

The Impact of Environmental Public Relations Strategies in Managing Climate Change for Agricultural Development in Nigeria

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Abstract

The study examined Environmental Public Relations (EPR) strategies as intervention measures to caution the challenges of climate change on agricultural development in Nigeria. The objectives of the study included the effects of drought, flood, desert encroachment on agricultural in Nigeria and the effective application of EPR strategies on mobilizing the citizens as primary intervention measure. A critical review of literatures revealed the adverse consequences of climate change on the production of food, livestock, cash crops. The cross sectional survey design was used to obtain necessary data. The sample size of the study was 201 from the two selected states (Yobe – North and Cross River – South). The findings of the study revealed that low yield of agricultural products and massive lost of farm lands were evident result of climate change. Mobilization, participating and social marketing strategies will assist create the needed environmental education that will results in change in attitude of the people to become environmental friendly.

Keywords: climate change, mobilization, strategies, desertification, agriculture, flood, drought.

Introduction

Background of the Study

Climate change is a global challenge and its exerting pressures on agricultural development in Nigeria. Nigeria agriculture is about ninety (90%) rainfed and completely depends on climate conditions of wet and dry seasons (Akinboade 2010:30). Eleri as cited in Njoku (2010:43) states that climate change has totally altered the climate conditions in Nigerian and has resulted in serve consequences on agriculture which is one of the pillars of the Nigeria economy.

Major sources of water supply for agriculture in Nigeria like lake Chad Basin and several other river basin system as well as wet lands across the country are plagued by drought, desertification and excessive evaporation.

Similarly, the surging Atlantic Ocean is threatening coastal cities and villages with increasing sea level rise and regular floods that have made most of the places theatre of gully erosion and allied disasters.

These extreme conditions have negatively affected agricultural development in Nigeria. Most farmlands have been eroded, crops contaminated by salty sea water, low level household wastes have been conveyed into fluvial system to contaminate water supply for communities and wildlife habitats with extreme toxic substances.

Again, desert encroachment and desertification are assuming frightening dimension mostly as it affects the nation arable land mass. These hostile effects of climate change do not only pose threat to food production and food security but will equally results in rise in unemployment and increase poverty in the nation (Odiogor, 2010:35).

It is interesting to note that agriculture is the mainstay of the Nigerian economy. It account for an estimate of forty percent (40%) of Nigeria Gross Domestic product (GD) and employs about seventy percent (70%) of the nation's work force, of course, agriculture has the potentials to remain one of the major sources of employment and income for a large number of the Nigerian youths. (Onwubiko, 2011;32).

It is on the above assertion that Nigeria leaders and the relevant environmental agencies will appreciate the role of environmental public relations and apply its strategies maximally to create high level awareness, educate and enlighten as well as mobilize the citizens to acknowledge and understand the magnitude of land degradation through the impact of climate change and its effects particularly on agricultural development in the country.

The task and challenge of environmental public relations is to educate everybody in Nigerian about climate change and motivate them to show active partnership, participation and co-operation in its management. Environmental public relations will build a strong bridge to produce effective communication and information system among the various partnerships in the management of climate change.

1.2 Statement of the problem

From the above assertions, the problems caused by climate change on agricultural development in Nigeria are

enormous and critical. Climatic behaviour in Nigeria is greatly altered and is in extreme conditions. These extreme drastic weather events have caused over heating of the environment and have resulted in rapid rise in temperature.

This has resulted in rise of the sea level causing flood and on the other hand drought, desertification and human displacement. The consequences of these alterations are shortage of food supply, low yield of crop harvest or low productivity of crops, high prices of food, increase in poverty level and shorter life span.

Ignorance of climate change by majority of Nigerians is the most unfortunate epidemic in the country. Majority of the population both in the urban and rural areas across the country are completely uneducated and aware of this global catastrophic emergency.

Worst, is the lack of zeal and readiness on the part of relevant environmental agencies to create the expected high degree of awareness and education among the population to understand the threats posed by climate change in the environment particularly on food production. The long run effect is that Nigeria will be unable to feed her population that is rapidly increasing.

Under such critical circumstance caused by climate change, it means that agricultural development is under threats. It is on this platform that this research seeks to investigate the effects of environmental public relations on the management of this catastrophic development (climate change) on agriculture in Nigeria.

