

Challenges and Strategies for Enhancing Climate Change Communication and Environmental Engagement

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ARTICLE DETAILS

Article History

Published Online: 13 March 2019

Keywords

Climate Change Communication, Environmental Engagement, Media, Public

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ABSTRACT

Although there is an ongoing debate in the world regarding the reality of climate change, it has been largely accepted that climate change is real and happening. Nevertheless, the action on the ground to reign in climate change seems to be slow or absent in many parts of the world. The paper takes note of some of the challenges that the scientists and environmental interest groups face while communicating climate change to enhance environmental engagement. It also reviews some novel and innovative methods suggested by researchers for improving and enhancing the impact of climate change communication. These could also be applied to convey the facts, the perceptions, and the projections related to climate change. The desired policy changes, attitudinal changes, individual behavioral changes, and collective action needed at local and global levels, may then be communicated in more creative ways. There is an urgent and certain need for moving societies into environmental action through right communication. Climate change communication needs to be reoriented and reframed by applying the insights gained from communications research. The communicators need to pay attention to their audience more, so as to frame their communication to match their audience.

1. Introduction

Climate change has been the topic of interest and attention for the public and the policy makers alike. While there is still a debate regarding the reality of climate change, the world at large seems to have accepted it. 97% of scientists seem to agree that climate change is happening (<https://climate.nasa.gov/scientific-consensus/>, Cook, 2016).

Despite the fact that a variety of media has been used to convey climate change related news and analysis, the awareness about climate change related issues is not high even in countries like US where half of American adult population was found to be unaware of this consensus in a survey (Howe, et. al., 2015). Climate change communication has also not been found to be very far reaching in countries like India as evident from a survey to measure the awareness levels about local weather changes and climate change. It revealed that only 7% of Indians in the sample were aware about global warming while 41% had never heard of it. After being introduced to the concept of global warming, 72 percent said they believed that global warming is taking place and 56% considered global warming to be caused by human activities. The survey also found that it is the scientists who are trusted the most with climate change related communication (73%) followed by the news media (69%), and environmental organizations (68%). Government and religious leaders were trusted by about half of respondents (Leiserowitz and Thaker, 2012).

It is believed that the field of climate change communication is still marred by the 'deficit model of science communication'. More 'participatory models of communication' which would consider and acknowledge the existence of doubt and uncertainty about climate change as necessary

components of the climate change debate and stimulate more discussion and debate and finally lasting conclusions and solutions to climate change (Pearce, et.al., 2015) are required.

Within communication theory, there has been a shift from viewing communication as a transmission of messages to viewing it as an interaction. In the context of communicating climate change in the light of this new "interaction paradigm", a 'meta-theoretical' framework has been proposed which looks at communication as a process which constitutes production and reproduction of common understandings. Such a 'meta-theoretical' paradigm calls for a shared platform which would generate multiple arguments advancing multi-perspective argumentation and discussion of the role of climate change communication in society (Ballantyne, 2016).

Climate change communication need to be about a dynamic interchange of ideas about climate change that either create or obliterate climate change consciousness and understanding, the perception of urgency of action, and the motivation to take action (<http://climatecommunication.yale.edu>). It is a process, where the source, the medium and the target, all get influenced by a variety of factors, such as culture, attitudes, beliefs, politics, popular discourses, popular modes of communication etc., as opposed to traditional thinking where it was viewed as linear process.

2. Challenges to Climate Change Communication

Those talking about climate change face challenges while communicating. These challenges relate to reaching their audiences, making climate change meaningful to them, motivating people change their habits, make wise decisions

and rally them for policy changes (Moser and Dilling, 2007). The following section reviews some of these challenges.

1.1 Existence of Two Lines of Climate Change Communication

There have been two lines of climate change communication. One, a communication that focuses on informing the public about the facts related to climate change assuming that this alone is sufficient to motivate them to act against climate change and the second, makes an effort to create a dialogue with the public hoping to ensure their engagement in climate change mitigation efforts. (Barnosky, et.al., 2016). The challenge is to combine the two types of communication. Climate change communication should not only be about conveying information, forewarning, and educating about climate change. It needs to be also about scientists and the public collectively realising the need for action related to solving the problem of climate change.

