

# Reflections on community communications for climate adaptation and preparedness through information and communication technologies

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## Talk Description<sup>2</sup>

Climate change poses risks to everyone and demands our collective attention. Actions to *mitigate* global warming, *adapt* to a climate that has already changed, and *prepare* for imminent climate events require everyone's engagement [1]. Communities, cities, and countries face an unprecedented demand for coordination and communication. Social network sites, instant messaging apps, Short Message Service (SMS) and e-mails [2] are information and communication technologies (ICTs) widely used for climate communication and coordination. However, these technologies' effectiveness and method of use are frequently questioned. Which kind of adaptation and preparedness actions can benefit these technologies? *What harm can happen to people when they are not used properly?*

Many reflections on climate change reside at the intersection between people's personal experiences and perceptions of climate change and the technologies used to communicate about such changes. For example, there are two concerns about human psychology and behaviour when facing climate change: *normalisation bias* [3] and *climate anxiety* [4]. Normalisation bias is a human trait that leads us to normalise (or get used to) new situations and not react to combat or change them. Climate anxiety is not always negative. Anxiety can signal the approach to the climate change threat and motivate people to take action. It becomes a psychological problem when it threatens mental health, for example, when it is difficult to control and interfere with sleep, work and socialisation. One could say that climate anxiety can become an excessive worry, while normalisation leads to excessive carelessness. *Could information and communication technology design or method of use contribute to rising climate anxiety or normalisation bias?* There are fragments of evidence that allow us to think about these connections, but they still must be better investigated.

Some climate authorities adopt face-to-face communication, while others use communication technologies extensively. Civil Defense of Belo Horizonte, in Brazil, continually uses Telegram, WhatsApp, Twitter, Instagram and SMS. Many other Brazilian climate authorities widely use the X Social network in preparation for climate events. The effectiveness of such use is questionable. The study *How Citizens Engage with the Social Media Presence of Climate Authorities: The Case of Five Brazilian Cities* [1] investigates the characteristics of citizen-authority communication seeking preparedness activities and citizen awareness about climate event risks via such technologies. Communication can be analysed using top-down versus bottom-up information flow and one-way versus two-way communication. In top-down information flow, only authorities start the interaction (e.g. authority profile on social media). In bottom-up information flow, citizens may start the interaction and make their needs emerge (such as when they use hashtags). In one-way communication, authorities deliver a message to a large audience without expecting a response (e.g. SMS), while in two-way communication, they engage by exchanging information, ideas, and feedback (e.g. "Contact us" services). The social media presence built by the authorities is mainly a top-down, one-way and one-size-fits-all approach, with the same message regardless of the city neighbourhood the citizen is in.

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Let us focus on citizens' perceptions and behaviours that can emerge in this context. What drives citizen engagement with climate authorities? Four significant situations [1]: 1) disagreeing with information about their locations; 2) complementing the information with their locations; 3) Updating with current information Informing about donation actions; and 4) expressing thanks. People are concerned about the quality of the published information. Another example is that during recent climate events, SMS services have been questioned about their effectiveness in informing the at-risk population. What do technologies need to be like so that they can effectively contribute to raising awareness among communities about imminent climate risks in their locations? After climate disasters, it is not uncommon to find reports in the Brazilian media of people saying they were unaware of the risks [7].

Climate change imposes an unprecedented challenge as climate communications address risks on an impressive scale, and their comprehension by people may require some level of understanding of scientific knowledge and the scientific method [5]. This situation may demand transitioning from a communication-based model to a co-participation-based one, as employed by community science and citizen science approaches [7][8][9]. So, the ideal solution is not bottom-up or top-down but *together*. It is also essential to avoid a dependency on a cooperative platform since the community has no control over their design and governance. For example, recent changes to the social media platform have imposed barriers that compromised the activity of citizens and climate authorities, such as limits on the number of publications and views and difficulties in operations via the Application Programming Interface [1].

Finally, we must reflect on how technologies can allow citizens and authorities to communicate adequately via technology, building communities' resilience to climate risks and enabling them to be heard in their diversity, specificities, and needs. For example, there is much evidence that the systems best suited to the climate authority's purposes differ from what people generally use [1][9]. For sustainable use, it is essential that this sort of social computing technology is not used only instrumentally but that it builds a space for online coexistence [10]. Furthermore, it cannot be assumed that a "one-size-fits-all" approach is adequate to respect diversity. There must be a shared space, but one in which the individualities of communities can be fully considered. Individualities include, for example, dialect differences, geographical differences, climatic differences and socioeconomic differences. A prior and static mapping of the relevant factors is impossible since some differences may become evident only during the use. Technology must also allow these factors to emerge organically and reconfigure itself according to them.

Climate communication is an evolving activity that is studied while climate change unfolds and climate actions are taken. Communication technology should be assessed based on real-use experience and improved based on evidence. People should actively participate in this process [6][11]. The science "of the people, by the people, for the people" should be practised as established by action research, participatory Science, community science, citizen Science, o-design, and participatory design approaches.

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