



OPEN ACCESS

EDITED AND REVIEWED BY
Richard G. Hunter,
University of Massachusetts Boston,
United States

*CORRESPONDENCE
Kinga Igloi
✉ kinga.igloi@unige.ch

SPECIALTY SECTION
This article was submitted to
Emotion Regulation and Processing,
a section of the journal
Frontiers in Behavioral Neuroscience

RECEIVED 24 March 2023
ACCEPTED 27 March 2023
PUBLISHED 12 April 2023

CITATION
Igloi K, N'Diaye K and Burguiere E (2023)
Editorial: How can neuroscience help to turn
the tide of the climate crisis?
Front. Behav. Neurosci. 17:1193106.
doi: 10.3389/fnbeh.2023.1193106

COPYRIGHT
© 2023 Igloi, N'Diaye and Burguiere. This is an
open-access article distributed under the terms
of the [Creative Commons Attribution License
\(CC BY\)](https://creativecommons.org/licenses/by/4.0/). 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: How can neuroscience help to turn the tide of the climate crisis?

Kinga Igloi^{1*}, Karim N'Diaye² and Eric Burguiere²

¹Basic Neurosciences Department, University of Geneva, Geneva, Switzerland, ²Sorbonne Université, Institut du Cerveau—Paris Brain Institute—ICM, Inserm, CNRS, AP-HP, Hôpital de la Pitié Salpêtrière, Paris, France

KEYWORDS

climate, cognitive bias, neurophysiological adaptation, behavioral neuroscience, decision making

Editorial on the Research Topic

How can neuroscience help to turn the tide of the climate crisis?

The climate crisis is one of the most pressing challenges of our time, and it needs to be addressed from different perspectives. How does it come that the human brain cannot interpret this menace and act against it quickly to avoid the (massive) harm that may ensue? Fundamentally it is up to each individual on our planet, from farmers, to city residents and decision makers that could add up to ensure global behavioral changes toward more sustainable environmental policies. The scope of this topic is to bring together researchers from different neuroscientific viewpoints and integrative levels (from molecular neuroscience to human behavior), with the aim to find new approaches that may help act on the climate crisis from a neuroscientific perspective. The four published articles take different angles to address this issue, two articles focus on adaptive strategies: one showing organisms modification in fruitflies for phototactic choices depending on environmental lighting conditions (Krams et al.) and the other at a more general cellular, molecular and functional levels of marine species adaptation in response to ocean acidification (Michaël and Bernard). These articles illustrate existing mechanisms that may mediate adaptive responses to environmental changes. The two other articles focus on how neuroscience may explain and possibly influence our environmental-related choices and behaviors. Leeuwis et al. address neuroscientific underpinnings of consumer attitude and how this attitude could be acted on using affective conditioning techniques. Munuera and Burguière focus on the dopaminergic nervous system and how it is involved in cognitive biases that partially mediate our inconsistent behaviors regarding climate change, and explains why it difficult for us to act now for something that will happen in a long time. These articles shed light on how neuroscience may explain our current behaviors, but importantly also suggest new avenues based on neuroscientific methods that may help modifying our behaviors (by strategic changes using conditioning techniques, as in Leeuwis et al.) but also through the interaction of the dopaminergic system with higher-order cognitive functions that may influence positively our social behaviors if linked to short-time pro-environmental outcomes (Munuera and Burguière).

By exploring the neuroscientific backgrounds of adaptive behaviors and of complex decision-making processes that relate to sustainable and less-sustainable decisions in our everyday lives, neuroscience (including behavioral science), is a crucial and so-far little-recognized component that could help turn around the tide of the climate crisis.

Cognitive biases and nudging techniques that are at the core of behavioral approaches to consumer-related behavior in the climate crisis would largely benefit from being promoted further to the general public. Neuroscience can provide insights into the cognitive and emotional processes that underlie pro and anti-sustainable behaviors but also climate change denial. Taken together, the selection of these articles provides an illustration of the current neuroscientific potential of adaptive and behavioral components related to the fight against climate change.

Author contributions

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

Acknowledgments

We thank authors of the papers published in this Research Topic for their valuable contributions and the referees for their

rigorous review. We also thank the editorial board of the Frontiers in Behavioral Neuroscience section for their willingness and support to setup this original topic.

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.