1.2 The Challenge of Using Appropriate Framing

Framing is an important variable in the communicative process. The frames are the lens made of the existing cultural beliefs and world views through which individual make out meaning out of the verbal and non verbal elements of communication around them (Goffman, 1974). Framing is used by everyone since it is an important element of communication. Journalists, policy makers, and experts use framing to reach a wider audience by reframing their message in the language of a common man and make their ideas understandable and acceptable to a wider public (Scheufele, 1999 and Nisbet and Huges, 2006). They are the reference points with which people understand an issue and decide their actions related to the message. Framing is an attempt to glean relevant information, useful for the audience, and make it reach them in a user friendly composition, emphasising certain facts more than others (Ferree, et.al., 2002 and Price, Nir, and Capella, 2005).

When individuals are presented with an ambiguous or uncertain situation to consider, what matters is the varied words and the visual information and perspective used to describe the issue rather than the content of the message. Climate change is one such complex issue surrounded by so much confusing cacophony around it that the role of framing and unambiguous messaging takes supreme importance (Nisbet, 2009).

Scientists need to pay attention to the words, the images and the perspectives taken while communicating climate change related information and the need for action.

1.3 Presence of Vested Interests/Polarised Views

The degree of threat perception from climate change is influenced by such things as cultural values. For example, with regards to egalitarian and individualist values, it has been found that individualists as compared with egalitarians perceive less threat from climate change. Similarly people may also disagree with scientific facts even when proposed by experts in a particular field, if these are opposed to the prevailing view of his/her cultural group (Kahan, et al., 2011).

If someone understands science, it is not essential that he or she will hold scientific beliefs about something like global warming. Kahan, et. al., (2012), found that those with highest degrees in science and technical education are not those with the greatest concern about climate change. In fact they were the most culturally polarised groups, having beliefs in line with their own interests. They found that it is not the ability to comprehend scientific facts, but the conflicting interests of different sections in the public which lead to differing views and perceptions about climate change.

Climate change communication seems to be also influenced by the varied “experiences”, distinct “mental and cultural models”, and prevailing “values and worldviews”. Our values and world views have a key role in deciding how we view climate change (Corner, et al., 2015). Individuals tend to develop beliefs in line with those of the social groups to which they belong. These social groups may be of different political, religious, and sexual orientation. When such people are introduced to scientific information which is not matching with their beliefs, they tend to oppose that information and protect their beliefs. They may find flaws in the information and become more convinced about their own beliefs (Kahan, Jenkins – Smith, and Braman, 2010).

Thus, climate change communication has been influenced by those with vested interests and also neutral actors, and all the stakeholders in climate change debate (Barnosky, et.al., 2016) and it is a challenge for communicators to convey their messages related to climate change debate in a manner that helps resolve these differing convictions of a variety of interest groups.

1.4 Mediating Role of Psychological Distance and ‘Hope gap’

In a study conducted by Jones, Hine, & Marks (2016) in Australia, psychological distance with respect to climate change was construed in terms of place distance, time distance, social distance, and extent of uncertainty. The study aimed to test the impact of communication framing in terms of increasing the psychological distance on the one hand, and of reducing the psychological distance on the other hand, on public engagement. It was reported that the social distance and uncertainty dimensions of psychological distance have a mediating role in determining concern for climate change and intentions for action.

In Portugal, which may be true of other countries as well, the public comes to know of climate change as a global challenge and as distant from them. Here, the climate change communication has been dominated by discussions about global politics. It has been observed in Portugal that international news and its dynamics get more attention in media, and the national politics and policy takes a back seat. There is not much debate between national policy makers and environmental groups, perhaps affecting the public engagement with climate change (Horta and Carvalho, 2017). Thus the challenge is to decrease this psychological distance and make environmental discussions a part and parcel of debates and discussions taking place in a country and make people realise that it is everyone’s issue in the long run.

According to Leiserowitz (2015) people fail to understand the climate change is happening now, in their own countries and for them, their friends and family too. He has talked about a "hope gap". This hope gap is about people who are alarmed that climate change is real and happening but fail to see the solutions. The perceptions of people need to be changed from lack of hope to seeing and finding the solutions. Reframing of questions related to climate change may help fill this gap (Smith, 2015).

