



Waters that Divide: Climate Refugees and Sea Barriers

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Abstract

The issue of climate refugees needs urgent attention at global level. After illustrating the complex relationship between climate change and migration, this article analyzes the issue of climate refugees from a socio-political and legal point of view, arguing for the need to address this issue both at regional and international level but also to discuss the issue directly with citizens through the innovative approach of game-based learning.

Keywords Climate refugees · Climate change · Climate-induced migration · Science diplomacy · Game-based learning

Human activities have caused dramatic climate change in several regions of the globe. At the same time, climate change severely impacts human societies that are, in different parts of the world, often vulnerable and barely able to adapt to it. One of the most discussed impacts of climate change on human society is represented by climate-induced migration, which is expected to increase in the second half of the twenty-first century, as a consequence of the increase in frequency and intensity of climate-related hazards (such as sea-level rise, coastal flooding, droughts, heat waves and heavy precipitations).

The international community is now faced with the challenge of climate refugees, a term that is currently debated, considering that people forced to flee their country for climate-related reasons are not formally recognized as refugees in the 1951 Geneva Convention Relating to the Status of Refugees.¹ However, if Countries fail to protect people from climate change's harmful effects (with consequent

migrations), this can lead to the violation of their fundamental rights (such as the right to life). Therefore, these people can indeed be considered climate refugees and States need to build adequate global governance arrangements to protect them, starting with considering migration as a phenomenon driven by multiple factors, which requires a more flexible definition in order to allow this vulnerable group to receive international protection.

To contribute to the debate on climate refugees, the National Institute of Oceanography and Applied Geophysics - OGS² developed the project CREATE – ‘Climate Refugees Exist: let's stArt to Talk about it | SciEnce Diplomacy as an innovative tool to unlock the potential of dialogue with citizens and society’, co-funded by the Central European Initiative (CEI).³ This intergovernmental forum for regional cooperation supported the initiative as a positive example of science diplomacy to address a complex issue, considered a

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¹ <https://www.unhcr.org/media/28185>, accessed 3 May 2023.

² <https://www.ogs.it/it>, accessed 3 May 2023.

³ www.cei.int, accessed 3 May 2023.



priority for eastern and south-eastern Europe, a region especially vulnerable to climate-driven migration.

Climate Change and Migration: Not a Linear Relationship

The Intergovernmental Panel on Climate Change (IPCC) in its Sixth assessment report in 2021 (IPCC 2021) has clearly stated that human activities have unequivocally warmed the atmosphere, ocean and land, producing dramatic climate change in different regions of the planet. In particular, the report acknowledges that the overall increase in global surface temperature associated with human activities (about 1.1 degree Celsius higher in the last decade with respect to the end of nineteenth century) has represented an important driver of the observed retreat of the continental glaciers over the land, the decrease of the ice sea coverage in the Arctic region, the sea level rise in several coastal areas, and the increase in the frequency and intensity of hot extremes (for example atmospheric and marine heatwaves) as well as of heavy precipitations, drought, fires and compound flooding events (IPCC 2021).

Conversely, the IPCC working group II (WGII) in its report on ‘Impacts, Adaptation and Vulnerability’ (IPCC 2022) discusses the predisposition for specific human systems to be adversely affected by climate change introducing the concept of ‘vulnerability’.⁴ According to IPCC (2022), vulnerability is a complex concept since its definition encompasses a variety of different elements and factors, including the lack of capacity to cope with and adapt to climate change. However, according to the report, nowadays approximately more than three billion people live in regions of the world characterized by a significant level of vulnerability to climate change-related hazards although vulnerability itself may vary significantly among different regions and even within the same area and population. Moreover, vulnerability tends to be significantly higher in those areas characterized by pre-existing limited access to basic services and resources, presence of violent conflicts, poverty and governance challenges and high density of climate sensitive livelihoods (fishing communities and small farms). Several areas characterized by high vulnerability have been identified in West, central and East Africa, South Asia, central and South America as well as in small islands, developing states and even in the Arctic region. In those areas, vulnerability can be further exacerbated by the presence of strong inequalities associated with ethnicity and gender.

The report further stresses that the exacerbation of social inequalities gives climate change the potential to trigger fast and significant social transformations and thus drive human

societies from peaceful to violent situations, from a democratic state to an authoritarian regime, even forcing populations to migrate (IPCC 2022).