1.3 Objective of the Study

The objectives of the study induce;

- i. To examine the impediments of flood on food production in Nigeria
- ii. To investigate the impact of desertification on agricultural development in Nigeria.
- iii. To identify the effect of drought on agricultural development in Nigeria.
- iv. To examine the role of mobilization strategies on climate change management in Nigeria.
- v. To determine the effects of social marketing strategy on the positive change of attitude by the people toward the environment.

1.4 Research Questions

The under-listed research questionnaire formulated to guide in the supply of answer for the study.

- i. Can flooding of farmlands affect food production?
- ii. Does acute shortage of rainfall affect food production in Nigeria?
- iii. Does desertification caused shortage of farm lands and human displacement in Nigeria?
- iv. Would mobilization strategies enhance the creation of the needed education and awareness of climate change in Nigeria?
- v. Can social marketing enhance positive change in attitude by the people towards the environment?

1.5 Research Hypotheses

- i. Flooding and acute shortage of rainfall as well as lack of water for irrigation have not adversely affected crop production in Nigeria.
- ii. Large hectares of landmass have not been claimed by desert encroachment in Nigeria.
- iii. Effective mobilization and participatory strategies will not create environmental consciousness among the people in Nigeria.
- iv. Social marketing strategy would not exchange a change in attitude of the people towards the environment.

Literature Review

2.1 Theoretical framework

The study is anchored on two theories that will support the work. These theories are:

- i. Environmental determinism theory
- ii. Structural functionalism theory. These theories are summarized below

Carl Saver is the exponent of this thought. Saver believes that man is created for the environment or nature and that man must obey or succumb to the laws and protocols dictated by the environment or nature. Man has no choice than to obey nature otherwise.

The philosopher emphasizes on the supremacy of the environment that the environment is above man and man could do but little to modify the natural environment (Enu, 2005:22).

It is important for man to understand that humans depend on the environment and any destruction or harm to the environment is reflected and redirected to man. Man needs the environment to live but the environment can live without man.

2.1.2 Structural functionalism theory

This theory has a long standing history in sociology. This theory is prominent in the works of two founding fathers of sociology, Auguste Comte (1798-1857) and Herbert Spencer (1820-1903). It is developed by Emile

Durkheim (1858-1917) and refined by Talcott Parson (1902-1979).

Experts in classical and contemporary sociology used this theory to explain various issues, problems and situations in different communities and societies in advanced and the third world countries. This theory views the society as a system. It is the buildings of interconnected or related components which together form a whole.

The basic unit is the society and its various components must be understood primarily in terms of their relationship to the whole. Pearson (1974) in Nwosu (2001:47) states that for any issue in the society to be understood and managed properly, we must first understand the various structures of the society and their specific contributions and functions including the interrelationship among the structures.

2.2 Mechanism of climate change

Climate change is defined as the statistical distribution of weather over periods of time that ranges from decades of millions of years. It can be a change in the average weather or a change in the distribution of weather events around an average e.g greater or severe weather events.

The main cause of global warming to climate change is the accumulation of gases known as green house gases in the atmosphere. These green gases included the natural carbon-dioxide, methane, nito-oxides and chlorofluorocarbons which is synthetic.

These green house gases absorb heat thereby rapidly warming the earth through the green house effect process. Some of the heat trapped by these green house gases is radiated back from the earth into the space to create the green house effect. This heat trapping is predicated to have increased global temperatures that have altered the weather conditions known as climate change and have previous consequences on the environment and society (Anijab-Obi, 2006:120).

2.3 Sources of greenhouse gases emission in Nigeria

The major sources of these greenhouse gases in Nigeria include motor vehicles (e.g Lagos has 2.5 million vehicles and contribute much of carbon monoxide to the air) bush burning, gas flaring, fridges, deep freezers air conditioners, burning of fossil fuels among other (Abam, 2004:232, Aniah & Okpilliya, 2007:113). These green house gases are the major causes of rise in global temperatures.

2.4 Effects of climate change on agricultural development in Nigeria

The evidence of climate change on Nigeria Agricultural Development is resistant to agricultural growth and food productivity. Among the effect are:

2.4.1 Rainfall variability

The country experiences varying degrees of rainfall in different parts or regions. In the northern parts of the country, average temperature is above 45°C and experience low rainfall. As reported by Nigeria national meteorological Agency, the rainy season has dropped from average of 159 days to 120 days, when compared with the frequency of rainfall in the past 30 years. This has resulted in a drop of crop yield by 20 percent.

