
Understanding Public Perception Of Sea-Level Rise

Global mean sea-level has and continues to fluctuate immensely throughout time, notably sealevel has risen since the late 19th century. Sea-level changes can be driven by a variety of drivers, but those drivers can be classified into two general categories, eustatic and isostatic change. The former has a global effect, indicated by variations in the volume or masses of the oceans as a result of ice sheets melting or water redistribution between different hydrological reservoirs. On the other hand, the latter is caused by land uplift or subsidence and only has a local effect, known as relative sea level change.

At shorter timescales, ranging from decades to centuries, sea-level mainly changes due to anthropogenic climate change that leading to the warming of the oceans and glacier melting. Relative to the 1986 to 2005 baseline, global average sea-levels are predicted to rise between 0.26 m and 0.98 m by 2100. Understanding about climate change as a major driver of sea-level fluctuations, therefore, is necessary to grasp an idea about the risks posed by sea level change. It is important to note that the climate varies according to the amount of radiation emitted from the sun, changes in the Earth's axis around the sun, atmospheric factors, oceanographic factors, terrestrial factors, as well as human activities. Furthermore, the greenhouse gases that build up in the atmosphere can decrease the amount of thermal radiation which can escape into space, then raise the Earth's surface temperature. As sea-level is predicted to continue to rise in the near future, the term sea-level rise (SLR) therefore is used in this essay to describe an increase in the average level of the sea at the coast. Accordingly, concerns about the potential future physical and socio-economic impacts of SLR on coastal zone communities are also increased nowadays. The physical effects include flooding low-lying lands, erosion, retreat of shorelines and salt-water intrusion into freshwater aquifer, wetland loss, changes in water tables, whereas socioeconomic impacts can vary from property damage to injury and death. Understanding on how public perceptions about the risks posed by SLR is critical to have better approaches in disaster risk management.

As SLR risks threaten coastal communities to a greater extent, understanding their beliefs and responses becomes more critical to collate SLR risk management strategies. The risk management strategies are needed to decrease risk by decreasing potential damage. Without these, coastal populations are at increasing risk from storm attack and permanent inundation of land. Therefore, an initial step toward communication strategies that may encourage preparedness can be initiated by a good understanding of how people comprehend the risks. Dealing with risk perception appraisal means including several aspects from an individual, such as personal beliefs and values, demographic factors (gender, race, and age), political views, affiliation, trust, and culture.

Need help with the assignment?

Our professionals are ready to assist with any writing!

[GET HELP](#)

In order to understand public perception, a well established communication is a crucial factor both in assessing the understanding and risk perception of coastal communities as well as in shaping risk decision-making and response by authorities. SLR communication shares challenges with climate change communication, including the extent of the problem, the complexity of the science, and developing policy-driven solutions. Even though the risks of climate change induced SLR has been known for decades, however, between public acknowledgment and related policy response have considerably lagged. Furthermore, because of some issues, such as SLR information too general for people to relate to, and technical information is too specialized, messages about SLR risks thus may fail to satisfactorily inform and persuade communities to respond to consequences. According to Fischhoff (1995), effective risk communication means it is not only expressing accurate information, but also should raise awareness, enhance understanding, and move audiences to action. In other words, it should involve the recognition of perceptions, issues, and attitudes of residents at risk area, so that person or community decisions can be made based on the best available information about risks.

Methods

To elicit information about audiences understanding, attitudes, and perception about SLR risk, mental models approach is one of the robust ways to be used. Researches have shown that to effectively engage people through communications and enable changes in their beliefs and behaviors, one must first understand their mental models. Mental models compare lay and expert perspectives with the goal of identifying gaps in understanding that might be corrected. In addition, an expert model is an essential element in mental modeling. It comprises of comprehensive graphic representation that summarizes and integrates the current knowledge and understanding of experts about main factors of the study topic.

