



## Review article

# The role of social perception in disaster risk reduction: Beliefs, perception, and attitudes regarding flood disasters in communities along the Volta River, Ghana



Sherry Adomah Bempah<sup>a,b,\*</sup>, Arne Olav Øyhus<sup>b,1</sup>

<sup>a</sup> Kwame Nkrumah University of Science and Technology, Institute of Distance Learning (IDL-KNUST), Kumasi, Ghana

<sup>b</sup> University of Agder, Department of Global Development and Planning, Gimeoleon 25, 4604 Kristiansand, Norway

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## ABSTRACT

People's perceptions of natural, spiritual, and social phenomena are socially constructed. Social perception is important because it helps people to make sense of the physical and social world and therein interact with it. Earlier research specializing in the study of human behaviour has emphasized a linkage between people's perceptions and their behaviour. In this article, the authors employ a similar theory with the intent of proposing a theoretical framework that examines the factors that influence people's perception and attitude (mitigation and response) towards the hazards they face. This discussion is done on the premise of “culture”, “experiences” and “disaster risk reduction”. In addition, the authors examine the issues that influence local people's understanding of NADMO, an agency mandated by government to manage disasters and similar situations in their communities. A key argument of this paper is, people's seemingly “irrational” attitude towards a disaster situation or an institution has an underlying “rational” cause embedded in culture and the failure of entrusted authorities. Using a qualitative research strategy and a narrative approach, the perceptions of flood victims living along the Volta River of Ghana are discussed within the broader concept of community based disaster management.

## 1. Introduction

According to social scientists specializing in the study of social perception, people's perception or understanding of natural disasters is socially constructed [3]. This means that any understanding of how people perceive natural hazards should take into consideration the context within which natural hazards are experienced [17]. The context may include unique socio-economic and religious factors, direct and indirect experiences, and political characteristics that have influenced the formation of a community's risk perception. In this article, we present a discussion on the unique socio-cultural factors that shape flood victims perception of the causes of floods in their communities and of NADMO, the governmental unit that manages disasters in Ghana.

Disaster researchers have developed what may be called *elements of social perception in risk analysis*. According to Figueiredo et al. [5], social perception of natural hazards is *subjective* because the risk associated to a particular natural hazard may differ within and across communities depending on the socio-economic dynamics of those involved. In Taiwan, for example, victims' (most of whom are rural dwellers)

perception of risk associated with floods and landslides differs from that of the general population (most of whom are urban dwellers) [10]. The former have been directly exposed to floods and landslides, and as a consequence they perceive such events as carrying more risk than the general population who have had little exposure to it. Also, compared to male victims of flood and landslides in Taiwan, female victims consider such natural hazards to carry more risk than their male counterparts. This is because the women are largely exposed to it due to the impact it has on their domestic activities.

Another element of social perception in risk analysis is that it is *value-laden* because natural disasters are perceived or understood according to local values, beliefs and other cultural factors. Boholm [3] argues that culture is crucial to social perceptions of risk or natural hazards. As an example, among the Hima tribal group, Bantu-speaking people in south-western Uganda, women are not expected to come into contact with cattle as this is believed to cause death and sickness among the cattle [3].

Currently, it is an accepted practice within international disaster management that before embarking on any disaster risk reduction project in a community, differing perceptions should be recognized and

\* Corresponding author at: Kwame Nkrumah University of Science and Technology, Institute of Distance Learning (IDL-KNUST), Kumasi, Ghana.

E-mail address: [sherrybempah@gmail.com](mailto:sherrybempah@gmail.com) (S. Adomah Bempah).

<sup>1</sup> [arne.o.oyhus@uia.no](mailto:arne.o.oyhus@uia.no)

targeted. Many scholars have argued that people's perception of risk, although varying, is a crucial component of community risk assessment as it provides a venue to come to common understanding of risk scenarios. More importantly, the World Disaster Report of 2014 suggests that the “missing link” in current vulnerability analysis is culture.

Risk perception is the main driver of citizens' actions and hence a good source of information for determining behavioural outcome space (BOS) where BOS refers to the set of all individual behaviours in the face of a natural hazard. Pennings, Grossman (2008) [15]. Policy-makers rely on BOS when making major decisions in disaster situations [15]. Unfortunately, to date, local understandings and perceptions of flood risk have not been integrated in a substantial and proactive way in either policy or implementation processes [5]. However its inclusion, generally, adds legitimacy and effectiveness to social processes in the management of disaster, strengthens risk communication, and can serve as a stepping stone in efforts to adjust social behaviour [10,5].

Although many studies of risk perception have been carried out and a large body of literature exists, limited research has been conducted on social perceptions regarding the causes of natural disasters, such as floods, and their implications for disaster-risk reduction in local communities. This is particularly so regarding risk exposed communities along the Volta River of Ghana.