1.5 Proliferation of Fake News

The presence of social media and Facebook, is aggravating the problem of fake news and misinterpretation of facts since it is the platform where likeminded people come together and they may keep promoting a certain idea or philosophy despite the facts pointing in a different direction. These distorted facts tend to get spread and promoted in these media platforms. In view of the fact that 88% of young adults of age 18 years get their news on these platforms only, this is all the more disconcerting (<http://www.mediainsight.org>).

In the context of climate change communication, it is believed that for the last many decades, fake news, in the form of 'influential misinformation campaigns, selective media exposure, fabricated controversies, alternative facts and false media balance' has interfered with genuine climate communication (Boykoff, & Boykoff, 2004). As a result, there has been an increase in the public doubt with regard to climate change and this has compromised the progress on climate change (Lett, 2017). Dealing with the challenge from the phenomenon of fake news is an earnest task for the scientists and environmentalists.

3. Strategies for Enhancing Climate Change Communication

The following section reviews some of the probable solutions to meet the challenges faced by those involved in climate change communication: the scientists, the media, the policy makers, and others who may have an interest in restraining climate change.

3.1 Attending to Cultural Values

Many a times there are parallel discourses running about a topic such as climate change in democratic and pluralist societies like India. These need to be respected and acknowledged in a democracy and cannot be overruled easily without reason. Hence there is a need to reconcile these parallel discourses by the actors in the climate change debate, so that a country may take a stand on the issues related to climate change in international arena. Here the role of communicators becomes salient and the use of the appropriate and impartial media of paramount importance (Thaker and Leiserowitz, 2014).

It is also important to explore how the values determine an individuals' engagement with climate change. Much research in this area has focused on how the public perceives climate change in view of the differing ideologies they are exposed to. Researchers are trying to understand how to reframe climate

change communication to get the attention of even those who do not hold pro environmental attitudes and also to bring about significant changes in the behaviour and level of engagement of the larger public with the ongoing climate change related issues (Corner, Markowitz and Pidgeon, 2014). Research has shown that individual's stable values, worldview and political orientation rather than scientific knowledge are much stronger drivers of opinion on environmental risks such as climate change (Stern, 2016).

3.2 Using All Media – New and Old

Media has a crucial role to play in giving information to the public about climate change and scientific findings. In India, where 40% of the adult population is believed to be not even aware of global warming, a national survey was conducted on a sample of 4031. It was found that risk perception due to global warming and support for policy was positively related to use of media, attention to news around the world, having trust in the scientific community and in organizations working for the environment. It was also directly related to perceived personal experience with global warming. Thus it was suggested that extensive and intensive media coverage be given to global warming related news and its relatedness with increasing local temperatures and extreme weather events as experienced from time to time (Thaker, Zhao & Leiserowitz, 2017).

Although language has been extensively used in communicating climate change, new media such as visual images related to climate change have captured the digital landscape. There has been an increasing use of climate related imagery in the digital world in all its forms such as seen in 'news, social media, art, videos and visualizations'. These images have been believed to be important for engaging the public in the present as well as in the years to come. It is important for psychologists and climate change communicators to understand how this imagery impacts on the public psyche and how they use this imagery (Wang, et. al., 2018).

3.3 Appeal to the 'Co-benefits'

A recent cross cultural research (Bain, et. al., 2016) tried to investigate if conveying 'potential co-benefits of addressing climate change' could be a motivating factor for environmental action for both categories of people i.e. those convinced that climate change is happening and is real and also those who are unconvinced that climate change is real. They adopted an integrated approach where they assessed beliefs about co-benefits related to improvement in social conditions, such as "pollution, disease, economic development" and those related to the character of a community such as promoting "benevolence and competence". Data was collected from all those continents which are inhabited comprising 24 countries and included 6196 participants. The results showed that the two types of co-benefits i.e. economic development and scientific advancement (related to Development) and a more moral and caring community (related to Benevolence)", could motivate "public, private, and financial actions" in addressing climate change among both convinced and unconvinced participant. The findings were independent of the perceived importance of climate change, political ideologies held by participants and their age and gender. It was suggested in the study that by emphasizing the co-benefits, the environmental

communicators may motivate pro environmental action, without having to make efforts at changing the world views held by a person, which are often difficult or even impossible to change. In cases where there were no co-benefits, people likely to be affected by climate change action could be helped with the transition through jobs creation, training and government incentives.