In the southern axis, climate change has resulted in exceptionally high and prolonged rainfall and the resultant rise in Atlantic Ocean level forcing water levels to rise. This rise in water level have cause floods in the country especially along the coastal areas where wide hectares of farmlands have been destroyed and food crops and plants contaminated (Ndirebe, 2010:37 & Odiogor, 2010:35).

Adegboye (2012:44) states that flood has rendered 25 million people in Nigeria homeless and estimated 300,000 hectares of farmlands and agricultural produce worth millions of Naira were lots to flood. One hundred and thirty seven (137) persons have lost their lives to flood while more 120,000 people have been displaced. Also, more than 400 communities have been submerged under water across Nigeria.

Low level household wastes have been conveyed into the fluvial system and has contaminated communities water supply as well as poisoning wildlife habitats with extremely toxic substances. Hazardous and toxic chemicals such as pesticides, gasoline and other industrial wastes have been washed into the water which in most cases find their ways to fresh water sources leading to water pollution and destroying aquatic animals stability. Wildlife species like dangerous snakes and reptiles are likely to extinct.

2.4.2 Drought and desertification

These are other national emergencies affecting agricultural development in Nigeria. Nigeria is witnessing sever drought and desertification arising from rapid disappearance of large sources of water and activities of sand in the northern region of Nigeria.

Odiogor (2010:35) states that Lake Chad, the largest source of inland fresh water is heavily devastated by desertification and has caused enormous agricultural losses in the region. The Sahara desert is progressing southwards at six percent (6%) annually. Consequently, Nigeria losses about 350, 000 hectares of land every year to desert encroachment. Experts believe that about 75 million hectares of land in the north is threatened by desertification. This portends grave danger for food production and security in Nigerian and beyond.

Yobe State one of the states in the northern region experiences sand dunes encroachment at the rate of 30 hectares of land every years. Over 5 millions livestock's are being threatened in the area as per greasing and feeding. Experts and researchers predict that the country large land mass will become desert in 2015.

United Nations food and Agricultural Organization Report, (2005) in Nwosu (2005:215) states that Nigeria has the highest rate of deforestation of primary forest and these experts explained that deforestation contributes about 18 percent of total emission to desertification. Desertification has serious socio-economic consequences on the people (Olantuni, 2006:17).

2.4.3 High temperature

High temperature causes excessive evaporation on the soil and plants. This excess loss of water by soil and plants results in pour quality and low yield of crops (Oyedode, 2010:32).

All these factors advance to deterioration of the nation's fertile land and loss of its productive capacity which eventually results in shortages of food supply to feed the entire population.

2.5 Consequences of climate change on agricultural development

These erratic and extreme conditions caused by climate would have severe consequence on agriculture. First, it will lead to acute shortage of food for the citizens, balance of payment problem and a fall in balance of trade resulting to less revenue for the country.

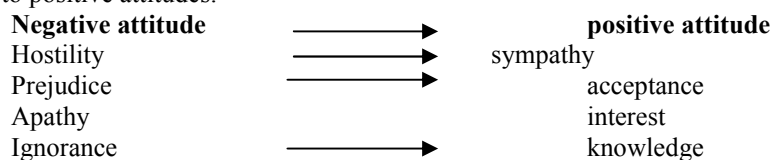
Flood, drought and desertification reduced the potentials of farmers in terms of lost of farmland, low crop yield, contamination of crops and plants lost of aquatic animals and livestock among others. This situation will lead to insufficient food supply, food insecurity, unemployment and high cost of food items. The end points of this situation will be increased in poverty level, high crime rate and social insecurity.

2.6 Environmental public relations role in the management of climate change on agriculture in Nigeria

Environmental public relations is a specialized area of public relations reputation management practice that focuses on how best to apply relevant public relations strategies, principles and tactics in any effort to manage environmental issues, problems and projects in other to ensure achievement of sustainable development objective at the local, regional, contentail and global levels (Nwosu & Uffoh, 2005:37).

2.6.1 Environmental public relations transfer model

Environment public relations use the transfer model propounded by Frank Jenkins in (1986) to change negative attitude to positive attitudes.



