



OPEN ACCESS

EDITED AND REVIEWED BY
Albie Miles,
University of Hawaii–West Oahu, United States

*CORRESPONDENCE
Anne Namatsi Lutomia
✉ alutomia@purdue.edu

RECEIVED 09 May 2023
ACCEPTED 22 May 2023
PUBLISHED 06 June 2023

CITATION
Bello-Bravo J, Pittendrigh BR and Lutomia AN
(2023) Editorial: Information and
communication technologies (ICT): enabling
resilience in the face of climate change in a
COVID-19-impacted world.
Front. Sustain. Food Syst. 7:1219527.
doi: 10.3389/fsufs.2023.1219527

COPYRIGHT
© 2023 Bello-Bravo, Pittendrigh and Lutomia.
This is an open-access article distributed under
the terms of the [Creative Commons Attribution
License \(CC BY\)](#). The use, distribution or
reproduction in other forums is permitted,
provided the original author(s) and the
copyright owner(s) are credited and that the
original publication in this journal is cited, in
accordance with accepted academic practice.
No use, distribution or reproduction is
permitted which does not comply with these
terms.

Editorial: Information and communication technologies (ICT): enabling resilience in the face of climate change in a COVID-19-impacted world

Julia Bello-Bravo¹, Barry Robert Pittendrigh² and
Anne Namatsi Lutomia^{2*}

¹Department of Agricultural Science Education and Communication, Purdue University, West Lafayette, IN, United States, ²Entomology Department, Purdue University, West Lafayette, IN, United States

KEYWORDS

COVID-19, climate change, food resilience, social justice, ICT—information and communication technologies

Editorial on the Research Topic

[Information and communication technologies \(ICT\): enabling resilience in the face of climate change in a COVID-19-impacted world](#)

Among COVID-19's many impacts, one of its most enduring may be its weakening of poorer people's resilience and adaptability to worsening climate change. International development initiatives, such as the Sustainable Development Goals, have also been hampered by the pandemic, with secondary and direct effects creating new difficulties and putting current and future resources for development under strain. Information and communication technologies (ICTs) offer excellent opportunities for intervening in these situations with extensively up-scaled access and uptake of information (Bello-Bravo et al., 2022). Such information includes climate-change-adaptive approaches, research for development (R4D) innovations, the adaptation of indigenous knowledge, and best practices to mitigate and reverse climate change.

The four papers in this issue add to the range of responses to these challenges, especially by focusing on the *social* pillar of sustainability (and not exclusively on the technical or economic aspects). This is an essential emphasis for several reasons. First, the social impacts of COVID-19 and worsening climate change are not something still in the future; they are occurring already and require offsets and solutions immediately and are by no means economic only. Second, notwithstanding the benefits of technical/economic approaches for achieving the SDGs and food security, people's health, and adequate living infrastructures generally, if such efforts do not enable *social* wellbeing for communities and the people who inhabit them, the result may yield an only "dehumanized survival" ["entmenschlachte Leben"], which humanity cannot bear (Heydorn, 1980). Lastly, the approaches offset a tendency to over-prioritize the financial aspect of the economic pillar, where "economic" perspectives dominate 'sustainability' and 'social' perspectives by a factor of 2 and 4.67,

respectively” (Luetz and Walid, 2019, p. 301). Social wellbeing, wealth, and prestige in human cultures existed long before the economic in any strictly monetary sense (Reiss-Schimmel, 1999; Murdin, 2018).

Investigating pathways for climate resilience in rural Kenya, Ngare et al. find that despite otherwise well-drafted national policies for climate-change mitigation, “very little of this information has been disseminated to the general public,” especially in rural areas. This reflects colonial and post-colonial historical patterns that disadvantage rural and global “peripheries” compared to urban and “core” areas (Langa, 2023). Positioning the impacts of COVID-19 and worsening climate change impacts within their global contexts, the authors address the many familiar challenges facing African countries from those impacts, especially highlighting that “Africa contributes <5% of the greenhouse gases responsible for climate change, but it is the most vulnerable continent to the consequences.” Accordingly, they recommend that in-country buy-in by people around solutions for climate and COVID-19 requires effective communications drawing on scientific and locally based traditional ecological knowledge (TEK) and indigenous people’s knowledge (IPK). This expressly involves “finding ways to simplify [a communication] while conveying its full significance” without falsifying it. Locally translated animated educational videos have a demonstrated capacity to do this at decreasing unit costs to up-scale the information (Rodríguez-Domenech et al., 2019; Bello-Bravo et al., 2022).