3.4 Reframing the Messages

In psychology the importance of framing of a message was brought out in the Nobel Prize winning research by cognitive psychologists Daniel Kahneman and Amos Tversky in 1970s, who tried to understand the role of framing to understand risk judgments and consumer choices. In their research also, they found that "perception is reference dependent" (Kahneman, 2016).

Studies from the field of sociology and political communication have also brought out the fact that media interacts in important ways with the culture of a given place and decides how public views complex issues like climate change (Nisbet, 2009). Nevertheless, individuals do integrate these media portrayals with their own perspectives, experiences, partisan views, ideological orientations, social identities and the popular conversations with others (Ferree, Gamson, Gerhards, and Rucht, 2002, and Price, Nir & Cappella, 2005).

A particular frame will be effective in the midst of an audience if the frame is also relevant for them, e.g. using the religion and morality frames in climate change communication, many religious leaders have been convinced that climate change needs to be addressed since it is relevant to their faith as well as the communities following their faith. This frame worked since faith and religion are relevant for these religious leaders (Wilson, 2006).

In a survey experiment to understand the effects of communication framing on policy support for climate change, it was found that religious morality frames and economic efficiency frames were not effective while the frames that emphasized science, secure morality frames, and frames of economic equity were effective in increasing climate policy support. Moreover these latter frames were also effective in bringing together the ideologically divided groups in supporting climate change policy (Severson and Coleman, 2015).

Based on a pilot study conducted in India, it was suggested that climate change communication be framed in such a way that impacts of and solutions to climate change are highlighted. Some other suggestions included e.g. that key climate change terms get translated in local language, creating a positive scenario of the future, taking national pride in overcoming climate change challenges, relating climate change to basic needs like food and health, focusing on youth, promoting individual action and systemic changes, and not making big claims for renewable energies. Moreover, in the study it was concluded that people disliked the term 'dirty energy' to describe fossil fuel and it would be better to use alternative narratives to describe 'climate justice' since the

participants rejected the blame game that is often played out in climate change debates (Marshall, Shaw and Clarke, 2017).

It has been suggested that instead of saying climate change one can talk about the things that are important to the audience e.g. "fishing, flooding, farming, faith and the future". After talking about these things which seemingly matter more to the audience, one may subsequently enter into talking about global warming. As a result, the audience would be better able to connect the scientific evidence of a phenomenon, such as, global warming with own experiences and identities, and perceive it as significant for themselves and their particular reference groups (Kahan, 2012).

Moreover, it has been found that 'Information based' framings are more effective than the 'psychologically distant' climate change framing; and the role of trusted messengers is always very important (Corner, et al., 2015).

3.5 Rephrasing the Discourse

One may rephrase with the help of **metaphors**. The metaphors act as frames within which one can talk about climate change. The metaphors used by scientists to convey the reality of global warming may have a bearing on what people believe and how they act. In a study, it was found that using words like "war against" rather than "race against" in climate change related articles mattered. The use of these metaphors did have different impacts. When the metaphor 'war against' global warming was used, the audience agreed more with the fact that global warming is here and manmade. The group exposed to this metaphor was found to feel more urgency for bringing down emissions, and they perceived the global warming as posing a greater risk. They were more willing to bring about a change in their behaviours and reducing their carbon footprints when compared with the group exposed to 'race against' global warming. The researchers believed that the metaphor "war" evoked war related thoughts such as "death, destruction, struggle, defeat" and thus motivated them to avoid defeat or fight for winning this war against global warming, which is the opposite party in this war (Flusberg, Matlock & Thibodeau, 2017).

Using **analogies** such as suggesting that global warming is akin to a medical disease, may help in pointing out that the risks involved in global warming get multiplied by human actions, are progressive with time, have indicative symptoms, involve an uncertain future, treatment is required, involves some give and take if want to treat the problem, and the need for treating the underlying problem. It has been found that the people who read the medical disease analogy of climate change, agree more to the scientific information and explanation about global warming and its consequences, than the people who read a different analogy or no analogy at all (Raimi, Stern, & Maki, 2017).