Man's activities such as bush burning deforestation industrialization etc has fuelled the level of hostility in the environment hence environmental public relations through research can fashion out strategies to inform and communicate to the society on how best to relate positively with the environment, in the most beneficial way.

Prejudice to the environment exists in many ways. Many people in Nigeria hold unto cultural beliefs. Most people believe that the extreme weather condition experienced presently is caused by the gods and ancestors who need to be appeased and not climate changes.

Environmental public relations seek to persuade humans to accept climate change concept as it is scientifically proven and that it is real. Acceptance of climate change will create motivation in the people to accept any efforts by experts.

Apathy towards climate change by most Nigerian is real. Both the educated and uneducated, the rural and the urban people are not adequately informed and as such are not interested in any policy about climate change. The task of environmental public relations is to create interest among Nigerians on government environmental policies. When Nigerians have the interest on environmental issues, environmental policies and laws will be obeyed. This will enhance environmental control.

Finally, ignorance is the most costly disease of humanity and the bane of environmental control in Nigeria. Environmental public relations experts have the duty to fill the gap of ignorance with adequate knowledge. This could be achieved through workshops, mass media, social media, and seminars among others.

2.6.2 Identification of groups with needs and interests strategy

This strategy is very essential because various people with need are identified and mobilized. Attention will be directed specially on this group with need and interest who strongly believe that their survival for instance is depended on forest resources. These groups will never stop cutting down trees for fuel energy, logging among others.

Exeanolue, (2009:183) opines that this strategy will adequately serve to mobilized the traditional rulers, opinion leaders, farmer Association among others who have the ability and the potential to either support or influences the mobilization programme or disrupt same.

2.6.3 Direct contract straggly

This strategy is also known as contact marketing strategy. Direct contact with the target population has a very positive effect in mobilizing them for effective participation and understanding of how best to control the environment.

This strategy offers the people the opportunity especially those in the rural area to see face to face with the Environmental agents who through explanation, demonstrations will response to the people questions. This direct contact will create acceptance, memorable impression that will cause a change in the minds of the people. Also direct contact with the people demonstrates respect for the people visited. This will promote effective mobilization among the leaders and the subjects.

2.6.4 The participatory strategy

Participatory strategy is the involvement of members of the target population as early as possible in all the stages of climate change programme. This, the target population through effective selection of representatives should be involved right from the research, conceptualization, materials design, planning implementation, emulation of climate change programme.

This strategy by implication means environmental agents should see the target population like farmers as partners in the development programme who have the opportunities to identify their needs and as well participate effectively in solving their needs.

2.6.5 Persuasive strategy

This strategy brings about self conviction of the advantages and benefits derivable from effective compliance to the environmental policies and laws. Persuasive strategy will yield long term results since it is willful intention. This strategy enables the environmental agents to democratically win support, conviction and commitment of the people's who are required to participate in the climate change campaign.

2.6.6 Social integration strategy

This is a non discriminatory strategy aimed at carrying along will human and material resources to create the needed awareness, education, campaign and participation on climate change in Nigeria. Social integration strategy focuses on motivating and encouraging people of different races, countries, organization, profession and occupations to be favourably disposed to contributing meaningfully and objectively to climate change campaign in Nigeria.

2.6.7 Social marketing strategy

Social marketing strategy basically is the use of marketing principles and techniques to advance a social causes, idea or concept. It seeks to increase the generality of the society accepting a product like an environmental product of climate change. (Kotler, 1999:245).

Adirika, Ebue & Nnolim (2001:289) state that the prime objectives of social marketing is geared at promoting a change in attitude, knowledge and understanding including behaviour about something in the people.

Social marketing strategy therefore is to effect a change of attitude in the people on climate change and other environmental issues, this is possibly achievable through aggressive campaigns to create an impact in the people to stop destructive logging, bush burning of oil gas and coal as well as ownership of many automobiles that have saturated the atmospheres with green house gases. This strategy will equally promote and encourage effective participation of the people through attendance of workshops, seminal, public lectures, and conferences among others.

2.6.8 Environmental communication and media strategy

Effective communication and media strategy is a two ways interactive strength through which idea, knowledge, skills and information are shared among the people by the use of appropriate channels about environmental issues.

The environmental agent must first of all understand the Nigerian public. This will enable them to structure and design climate change campaign messages in the major Nigerian languages, and the selection of the various media both modern and traditional to effectively reach the geographical spread and the various strata of the Nigerian population.