On the other hand, the report itself acknowledges the difficulties to identify a clear cause-effect relationship between climate change and migrations. In fact, although studies have already identified climate-related hazards (such as tropical cyclones, flooding, droughts) as drivers of significant displacements in specific areas of the globe (sub-Saharan Africa, parts of South Asia and South America), IPCC (2022) also acknowledges that societal responses to specific climate hazards remain strongly dependent on economic, social, political and demographic processes taking place within the specific population. In fact, even in case of significant disasters, migration is often considered as a response to the consequences of the disaster itself (such as loss of resources, employment or the ability to stay in the area) rather than a response to changes in the frequency or intensity to life-threatening events.⁵ Therefore, migrations associated with climatic hazards are still considered a minor phenomenon as compared to internal migration and nowadays still primarily take place between neighboring states which share longstanding cultural ties and labour-migration agreements (IPCC 2022).

However, the report itself recognizes that the situation could dramatically change in the second half of the twenty-first century as a consequence of the worsening of the frequency and intensity of several climate related hazards (drought, coastal flooding, heatwaves and so on) as projected by several modelling simulations (IPCC 2021). Although the main features of future climate-related migration are expected to continue differing by region and over time, according to climate drivers, vulnerability of exposed populations, international migration policies and patterns of population growth, climate change is expected to increase the frequency of migration, especially from internal and rural to urban areas (IPCC 2022). For example, the report features estimates according to which 17–40 million people could internally migrate within sub-Saharan Africa in 2050 with 1.7°C global warming. This number will further increase to 56–86 million for 2.5°C global warming due to water stress and reduced crop productivity in the African continent. The acceleration of sea level rise and the increase of coastal flooding events have been identified as key drivers of the projected net migration of 750,000 people out of the East African coastal zone between 2020 and 2050. Moreover, the report shows that asylum applications are also projected to increase in the second half of the twenty-first century. For example, the number of asylum seekers to the European Union (EU) could be seven times higher under the

⁴ <https://apps.ipcc.ch/glossary/>, accessed 2 May 2023.

⁵ [https://www.europarl.europa.eu/RegData/etudes/STUD/2020/655591/IPOL_STU\(2020\)655591_EN.pdf](https://www.europarl.europa.eu/RegData/etudes/STUD/2020/655591/IPOL_STU(2020)655591_EN.pdf), accessed 2 May 2023.



Representative Concentration Pathways (RCP) 4.5 emission scenario with respect to RCP2.6 or 34% higher (relative to 2000–2014 period) across Africa at 2.2°C global warming level.

Building a Global Governance for Climate Refugees

Nowadays climate refugees have not yet been formally recognized under international law. In fact, the 1951 Geneva Convention, which defines the refugee status on the basis of a well-founded fear of being persecuted for reasons of race, religion, nationality, membership of a particular social group, or political opinion, does not include climate change as a reason for people to flee their country and seek asylum elsewhere.⁶ However, there is little doubt that climate change will increasingly become a reason for migration in addition to other drivers for displacement, such as armed conflicts or natural disasters, that could be in turn exacerbated by climate change.

The international community should try to find appropriate solutions to the issue of climate refugees before it becomes too late to face the consequences of climate-induced migration at global level.

Although the mobility of people remains primarily an internal phenomenon, in several cases climate refugees need to move outside their country of origin, since the government does not adopt the necessary measures to protect them. For example, in the context of disasters or environmental degradation, States often fail to ensure planned relocations of people within the national borders because it is too expensive or because of lack of political will.⁷

Climate refugees who sought international protection have not succeeded so far in obtaining a formal recognition of their status. However, a landmark ruling of the UN Human Rights Committee (HRC), published on 7 January 2020, recognized for the first time that forcibly returning a person to a place where their life would be at risk due to the adverse effects of climate change may violate fundamental human rights. Specifically, the ruling on the case of Ioane Teitiota from Kiribati (one of the countries most threatened by sea level rise), stated that returning Mr. Teitiota to his country would violate the right to life under article 6 of the International Covenant on Civil and Political Rights

(ICCPR).⁸ While the judgement is not formally binding on countries, it points to legal obligations that States have under international law, shedding a light of hope on the possibility that climate refugees may receive some form of international protection in the near future.