Psychologists have tried to look into the climate change communication with reference to the question as to whether these messages need to **focus on the past or on the future**. In a study by social psychologists (Baldwin and Lammers, 2016), groups of people were made to read either a 'past focused' climate change related message e.g. "Looking back to

our nation's past... there was less traffic on the road" or a future-focused message, e.g. "Looking forward to our nation's future..... there is increasing traffic on the road". The results showed that the people who were self-proclaimed conservatives, who usually dismiss climate change messages as compared to the so called liberals, tended to agree to the need to change the ways that we deal with the planet more when they read past focused messages. On the other hand, the liberals liked the future oriented message frames. Significantly these frames only influenced their attitude towards whether action needs to be taken or not, but not on the environmental attitudes. The study also looked into images as the message frames for these messages and their impact on the audience. They found that the beliefs of conservatives became more pro-environmental when they saw past focused images (satellite images showing pictures from the past to the present day) as compared to their seeing 'future-focused' ones (satellite images showing pictures from present day to a future). However these two types of images made no difference to the attitudes held by the liberals. Thus it may be said that focusing on the future dangers of ignoring climate change now may be counterproductive for those who are opposed to the idea of climate change.

In climate change communication, there is not a fool proof frame for influencing every individual to be concerned about the changing climate. The scientist needs to be aware of his audience and their plausible reactions. The scientists may present the need for action in relation to climate change as a war and draw their attention to the wonderful picture of earth before it started getting affected by climate change (Shank, 2017).

3.6 Using "social learning" principles

Effectiveness of 'social learning' is a type of shared learning where the knowledge and experience of each participant is used for the learning process to take place. It is an action oriented process which takes place in a loop. The facts, knowledge, and experiences are shared and culminate into actions taken based on this shared knowledge. Thus the knowledge is shared not just for the sake of knowledge but based on the knowledge actions are taken to bring about desired change and this completes the loop. Feedback from action taken informs the sharing of information and experience and results in rethinking the way the issues related to climate change need to be approached (Harvey, et. al., 2012). At the community level, research needs to be undertaken to see if such type of social learning helps enhance environmental engagement of its members.

3.7 Mixing the Arts and the Sciences

The artists and creative persons can involve themselves with climate communication, through the use of their unique talents in creative ways, e.g. a popular iPad app was created by a famous DJ, Paul Miller, which saw more than 12 million downloads in 2016, as per reports. In his projects, the DJ used mathematical formulas to convert the data related to climate change parameters such as melting ice and declining river into tones and then remixing these to create music. As a result the listeners could have a "visceral experience" related to the environmental changes. In this way the artist could use data as

tool for promoting and interplay of arts and science and thereby making science available to layman by instilling life into science and art. The DJ took such projects in Antarctica, India, and the Arctic Circle (<http://bcnm.berkeley.edu>).

In a recent study by Illingworth and Kirsten (2018), the experts and non experts interacted through the media of poetry. The non experts were from underserved community groups who expressed their experience with environment change through poems. The poems were analysed using interpretive phenomenology, where the experts employed their own understandings and interpretations of environmental change to understand the dominant themes in these poems. The poems helped the experts and non experts engage in a dialogue about environmental change, and the poems revealed a lot about the non experts' understanding of environmental change and what they wanted from the experts.

In addition, there is a need to use some distraction while communicating about climate change. Talking about climate change need not be made to look serious always. It may be combined with a little fun to start with and bring the one can bring climate change later on in the message. One can learn from the ad- mad world where many ads bring in their product discussion only after the audience has had some fun and enjoyment. The climate communicators should attend to what they themselves like on many social media platforms, such as Twitter, Facebook or Instagram, and what has become popular on these media and pick cues from these to guide their own communication about climate change facts and experiences. This will enable them to communicate in a language that the audience can follow (Shank, 2017).

