0.05$, $p=0.126$). This means that the stories in the main story segment of the newspapers are too few to have effective impact on the readership during the year.

The number of climate change stories in the "Feature" segment is second highest overall, increasing their visibility and the likelihood of being read across the populace. They often appear as pull-out magazines, or part thereof. *The Daily Nation* has a statistically significant reporting in this segment while the other two papers showing statistically insignificant results. This ensures the overall statistical significance of reporting in the "Feature" category ($\chi^2=12.25$, $n=32$, $s=0.05$, $p=0.002$). Reporting in the "opinion" segment is statistically insignificant across all the three papers, while only *The Nation* newspaper shows statistically significant reporting numbers in the cutting edge section ($\chi^2=0.875$, $n=9$, $s=0.05$, $p=1.521$).

The combined statistical significance of climate change reporting by location indicates overall insignificance, as shown in Table 5 below.

Table 5: Statistical Significance of Reported Climate Change Stories by Location

	Daily Nation	The Standard	The People	χ^2	p-value
Main Story	17/50	30/44	20/30	4.149	0.126
Feature	20/50	6/44	6/30	12.25	0.002
Opinion	5/50	7/44	4/30	0.875	1.521
Cutting edge	8/50	1/44	0/30	12.667	0.002
Combined test				22.64	0.0009

Significance $\alpha = 0.05$

Regions Covered by Reported Climate Change Stories

In the three papers, 67% of the climate change stories reported is attributed to the Kenyan setting. They delve into impacts, mitigation and adaptation dynamics as well as awareness creation stories from various counties and communities across the nation. This is an effective approach to ensuring that readership feed from reports that they can relate to, and can aid information sharing, technology and knowledge transfer hence increased adaptive capacity. However, as confirmed from the chi-square analysis below, the findings on Kenyan stories as well as those from the East Africa region as a variable to effective climate change reporting reveals statistically insignificant results. The implication of these findings are that despite the variation on reporting numbers by region during the study, none of the reported categories is statistically impactful in aiding effective climate change reporting in the newspapers, as shown in Table 6 below.

Table 6: Significance of Reported Climate Change Stories by Source Region

	Daily Nation	The Standard	The People	χ^2	p-value
Kenya	38/50	32/44	23/30	3.678	0.159
E. Africa	0/50	0/44	1/30	2.00	0.368
Rest of Africa	3/50	1/44	1/30	1.6	0.449
Beyond Africa	9/50	11/44	5/30	2.4	0.326
Combined test				4.844	0.564

Significance $\alpha = 0.05$

Drawing from the chi-square analysis that reveals statistical insignificance, indicating that each of the newspapers do not effectively report on climate change, a lot more still needs to be done across all the three publications to enhance readership numbers and spark more interest and discourse on locally relevant climate change issues among the Kenyan populace.

Comprehensiveness of Climate Change Reporting

Length of Reported Climate Change Stories

More than 53% of all reported climate change stories are less than half a page in length. Across the divide, the calculated mean indicates that there were 21 stories in number with less than half-length in each paper, with minimal variation ($x=21, s=1.73$). This is still a majority compared to means of less than a third of this from the other 5 categories. The remainder of the reported stories (47%) is spread across five separate lengthier categories, in small proportions for each category, as shown in Table 7 below.

Evidently, the dominance of less than half page stories in the papers hinders projection of the stories, despite possible vantage location and relevance of topical issues covered in the reports. It makes it easier for readers to flip through without noticing these stories and miss out on likely vital information contained therein, hence further affect their understanding of climate change and its various manifestations, and adaptation options, as reported in the papers.

Table 7: Comparative Significance of Reported Climate Change Stories by Lengths

	Daily lation	The Standard	The People	Mean	Sd
3 pages	1	0	0	0.33	.58
2 pages	2	3	2	2.33	.58
Full page	9	6	7	7.33	.53
More than half-page	5	9	1	5	4
Half-page	11	4	1	5.33	.13
Less than half-page	22	22	19	21	.73

Relevant Illustrations in the Reported Climate Change Stories

Most of the identified illustrations, however, do not quite offer more pictorial expansion of the issues reported in the corresponding stories. The readers therefore cannot effectively use these illustrations to understand the issues more, but only to obtain the names of the personalities and have a feel of the locations. This is a real hindrance to ensuring readers comprehensively understand the climate change concepts addressed in the reported stories.

Readers' interest in climate change stories reported in the newspapers

The Nation has the biggest readership on climate change stories. This means they have the most climate change stories that were identified and acknowledged by the sampled readers. The significance of their readership

is statistically proven through chi-square test of significance ($\chi^2=51.14$, $df=3$, $n=110$, $p=0.001$). The publication has the highest circulation across the country, a fact that may have played a part in the significantly high readership on climate change stories by the interested readers. The other factors could be a slightly better sourcing of stories by the media house or better linkages to other climate change actors. *The Standard* newspaper, much lower in circulation, has a significant proportion of readership acknowledging the same too. This comparative significance is, however, an indication that the readership of climate change stories from the paper is too low to effectively spur information dissemination, education or awareness creation on the phenomenon. The readership matrix is as shown in Table 8 below:

Table 8: Significance of Readership of Reported Climate Change Stories by Newspaper

Newspaper	No.	χ^2	p
Daily Nation	65	51.14	0.00001
The Standard	20	2.05	0.562
The People	0	27.5	0.00001
All three Papers	25	0.23	0.973

Overall, readership per newspaper is notable, especially the fact that 22.7% of the readers have no preference, but would read from any of the three papers. This adds to the numbers affiliated to individual papers to raise a significant readership proportion per newspaper. The combined significance of newspaper readership by the sampled respondents is also statistically tested and confirmed through chi-square analysis ($\chi^2=80.909$, $df=3$, $n=110$, $p=0.00001$). However, it is noteworthy too that a number of readers reported the ambiguous climate change stories in some of the newspapers as a factor hindering their regular readership, while others noted the complex contents that they thought need to be simplified for the general readership to understand well.