The answer to climate-induced migration needs to be found at international level, pushing forward the discussion on building a global governance for climate refugees. There is currently no international organization or agency dealing exclusively with climate-induced migration, even though the International Organization for Migration (IOM) and the UN Refugee Agency (UNHCR) have started to focus on this issue. At the same time, climate refugees have not been at the centre of the agenda of intergovernmental fora, such as the Group of Twenty (G20). A significant problem is that governments are unwilling to recognize the status of climate refugees for fear of unprecedented migration flows. Yet, the danger of uncontrolled migration caused by climate change will be even more serious if international consensus on how to deal with this phenomenon is not found.

Another difficulty is that there is no agreement on how to distribute climate refugees among the countries of destination and on who would pay for these planned relocations. The issue is more complex if one considers that the areas most affected by climate change are found in developing countries. Decision-makers in such countries often claim that the industrialized States should be the ones tackling the climate crisis and paying for its consequences since their early industrialization created a great part of the carbon burden which is causing global warming and climate change.⁹

Therefore, the effects of migration as a consequence of climate change, which is a global phenomenon, have to be addressed at international level. Migration needs to be understood as a phenomenon induced by a combination of interrelated factors, which makes the recognition of the existence of climate refugees necessary by establishing adequate global governance arrangements to ensure that this vulnerable group can benefit from international protection.

Eastern and South-eastern Europe as an Interesting Case Study Area

While climate-induced migration is becoming—and will be more and more in the future—an international issue, its impacts and consequences can be observed and assessed also on the regional scale. In this regard, central, eastern and

⁶ <https://www.ohchr.org/en/instruments-mechanisms/instruments/convention-relating-status-refugees#article-1>, accessed 27 April 2023.

⁷ https://environmentalmigration.iom.int/sites/g/files/tmzbd11411/files/PLANNING%20RELOCATIONS_TOOLBOX_SPLIT%20VERSION.pdf, accessed 27 April 2023.

⁸ <https://www.ohchr.org/en/press-releases/2020/01/historic-un-human-rights-case-opens-door-climate-change-asylum-claims>, accessed 27 April 2023.

⁹ <https://www.theguardian.com/commentisfree/2021/nov/11/climate-refugees-far-right-crisis>, accessed 27 April 2023.



South-eastern Europe, whose countries, together with Italy, compose the membership of the Central European Initiative (CEI) proves an interesting case study area.

The CEI is the oldest intergovernmental forum for regional cooperation ever launched in Europe, as well as the largest in terms of geographical extension. Its origins date back to November 1989 when, two days after the fall of the Berlin Wall, the Ministers of Foreign Affairs of Austria, Hungary, Italy and former Yugoslavia met in Budapest and adopted a Joint Declaration with the aim to re-establish East–West relations through regional cooperation, although participating countries were still representing different positions on the international landscape. The inception of the CEI marked the beginning of the process that, after the end of the Cold War and the breakdown of the bipolar order, enabled the ‘return to Europe’¹⁰ of Central European post-Soviet countries, which culminated in the 2004–2007 EU eastward enlargement.

Since then, the membership of the CEI has grown steadily: nowadays, it includes 17¹¹ countries, of which one of the founders of the EU (Italy), eight countries that joined the EU between 2004 and 2013 (Bulgaria, Croatia, Czech Republic, Hungary, Poland, Romania, Slovakia, and Slovenia) and seven EU candidates in the Western Balkans and in Eastern Europe (Albania, Bosnia and Herzegovina, Moldova, Montenegro, North Macedonia, Serbia, and Ukraine). Notwithstanding the many differences among these countries, their joint commitment to support regional cooperation in the framework of the CEI, around the two overarching goals of European integration and sustainable development, has never declined. This is even more significant in the current, fast-changing geopolitical scenario, which makes this broad portion of Europe a strategic area of primary importance, characterized by multiple political, economic, social, and environmental challenges along the Eastern and South-Eastern borders of the European Union.