Ebitu (2012:28) opines integrated marketing communications will not only enhance adequate promotional and aggressive campaign message but also employs experts and proper channels that will influence climate change success among the people.

Nwosu (2008:16-18) postulates that adequate and multimedia strength including the use of modern information and communication technologies as well as traditional media will enhance the campaign of climate change in Nigeria.

3.0 Research Methodology

3.1 The study area

Nigeria lies entirely within the tropics at the eastern end of West Africa. Nigeria is at latitude 10⁰N of the Equator and 8⁰E of Greenish Meridian with a total landmass of about 923, 773. Sq km (Etuk, 2009:14) the country's climate is tropical.

These are over 250 different ethnic groups and over 200 languages and dialects spoken in Nigeria. The major tribes are the Hausa, Yoruba and Igbo (Bakare, Belgore & Harrison 2007:39-40). Nigeria has a population of over 140 million people. Their major occupation is agriculture while oil is the major sources of revenue. The capital of Nigeria is Abuja.

3.2 Research design

The Cross-sectional sample survey design was adopted in collecting data. This survey design allows samples to be drawn in such a way as to be a representative of the population. (Burns & Bush 200:124). This study was intended to determine the impact of environmental public relations strategies in managing climate change for agriculture development in Nigeria. Based on the nature of study data was obtained from the respondents.

3.3 Study population

The study population consisted of members of Nigeria Institute of Public Relations (NIPR), environmentalists and personnel of Ministry of Agriculture in Cross River and Yobe States.

The institute consists of experts and consultants who are very knowledgeable about application of public relations strategies in public enlighten campaigns. The environmentalists and Agriculturists have comprehensive knowledge on environmental issues and their effects on agriculture.

But for reasons of geographical spread, Cross River and Yobe States were selected to represent the South and Northern regions. The population of the study consisted of 405 from the two states. This figure was obtained arrived from the various records in the stated organization identified in the two states.

3.4 Sampled size determination

The adopted Bourleys rule since the population of the study is known (Yamanne, 1964:250 Ozongw, 1998:67).

$$n = \frac{N}{1+N(e)^2}$$

Where;

n = sample size

N = population of the study

e = Tolerable error (5%)

l = Constant

$$= \frac{405}{1+405(0.0025)} = 201$$

3.5 Methods & sources of data collection

Primary and secondary data were gathered for these studies. Primary data was obtained from structural questionnaires while secondary data were obtained from various publications of Federal and State Governments, Environment, Agriculture, public relations journals and textbooks.

3.6 Method of data analysis

Chi-square (X²) test statistics was used to analyze the collected data at 5% level of significance. Out of 201 questionnaires distributed 195 or 96.01% were returned and were valid. The use of X² was to sample the opinion of the respondents on the effectiveness of public relations strategies on climate change management.

$$X = \frac{\sum(O-e)^2}{e}$$

e = observed frequency

e = expected frequency

4.1.1 Test of hypothesis 1

Flooding, acute shortage of rainfall and inadequate irrigated water supply do not affect crops production in Nigeria.

Table 1: This table shows observed frequency from the field.

Option	Nipr	Environmentalists	Agriculturists	Total
Strongly agree	15	11	30	56
Agree	25	27	16	68
Disagree	14	6	15	35
Strongly disagree	16	13	5	34
Total	70	57	66	193

This result of the analyzed data shows that the X^2 cal = 22.2975 and the critical value is 12.592 therefore, the alternative hypothesis which claims that flooding, acute storage of rainfall and inadequate irrigated water supply affected crops production in Nigeria is accepted.

4.1.2 Test of hypothesis 2

Large hectares of landmass have not been claimed by erosion and desert encroachment in Nigeria.

Table 2: This table shows observed frequency for the hypothesis.

Option	Nipr	Environmentalists	Agriculturists	Total
Strongly agree	18	25	20	63
Agree	25	20	30	75
Disagree	15	2	6	31
Strongly disagree	12	2	10	24
Total	70	57	66	193

This result of the analyzed data shows that the X^2 cal = 13.1875 and the critical value is 12.592 thus the large hectares of landmass have been claimed by erosion and desert encroachment in Nigeria.

4.1.3 Test of hypothesis 3

Effective mobilization and participation strategies do not create and enhance effective environmental conscientiousness among people in Nigeria.