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Readers' satisfaction with Climate Change Reporting Through the Newspapers

Just over 17.3% (n=19) of the 110 teachers who read climate change stories is somehow satisfied, while a majority of the readers, at 82.7% (n=91) feel the reporting is underwhelming, hence not satisfied at all. The findings under this variable indicate that none of the interviewed readers is fully satisfied with climate change reporting in the newspapers (See Figure 2 below).

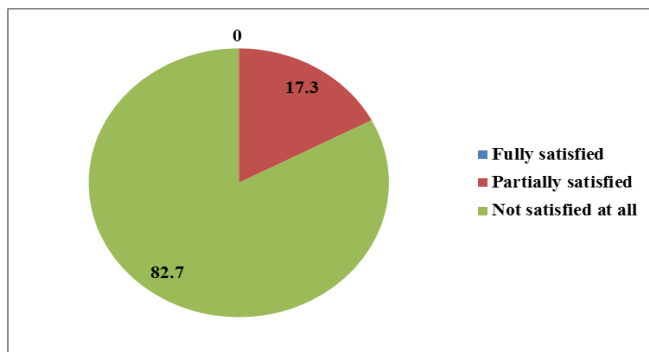


Figure 4.1: Respondents' Overall Satisfaction with Climate Change Reporting

Reader satisfaction is a crucial aspect in educative role of newspapers. The more satisfied readers in a thematic issue, the more progressive discourse such stories elicit and the more informed the readers become as well. A significant majority (n=91) of the dissatisfied respondents ($\chi^2=80.51$, $df=2$, $n=110$, $p=0.0001$) reported that they did not notice the stories or that the stories were too short, general, complex in content or not well presented. They therefore could not learn much from the said stories. The other significant partially satisfied proportion ($\chi^2=8.512$, $df=2$, $n=110$, $p=0.014$) indicated that there was inconsistency in framing and reporting of climate change stories. They further opined that there were occasions when the stories were adequate, relevant and understandable, but in most other instances they were generally below their expectations. Both of these proportions were found to be equally statistically significant through a chi-square analysis ($\chi^2=47.127$, $df=2$, $n=110$, $p=0.001$). They both represent dissatisfied newspaper readers who would want to see

improvements in climate change reporting across the board.

These findings point to the fact that, in all the three publications, the consistency, depth, content and nature of packaging of climate change stories in the newspapers need to be revised to make the stories more relevant and satisfactory to the readers.

CONCLUSION

Effectiveness of Climate Change Reporting

Though climate change reports are mainly in the main story segments in the newspapers, the average monthly numbers in are significantly low to effectively spur wide climate change discourse or create awareness among the general populace. The sources of reported climate change stories generally indicate more pro-activity by the media houses and other NGOs in the environment sector in terms of reporting on their work and output more than the Government and UN system, other climate change NGOs and even less from individual researchers. These stories focus mainly on the most dominant demonstration of a changing climate in Kenya. Though important in relevance, the stories in this context are still ineffective in numbers to achieve a significant outreach. The stories focus mainly on the increasing spread and severity of droughts but less of floods and temperature changes, which are equally important in climate change mitigation and adaptation. However, the amount of stories on these aspects is not significant to achieve the desired effectiveness, hence still requires more focus.

Comprehensiveness of Climate Change Reporting

Most of the reported climate change stories are less than half a page in length. As identified under research question two, this hinders visibility of the stories despite possible vantage location and relevance of topical issues covered in the reports. The identified illustrations are generally not relevant in explaining the issues reported.

Readers' Interest in Reported Climate Change Stories

A significant proportion of the readership population have interest in climate change stories in the newspapers, and look out for these mostly on a daily basis, as found out while testing research question three. They look for the stories mainly in the *Daily Nation* newspaper, with a significant figure also indicating that their search for climate change stories is spread across all papers sampled.

Readers' Satisfaction with Reported Climate Change Stories

The general response to research question four indicates that the proportion of respondents which read climate change stories from the newspapers is largely dissatisfied with the stories and deems them as inadequate. A little proportion is partially satisfied, mostly identifying the relevance of specific stories to their situations as the reason for finding a few interesting ones to read.

It is therefore imperative to conclude that most of the climate change stories reporting in the Kenyan newspapers are based on related manifestations within the country, hence relevant to the Kenyan readers in terms of theme. However, there is still a gap in the effectiveness and level of comprehension of climate change reporting through the Kenyan newspapers. Most of the stories are not comprehensively done to impart adequate and relevant knowledge to the readers, hence their general dissatisfaction. Despite significant interest in climate change stories carried through the newspapers, some of the stories cannot be well understood or related to climate change by the readers, who deem them mostly as inadequate in presentation.

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