### 1.1. Culture – disaster risk reduction continuum

The World Disaster Report [21] describes culture as a way of framing complex behaviour and rendering them understandable. With respect to DRR, culture is explained as the beliefs, attitudes, feelings, experiences, values and narratives, and their associated behaviours, actions and day-to-day routines that are shared by most people in respect to threats and hazards [21]. The belief system is the mental acceptance of statements, opinions, propositions, or hard facts, with or without direct verification by experience or evidence [13]. It is important to note that people's behaviour can sometimes look irrational from the outside, but are rather rational, taking their belief systems into consideration.

Beliefs may be religiously, philosophically, or ideologically oriented. In this article, we focus on a belief system partly rooted in religion (thus concerning the causes of flood) and also on ideology (the mandated of NADMO). In each case scenarios, we relate how this invariably affect local mitigation and response to disasters.

About four decades ago, behavioural scientists researched into the sources of perception.

Secord and Backman [16] indicated that the previous experience of an individual with a particular stimulus (such as the case communities' past experiences and/or encounters with NADMO) affects the way in which the stimulus is perceived in any contemporary situation. In this context, past experiences and encounters between the local people of Buie and Nawuni and NADMO are essential preconditions that have the ability to shape the way the local people understand the role of NADMO. More especially, a person's perceptions of those with whom he or she interacts are important determinants of his or her behaviour. This indicates that local perceptions about the functions of NADMO in the case communities can translate into either action or inaction towards disaster response. To this end, a working relationship can be drawn between culture, represented by beliefs, perceptions, and attitudes towards disaster risk reduction (Fig. 1).

## 2. Context and methods

It is a common occurrence for communities such as Buie, Nawuni, Kubori, and Yagaba (all in the northern part of Ghana) to be almost submerged in floods but with flood victims still living close or even within the flood-prone areas (Fig. 2). This seemingly irrational behaviour raises questions regarding how flood victims interpret (or

perceive) their vulnerabilities with regard to the causes of flooding, and why they choose to live so close to flood-prone areas. The main objective of this article is to focus on the perceived causes of frequent flooding events in the case study communities.

### 2.1. A brief profile of the two communities

The Northern Region is Ghana's largest region in terms of landmass. It occupies c.70,384 km<sup>2</sup> of land, accounting for 29.5% of the total land area of the country. Its current population is 1,820,806, and the regional capital is Tamale [8]. Climatically, the rainy season is between May and October, and the region has an average annual rainfall of 750–1050 mm. The dry season is usually between November and April [6]. Agriculture accounts for the employment of 71.2% of the economically active population, and relatively few engage in industrial activities. The Northern Region is one of Ghana's poorest regions [8].

The predominant religion in the Northern Region is Islam, which is practised by 56.2% of the population, followed by traditional religion practised by 21.3%, and Christianity practised by 19.3% [7]. From observations, it was apparent that most of the flood victims in Buie and Nawuni wore religious symbols that suggested that they were Muslims. Also, occupation is indicative of the kind of religion practised – for example, an individual who is *Mallam*<sup>2</sup> is likely to be a Muslim.

In 2007, the Northern Region and other regions in the northern part of Ghana experienced prolonged dry spells followed by intense rainfall. The rainfall in August 2007 was more than the average amount of rainfall, which is usually in the range of 750–1050 mm (WFP, 2010). This led to serious flooding, causing 56 deaths and the destruction of 54,000 homes. Also, 325,000 people were affected. In 2009, floods displaced more than 121,000 people, 5104 houses were destroyed, 13 schools collapsed, and 30,000 acres of farmland were destroyed [12].

Nawuni and Buie are characteristic in terms of the socio-economic and climatic conditions of the Northern Region as a whole. Nawuni has a total population size of 529 (264 male, 265 female), 80 houses, and 71 households, with an average household size of 7.5. Buie (also known as Buie-Bridge) has a total population of 5692 (2734 male, 2958 female), 742 houses, and 971 households, with an average household size of 5.9 [8]. The reason for the disparity in household sizes between Nawuni and Buie was not explored in this study.

Nawuni and Buie are located near the White and Black Volta respectively, and are regularly affected by floods. In the Central Gonja District, where Buie is located, two people – a child and a pregnant woman – died during the floods of 2010. Their deaths were the result of a boat capsizing while they were travelling to a nearby hospital. They had to use this means of transport because the roads had been rendered unmotorable by the flood waters. Additionally, 25,112 people were displaced, 55 communities were affected, and 3234 houses collapsed at a total cost of GHC 20,678,000.<sup>3</sup> Furthermore, 1109 ruminants and some farming tools were washed away by the floods [11]. Official statistics from NADMO for the number of people, crops, houses, and livestock affected by floods in 2009 in Nawuni and 2010 in Buie alone are shown in Table 1.

### 2.2. Methodology

A qualitative research approach was used in the study. The choice of method was influenced by the researchers' quest to ‘see through the eyes of the people being studied’ ([4]: 285) and to access their local knowledge of the causes, effects, vulnerability, and mitigation responses to natural disasters in Ghana. The method was also used in the case study research design, as case studies are useful for examining

<sup>2</sup> *Mallam* is the traditional name of a man knowledgeable in the teaching of Islam.

<sup>3</sup> GHC 206,780 is equivalent to USD 142,606,985 under the exchange rate of 1 USD = 1.45 GHC in the year 2011.

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