Table 3: This table shows observed frequency for the hypothesis.

Option	Nipr	Environmentalists	Agriculturists	Total
Strongly agree	30	11	14	55
Agree	21	30	27	78
Disagree	10	5	14	29
Strongly disagree	9	11	11	31
Total	70	57	66	193

This result of the analyzed data shows that the X^2 cal = 16.0209 and the critical value is 12.592 hence, effective mobilization and participation strategies will create and enhance effective environmental conscientiousness among Nigerian.

4.1.4 Test of hypothesis 4

Social marketing strategy would not enhance a change in attitude of the people towards the environment friendliness.

Table 3: This table shows observed frequency for the hypothesis.

Option	Nipr	Environmentalists	Agriculturists	Total
Strongly agree	16	12	30	58
Agree	630	24	16	70
Disagree	10	11	11	32
Strongly disagree	914	10	9	33
Total	70	57	66	193

This result of the analyzed data shows that the X^2 cal = 13.2055 and the critical value is 12.592 hence, social marketing strategy would enhance a change in attitude of the people towards the environment friendliness.

4.2 Discussion of findings

The impact of climate change in agriculture or precisely on food production cannot be over emphasized. But majority of Nigerians are farmer and the truth is that many Nigerians do not know and are no bothered to know the meaning and impacts of climate change in our lives and food production in particular.

Often, farmland loss, destruction of food crops and plants contamination, wildlife extinction, high death rate of live stocks, poor harvest portend great danger for human survival in Nigeria. These adverse impacts are as

a result of bush burning, deforestation, gas flaring, purchase of multiple cars and trucks, logging and tree felling for firewood as energy source which in turn results in agonizing environmental consequences such as flood, drought, desertification due to high temperature caused by climate change.

Environmental public relations enlightenment and public education option is importance because major public policy issues can only succeed when the general public gives an overwhelming support. This is by understanding the prospects, dangers and consequences involved. According Edaeni (1993:109) public relations activities do influence the formation of public option. Environmental public relations are viewed as a vehicle for communicating and changing public attitude (Nwosu 2005:36).

Therefore, through proper application of mobilization strategy, the people will be conscientious about environmental problems and try to adapt to instructions. Participatory strategy is to carry the people along right from the inception of the environmental management plan to the conclusion. Their involvement will encourage their full acceptance of the programme.

Social marketing strategy is useful for the marketing of not-for- financial profit products such as climate change and brings about change in attitude in favour of the environment.

5.1 Summary of findings

1. Flooding, drought and desertification are by product of climate change that impact negatively on food and crop production in Nigeria.
2. Effective mobilization of the citizenry through the various structures of the society and available modern and traditional media of communication will enhance sensitization and create affection and passion for the environment among people in Nigeria.
3. Participation strategy will give the people a sense of belonging and will encourage full acceptance of the climate change campaign by opinion leaders and by extension the full co-operation of the people.
4. Community relations and social responsibility programmes are highly encouraged by government and corporate organizations to provide alternatives for those depending mostly on the forest resources.
5. Social marketing strategy will be instrumental arsenal to cause a change in negative attitude of the people to positive attitude towards the environment.

5.2 Conclusion

Climate change impacts are very devastating on Nigeria agriculture. It become imperative that Nigerians must be aware and should be ready to adopt to changes as well as be active to participate in enforcing environmental behaviour that will be advantageous to agriculture.

5.3 Recommendations

1. The use of environmental communications is relevant which is the use of all form of communications designated to attract attention to environmental problem confronting man. Environmental communication will drum up support and champion advocacy on man's activities that will be friendly to the environment. This will create consciousness on the consequences of climate change and play an informing role of discouraging citizens in indulging in negative activities on the environment.
2. The use of modern and traditional media strategy – the use of radio, television, newspapers, magazines, community radio, age grade forum, town criers and opinion leaders. This will promote aggressive awareness, creation, education and enlightenment on climate change project among the people. Traditional media especially community radio will be use to translate the message to different local languages as to penetrate the nooks and crannies of the Nigerian society on friendly behaviour in the environment.
3. The involvement of opinion leaders at the planning and implementation stages of the programme will influence the followership as there are people who they are in contact with face to face.
4. More experts could be involved in the planning and implementation of the climate change campaign programme. They will carry out the execution of the plan successfully.

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