Mitigation as the result of, and the adaptation to, climate change represents a key-priority of all CEI countries, as clearly stated in the Plan of Action 2021–2023 adopted by the Heads of Government of the Member States, although the overall performance of the CEI region is weaker if compared to the EU one. The ND-Gain Country Index—developed by the University of Notre Dame (ND), Indiana, in the context of its ‘Global Adaptation Initiative’ (Gain)—summarizes a country’s vulnerability to climate change and

other global challenges in combination with its readiness to improve resilience.¹² If we look at the situation within the EU, we notice a range that goes from Finland (72) to Romania (51,1), and an average Index of 62,55. If we look at the situation within the CEI region, we notice a range that goes from Slovenia (64,1) to Bosnia and Herzegovina (49,7), and an average Index of 55,25, further decreasing to 51,7 if we limit our view to the countries of eastern and South-eastern Europe, i.e., the seven CEI Member States with status of EU candidate.¹³

This higher vulnerability to climate change of eastern and South-eastern Europe represents a challenge not only for the countries engaged in the EU accession process, but also for the EU as a whole. Indeed, these two European sub-regions can be impacted by the phenomenon of climate-driven migration in two different, yet potentially interlinked ways. First, environmentally forced migrants coming *from outside* Europe, particularly from the most affected areas of Africa and Asia, will increase the number of people *en route* to western and northern Europe, including those coming through the Balkan peninsula. Second, the negative effects of climate change may expand the number of internally displaced climate migrants, therefore climate-induced movements of people *from within Europe*. Climate shocks, extreme events, unpredictability of weather patterns and instability can trigger internal displacements and migrations because of natural disasters (like the floods and landslides occurred in Moldova in 2010, as well as in Serbia, Bosnia and Herzegovina, eastern Croatia and southern Romania in 2014), as well as because of worsening soil conditions, with dramatic consequences on economies based on large agricultural sectors. In eastern and South-eastern Europe, rural communities represent a vulnerable group that may suffer the heaviest consequences of climate change, including forced displacement that would lead to depopulation of the countryside, turned into a people-less wasteland, and to further environmental degradation.

In front of a complex challenge such as climate-induced migration, regional cooperation and science diplomacy provide for adequate tools to develop a comprehensive approach based on interdisciplinarity and collaboration among experts with different, yet complementary, knowledge. On this basis, the CEI has supported the CREATE project, through its Cooperation Fund, with the aim to raise awareness on this issue of a specific target group, that of high school and graduate students.

¹⁰ This expression was used by Václav Havel in a speech in the Polish Parliament on 25 January 1990, <https://www.visegradgroup.eu/the-visegrad-book/havel-vaclav-speech-in>, accessed on 3 May 2023.

¹¹ Belarus was suspended of its rights of representation in the CEI ‘as a consequence of the country’s actions in support of the aggression against Ukraine’ (Statement by the Bulgarian CEI Presidency and the CEI-Executive Secretariat on the suspension of the Republic of Belarus from the Central European Initiative, 25 March 2022).

¹² <https://gain.nd.edu/our-work/country-index/rankings/>, accessed 3 May 2023.

¹³ ND-Gain Index—Scores for 2020.



Tackling the Issue Through Game-based Learning: The Project Create

Racist and xenophobic episodes against migrants are becoming quite frequent and widespread in the countries of destination. In this context, it is difficult to tackle the topic of climate refugees with citizens, since the discussion runs the risk of getting highly politically polarized.

Trieste, a 200-thousand-inhabitants town in North-eastern Italy, is the right place to drive the debate on this issue, being a coastal city facing the consequences of climate change, at the end of the Balkan Route. The western Balkan Route is one of the main migratory paths into Europe, accounting for nearly half of the total irregular border crossings, according to the European Border and Coast Guard Agency, and in 2022 the arrivals were 134% higher than in 2021.¹⁴ The town is also renowned for being the ‘City of Science’, hosting a number of scientific institutions that can bring the discussion to a Science Diplomacy level: The International Centre for Theoretical Physics (ICTP), The World Academy of Sciences (TWAS), the UNHCR unit, the CEI.

In this context, the effort of OGS International Cooperation and Research Promotion team is primarily related to Science Diplomacy as a fundamental part of OGS mission. In fact, Science Diplomacy can be a tool to find common solutions among local and international stakeholders on the issue of Climate Refugees, to unlock the potential of migrants by:

- Informing foreign policy objectives with scientific advice, delivering instruments and tools for a science-based knowledge, which can influence policies to tackle this issue—science in diplomacy;
- Facilitating international science cooperation—diplomacy for science;
- Using science cooperation to improve international relations between countries—science for diplomacy.¹⁵

To trigger an informed public debate on the topic, it is necessary to engage the public into non-formal activities, demonstrated to be an effective way to disseminate information, and among the possible methods, game-based learning is one of the most effective ones. In the active learning framework, role play games are useful to tackle highly controversial issues, where many different interests and points of view need to be taken into consideration, placing emphasis on the participants’ exploration of their own attitudes and

values (Bonwell and Eison 1991). To walk in someone else’s shoes for a couple of hours is an effective way to de-stabilize prejudices and misconceptions as well as to trigger empathy. Role play serious games can be used to help participants experience ‘stressful, unfamiliar, complex, or controversial situations’ by creating temporary circumstances, which require them to examine personal feelings toward others, and develop and practise those skills necessary for coping (Davison 1984).