Ngare et al. emphasizes on the impacts of neo-liberalized globalization on climate change are well-placed, given a key finding in the contribution by Alam et al. of *decreasing* motivation among agri-food systems producers. Reviewing the many technical disruptions to agri-food systems from climate change and COVID-19 illustrates how decreasing motivation before the enormity of these problems is a significant obstacle to effective action (Malin and Kallman, 2022) and related immediately to the *social* pillar of sustainability: less hopeful people will be less motivated to take up any technical or economic solutions to problems facing them. Stressing the ability of ICTs to reach and empower rural populations, the authors also specifically recommend that “policymakers should assess the long-term consequences of export controls and foreign trade restrictions”; as in Ngare et al. this points to globalization’s impacts on (local) agri-food systems.

Pivoting from impacts, Sekabira et al. ask whether digital services are a good fit for insect pest management (IPM) for smallholder farmers in Africa. Importantly, they frame their answer to include both the social and environmental factors of sustainability and concerns around the feasibility of any digitization recommendations; hence, although non-synthetic alternatives to environmentally and socially more harmful synthetic pesticides can yield slightly smaller crop yields, “it is more apparent that slightly smaller crop yields actually yield better overall livelihoods.” When

highlighting technical solutions, the authors carefully indicate the importance of socially equitable solutions, solutions that reach *all* stakeholders, and ones that resist factors and policies that “perpetuate and keep in place unworkable practices that maintain a disadvantageous status quo.”

Lastly, Morais-da-Silva et al. investigate the generally optimistic prospects for non-meat sources of alternative proteins as a contributor to climate change solutions; this, given research underscoring industrialized meat production’s multiple ecological harms (not the least of which is exacerbating climate change) and the prevailing false belief that meat is necessary for the human diet. The latter, as well as disruptions or the elimination of the livelihoods of those producing meat, require “better understanding the social impact of a potentially disruptive technology, [like] alternative proteins.” As such, along with the technical and consumer-based issues around quality, “specific public policies are likely required to support [current meat] producers and make the transition smoother and more efficient.” Highlighting the social impacts of alternative proteins is indispensable if buy-in toward changes to eliminate climate change will occur. Once again, effective messaging will be equally indispensable.

These studies take a needed “social turn” that more directly addresses the social pillar of sustainability and ICTs’ ability to contribute to eliminating climate change. Their emphasis models a critical one for achieving the SDGs and grounding Earth’s prospect for our species’ future.

Author contributions

All authors listed have made a substantial, direct, and intellectual contribution to the work and approved it for publication.

Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Publisher’s note

All claims expressed in this article are solely those of the authors and do not necessarily represent those of their affiliated organizations, or those of the publisher, the editors and the reviewers. Any product that may be evaluated in this article, or claim that may be made by its manufacturer, is not guaranteed or endorsed by the publisher.

References

Bello-Bravo, J., Medendorp, J., Lutomia, A. N., Reeves, N. P., Tamò, M., and Pittendrigh, B. R. (2022). Dramatically increased accessibility and decreased cost-per-

person impacts are needed for scaling IPM in Africa. *Curr. Opin. Insect Sci.* 54, 100971. doi: 10.1016/j.cois.2022.100971

Heydorn, H.-J. (1980). *Überleben durch Bildung: Umriss einer Aussicht [Survival through Bildung: Outline of a Prospect] Ungleichheit für alle: zur Neufassung des Bildungsbegriffs* (Frankfurt am Main, DE: Syndikat), 282–301.

Langa, N. (2023). Dependency theory: an evaluation of the period-based changes in the utilization of maternal health care and neonatal mortality in Tanzania between 1991 and 2016. *Int. J. Soc. Determ. Health Health Serv.* 53, 183–194. doi: 10.1177/27551938231156033

Luetz, J. M., and Walid, M. (2019). “Social responsibility versus sustainable development in United Nations policy documents: a meta-analytical review of key terms in human development reports,” in *Social Responsibility and Sustainability*, eds W. L. Filho (Cham, CH: Springer), 301–334.

Malin, S. A., and Kallman, M. E. (2022). Enforcing hopelessness: complicity, dependence, and organizing in frontline oil and gas communities. *Soc. Probl.* 2, 32. doi: 10.1093/socpro/spac032

Murkin, L. (2018). *Money Had to be Invented How Money Talks*. London: Routledge, 87–102.

Reiss-Schimmel, I. (1999). Être et avoir: Stades d'évolution psychique. *Revue Internationale de Psychosociologie* 5, 25–35.

Rodríguez-Domenech, M. Á., Bello-Bravo, J., and Pittendrigh, B. R. (2019). Scientific Animations Without Borders (SAWBO): an innovative strategy for promoting education for sustainable development. *Sustain. Sci.* 14, 1105–1116. doi: 10.1007/s11625-018-0624-8