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

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## Talk Description[2]

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 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, but it becomes a psychological problem when it threatens mental health. 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.

This talk focuses on actions conducted through technologies and the positive and negative behaviours that can emerge in this context. Human characteristics such as community formation, the development of different communication styles, and the desire to participate meaningfully are analysed. The characteristics of technologies, such as single and dual interaction channels and top-down and bottom-up interaction resources, are also analysed. One example of this approach to climate change and technology is the study *How Citizens Engage with the Social Media Presence of Climate Authorities: The Case of Five Brazilian Cities* [1], which investigates the characteristics of citizen-authority communication seeking preparedness activities and citizen awareness about climate event risks. 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 require transitioning from a communication-based model to a co-participation-based one, as employed by community science and citizen science approaches [6][7].

Some climate authorities adopt more face-to-face communication, while others make extensive use of communication technologies, such as the Civil Defense of the city of Belo Horizonte, which continually uses Telegram, WhatsApp, Twitter, Instagram and SMS. Brazilian climate authorities widely use the X Social network in preparation for climate events. The effectiveness of such use is questionable, but as an aggravating factor, recent changes to the platform have begun to impose barriers that have compromised

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[2] *Description of questions and arguments for talks at LSD/UFCG and PSVS.*

the activity of these climate authorities, such as limits on the number of publications and views and difficulties in operations via the Application Programming Interface (API). 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 dangers.

Finally, this conversation reflects 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][8]. 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 [9]. 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.

## References


[1] Ponciano, L. (2023). How citizens engage with the social media presence of climate authorities: the case of five Brazilian cities. npj Climate Action, 2(1), DOI: https://doi.org/10.1038/s44168-023-00080-3

[2] Intrieri, E., Dotta, G., Fontanelli, K., Bianchini, C., Bardi, F., Campatelli, F., & Casagli, N. (2020). Operational framework for flood risk communication. International journal of disaster risk reduction, 46, 101510.

[3] Luís, S., Vauclair, C. M., & Lima, M. L. (2018). Raising awareness of climate change causes? Cross-national evidence for the normalisation of societal risk perception of climate change. Environmental Science & Policy, 80, 74-81.

[4] Clayton, S. (2020). Climate anxiety: Psychological responses to climate change. Journal of anxiety disorders, 74, 102263.

[5] Ponciano, L. (2022) A participação popular nas Ciências Exatas e Informática e seus efeitos no conhecimento científico e tecnológico. In: BRUCK, Mozahir Salomão; CARDOSO, Marisa; DOS-SANTOS, Marcus Vinicius (org.). Dossiê contra o negacionismo da ciência: A importância do conhecimento científico. 1. ed. Belo Horizonte: Editora PUC Minas, Capítulo 21. ISBN: 978-65-88547-22-9 Disponível em: https://books.google.de/books?id=uNluEAAAQBAJ

[6] Eitzel, M., Cappadonna, J., Santos-Lang, C., Duerr, R., West, S. E., Virapongse, A., ... & Jiang, Q. (2017). Citizen science terminology matters: Exploring key terms. Citizen science: Theory and practice, 1-20.

[7] Ponciano, L. (2018). A Ciência Cidadã no Brasil. Jornal Estado de Minas, Caderno de Opinião, p. 7-7, Belo Horizonte, 01 maio 2018.

[8] Eachus, J. D., & Keim, B. D. (2019). A survey for weather communicators: Twitter and information channel preferences. Weather, climate, and society, 11(3), 595-607.

[9] Ponciano, L., & Andrade, N. (2018). Perspectivas em Computação Social. Computação Brasil, (36), 30-33.