Thus, OGS confirmed the support of CEI for the project CREATE. Within the project, a game was developed using the Playdecide format. Playdecide is a platform to create card games ‘for simple, respectful & fact-based group discussion’ on a number of different topics and share them in open access to the entire community of facilitators. The game on climate refugees was based on fact-checked information (info cards) focusing on the topics of climate change and its consequences. On the other hand, the ‘issue cards’ were dealing with open issues regarding migrations and international diplomacy. The role play characters were inspired by true stories, but the names and country of origins were the result of the imagination of the working team, to avoid stereotypes or explicit references to specific people. The game was tested internally and with target audiences, different by age and interests, within international higher education initiatives (Advanced Master and Summer School in Sustainable Blue Economy, which are part of the Blue Skills Initiative), school projects and science festivals.

The role play game has been published on the playdecide.eu platform, from where it can be downloaded by anyone in a print-and-play format.¹⁶ The game is available in Italian and in English, but it can be translated in other languages or adapted to different situations. To ensure its replicability, it was presented to teachers during a workshop on game-based learning at the University of Trieste, and to the international ocean communicators community during the first International Conference on Ocean Education and Training held in Ghent in 2023.

Migration and climate change, and the non-linear relationship between the two, are not yet at the centre of public debate, perhaps because of the very sensitive nature of the topic. It is, instead, necessary to promote an informed and respectful public discussion on the consequences of climate change on human communities, especially focusing on the issue of climate refugees. Projects like CREATE can provide important contributions in this direction, as one element of a complex puzzle that needs several complementary tools to ensure that this matter is seriously faced at global level.

¹⁴ <https://frontex.europa.eu/media-centre/news/news-release/eu-external-borders-in-2022-number-of-irregular-border-crossings-highest-since-2016-YsAZ29>, accessed 3 May 2023.

¹⁵ https://www.aaas.org/sites/default/files/New_Frontiers.pdf, accessed 5 May 2023.

¹⁶ <https://playdecide.eu/playdecide-kits/168390>, accessed 3 May 2023.



Declarations

Conflict of interest This contribution is free from any conflicts of interest, including all financial and non-financial interests and relationships.

References

- Bonwell, Charles C. and James A. Eison. 1991. *Active Learning: Creating Excitement in the Classroom*. ASHE-ERIC Higher Education Reports. Washington D.C. Office of Educational Research and Improvement (ED). ISBN-1-878380-06-7; ISSN-0884-0040.
- Davison, Joyce G. 1984: Real Tears: Using Role Plays and Simulations. *Curriculum Review* 23: 91-94.
- IPCC, 2022: *Climate Change 2022: Impacts, Adaptation and Vulnerability*. Contribution of Working Group II to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change [H.-O. Pörtner, D.C. Roberts, M. Tignor, E.S. Poloczanska, K. Mintenbeck, A. Alegría, M. Craig, S. Langsdorf, S. Löschke, V. Möller, A. Okem, B. Rama (eds.)]. Cambridge University Press. Cambridge University Press, Cambridge, UK and New York, NY, USA, 3056 pp., doi:<https://doi.org/10.1017/9781009325844>
- IPCC. 2021. *Climate Change 2021: The Physical Science Basis*. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change (Masson-Delmotte, V., P. Zhai, A. Pirani, S.L. Connors, C. Péan, S. Berger, N. Caud, Y. Chen, L. Goldfarb, M.I. Gomis, M. Huang, K. Leitzell, E. Lonnoy, J.B.R. Matthews, T.K. Maycock, T. Waterfield, O. Yelekçi, R. Yu, and B. Zhou (eds.)). Cambridge, United Kingdom and New York, NY, USA: Cambridge University Press: 2391. <https://doi.org/10.1017/9781009157896>.

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