Along with effective communications in changing behavior, communicators can be framed in ways that encourage audiences to integrate the new information into their beliefs. Even though the mental model theory has been shown to provide a good fit for data sets representing reasoning processes, and provides a coherent conceptual framework for eliciting public opinions, however this method inevitably has some limitations and criticisms, such as researcher influence and an assumption of an expert model. Moreover, a common criticism of the mental model approach is that it depends too much on the knowledge deficit model of risk understanding and communication. This model says that the public knows too little to act appropriately, as well as misconceptions lead to inappropriate responses, and thus the public needs to be educated to respond appropriately. Critics of the knowledge deficit model indicate that a great many factors determine perceptions in addition to a person's knowledge of risk. Therefore, communications should respect values, feelings, and other contextual factors of each individual, not only pay attention to the facts that people know.

Need help with the assignment?

Our professionals are ready to assist with any writing!

GET HELP

The other qualitative methods are document-based evaluations and semi-structured interviews. These methods are also used to analyze audience interpretation of SLR risk and preparedness information. The main purpose of the document-based assessment is to examine the responses of the target audiences rather than to critique a specific document. Audience analysis not only can identify a profile and characteristic of the audiences but also reveal how they read and use documents. In addition, audience analysis is possible to support communicators to comprehend perceptions and attitudes about issues, reasons for disagreements about risks, and ways to frame messages for intended audiences. Many studies have been done to understand better how residents in vulnerable coastal areas respond to risk communications about SLR.

The study results conducted in Manteo and Washington (North Carolina, The United States) and the Severn Estuary (The United Kingdom) coastal communities can be two good examples. The qualitative approach that aimed to engage a diverse sample of participants demographically (e.g. races, education, income) who all at least 18 years old and was desirable that participants better have no apparent connection to the topic was used in the studies. Nevertheless, additional quantitative approach (public survey) was also conducted in the Severn Estuary research to explore perceptions amongst a broadly representative sample of people living within the study ar. In the North Carolina study, document-based evaluations questioned the participants about SLR effects and mitigation strategies tailored to perceived concerns of specific communities, whereas the individual interview was done to discuss their responses to the information and their perceptions about SLR risks. On the other hand, in the Severn Estuary case, the interview sessions were done to explore what people already perceived regarding SLR on the Severn Estuary. In the end, participants stated their level of the agreement relating to their opinions on how much they think about SLR, whose responsibility it is to respond, whether they trust the government to protect residents from flooding, and whether they are informed about SLR through the quantitative survey.

Public perceptions of sea-level rise

According to the study results, it was found that most of the participants are not feeling well informed about SLR. A mix of positive and negative comments acquired from the study samples in the North Carolina area has shown that the participants expressed a different level of awareness with SLR. Only a few had knowledge of its causes and consequences, and many did not understand the scientific information presented. Interview sessions revealed that negative feelings, such as anxiety and fere were associated mainly with attitudes prior to responding to the information. Interestingly, the topic of SLR was not particularly relevant to some participants. They think that many issues more important in their lives competed for attention. Most of the participants showed fatalism, skepticism, and fear, when they read information about SLR risk and felt, have no sufficient knowledge about actions need to take. Fatalism itself was a situation when participants expressed the view that nothing can be done about the problems posed by

Need help with the assignment?

Our professionals are ready to assist with any writing!

GET HELP

SLR. Overcoming fatalism and shifting communities toward adaptation is considered as a substantial challenge in SLR communication. Nevertheless, several people expressed optimism, and that feeling was a first step toward confronting the risk. Regarding SLR adaptation responses, participants have different opinions about government or private response. Some believed that the government should take action, but others feared about regulation.

The Severn Estuary study result has demonstrated that many aspects of public perception align with expert understanding. In term of the drivers and rates of SLR, most participants think that sea levels will rise, and half of them recognized the significance of combined events, such as a storm surge at high tide. Most survey respondents also agree that melting land-based ice is the primary cause of the global SLR. This finding is might not surprising considering it is a particular aspect of the science. Consistent with experts understanding of SLR physical impacts, the public is also agreed that SLR would be an overall risk to the Estuary and posing threats of flooding, erosion, and ecological change. Regarding socio-economic impacts, damage to properties was highly noticed among interviewees, and most of them also think that SLR will lead to difficulties obtaining home insurance and issues of emotional impacts. Renewable technologies were perceived by many respondents both experts and the public to be an effective mitigation measure that can be executed to adapt to SLR. Despite tremendous variation in the results, however, some patterns arise out.