3.8 Considering Geographical Location of the Target Population

Even geographical location may play a role in deciding the impact of climate change message as revealed in a recent study done on a nationwide sample of 6,301 people in USA. The research focused on the 'public understanding of the scientific consensus' on climate change and used techniques that can estimate public opinion at state and local levels. It was found in this experimental study that when simple and clear messages, e.g. "97% of climate scientists have concluded that human-caused global warming is happening" were presented, the perception of the experimental group regarding the consensus about climate change amongst scientists, increased by 16% nationally. That is they increasingly acknowledged that the scientists do believe that climate change is happening. Moreover, when the data was segregated state wise and locality wise, the strongest positive perception for the simply stated facts came from many of the fossil fuel rich states such as West Virginia, North Dakota, and Wyoming. In addition the message about consensus amongst scientists was perceived well by conservatives and liberals alike. Earlier research had only focused on how such consensus messages about climate change, i.e. it being real, being man made and a cause for worry, are well accepted by public, but that they result in better response from disagreeing sections is an added knowledge out of this new study (Zhang, et.al., 2018).

People do not understand invisible processes such as ozone layer depletion. They are more concerned and preoccupied about immediate needs, requirements, gratifications and concerns. Perceiving it as a very real and immediate threat to our existence and well being will go a long way in moving people to action (Smith, 2015).

3.9 Imparting Training to the Scientists and the Public

To deal with the challenge of fakenews, some efforts such as developing critical thinking skills, media literacy, and fact checking skills among students. Media houses are more cautious while interpreting opinions (Bruggemann & Engesser, 2017). There is also a need to increase the scientific acumen of the general public so that there is no confusion about the facts (<https://www.nature.com>).

In order to educate the public better about their research findings, the scientists need to be trained and they need to make use of the available technology to engage in a dialogue with the public. Translational ecology is one such discipline which aims to develop skills in scientists whereby they may translate their research into public policy (Schlesinger, 2010). This will help address the concerns of the general public regarding a changing climate, and not just keep conveying facts related to climate change and its impacts to them.

A recent review (Amel, et. al., 2017) helps answer the question why humans have not done enough to deal with the problem of a changing climate despite extensive efforts since 1970s to educate people. The review points out that climate change communication has focused much on internal forces such as guilt and fear, attitudes, beliefs and emotions, than on external forces e.g. social standing, roles, cultural worldviews, habits, infrastructure, investment, etc. which may be involved in climate change action. In climate change action there is a social dilemma where the actions through which individuals may benefit but these actions are not in the collective interest. In addition, there is a uniqueness of climate change issue where this long term problem is not of immediate personal threat. It suggests that climate change messages need to be framed in accordance with their current impacts at local levels. It also emphasizes that humans do not protect the things which they are not aware of or which they do not value, hence there is need to ingrain a sense of value in the natural world. There is this new challenge of creating 'connection opportunities' in the face of rapid industrialization. The authors suggest making environmentally supportive behaviour a 'cool' thing to do.

The scientists also need to engage the public in policy formulation stage so that public feels engaged and takes responsibility for a sustainable future (Cook, 2013). Wider visibility of scientific information alone will not resolve the

issue of climate change. It is pertinent for scholars to understand and develop theories about communication, so as to communicate climate change facts and scenarios in effective ways, moving people, societies and its institutions to action.

4. Conclusion

Any climate change communication that reduces psychological distance about climate change amongst all the stakeholders in the climate change debate may help increase environmental engagement, which is the ultimate aim of climate change communication.

There is a need to look into the sources, the content and the participants of climate change discussion and discourse prevailing in a country since it might be influencing the dominant perceptions and engagements of the public with climate change in a country.

Communication needs to be made an interactive and participative process, where the receivers not only receive information but create and modify the information with the messengers thereby informing their messages with ground realities and experiences. Only this may bring a change in the way climate change communication would be received by the masses.

It is the people with less scientific and technical knowhow who would be more concerned about climate change if the communicators target them more, since they are less polarised and thereby may be better convinced to act on climate change.

Climate change is a challenge which needs to be tackled through engaging communities. It is possible only by conveying to the general public the real challenges of climate change and what lies in it for them if they undertake collective efforts at mitigating and adapting to the aftermath of climate change that has already happened.

The climate change communication needs to be sensitive to diverse interest groups in the society and still be able to convey the scientific facts and the need for action by framing messages which carry universal appeal. Creative writers, poets and satirists, dramatists, filmmakers and other performing arts' talents, may be roped in to talk about climate change, and their creativity used for this purpose.

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