Firstly, the SLR issue is not strikingly salient, and it is in line with research that shows climate change has low salience due to its complexity and distance in space and time. People more likely do not tend to think much about it, and the concern is low compared to other issues like the economy. One reason that many participants express little awareness about SLR might because they see it generally as something that will happen to other people in the future. On the one hand, a significant proportion of survey participants perceive that the causes and impacts of SLR are their responsibility. A larger portion nevertheless thinks that it is the government obligation to respond to the associated risk of flooding and others SLR impacts. Further, survey respondents rather focused more on mitigation and adaption measures which are the responsibility of the government (e.g. dredging and geoengineering) instead of the individual (e.g. personal lifestyle changes). This misperception of responsibility was accompanied by distrust in the government or agencies who perceived to be responsible. Same as the participants feeling in the North Carolina, the public around the Severn Estuary also expressed feel not well protected by flood defenses and had no idea in dealing with SLR. It suggests that the public has a critical trust in the agencies, by which they neither do not distrust them utterly nor uncritically accept their decisions, instead of considering them with sort of skepticism.

Approaches to react

The specific details on comprehension, beliefs, and preferences of residents of particularly

Need help with the assignment?

Our professionals are ready to assist with any writing!

GET HELP

vulnerable areas that were obtained from the studies are the key to the approaches to react. Important to note, communicators should be concerned with choosing ways to represent information. In designing communications outputs, communicators also need to be aware that aspects of validity recognized by the scientific community are not entirely necessary for many public audiences. The public perception of valid, relevant information, or even worth attending to more likely depends on their personal experiences, framed by their point of view. Since the public did not feel well informed about SLR, improved communications are highly necessary. Providing sufficient yet light information about the risks of SLR may be one step to increase public engagement. However, remember that public mental models contain many factors in addition to the knowledge that may act as barriers to engagement. Individuals who do not put their concern about SLR and see it as a distant threat may be more likely not to respond to information about it, and those who express low self-efficacy may feel that engagement is pointless.

Likewise, optimistic individuals may perceive mitigation and adaptation as unnecessary. Therefore, risk communications should make the issue to be more relevant and include information regarding the most effective actions that individuals can seize. There are currently some hindrances which public communication campaigns cannot address to achieve engagement, such as a lack of enabling initiatives, planning legislation, and coastal defense spending cuts. The most challenging tasks in dealing with adaptation to SLR faced by scientists and policy-makers might be in communicating the environmental risks itself. Improved communication must, therefore, be accompanied by initiatives that enable communities to respond to threats in appropriate ways and resulted in effective coastal management that is understood and trusted by the public. Accordingly, in order to be more effective in presenting information and encouraging audiences to make an action, SLR risk communication must contain the information that uses proper framing, compelling visuals, and accessible language which preferably fitted to the audience. To deal with fear and fatalism, communicators should also be considering information about problem-solving approaches which promote agency and provoke trustworthiness.

An audience-empathetic method that recognizes local experience, concerns, and perceptions may support to engage communities in the issues. To conclude, the approach methods that have been discussed above are favored to be used by communicators in developing risk information. Note that those methods can provide a strategy for eliciting information from real audiences about perceptions, mindset, previous knowledge, and comprehensibility of information provided. Additionally, the process of conducting mental models study is suited to engaging stakeholders on SLR topic and treats their interests and priorities with respect. Further, this can lead to formulating strategies and communications for shaping judgement and decision making to enhance credibility and develop better disaster risk management.

Need help with the assignment?

Our professionals are ready to assist with any writing!

GET HELP