

Human Mobility under the Impact of Environmental Changes

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Abstract

The movement of people due to environment changes is not a new phenomenon. Despite this, only in the most recent 20 years, the international community has begun to acknowledge it as an unprecedented challenge in terms of sustainable resources involved. All over the world, the number of storms, droughts and floods has tripled in the last 30 years, with devastating effects on communities. The paper presents a brief analysis of global climate change in recent years and human mobility due to this phenomenon. The research is based on international regulations addressing the interdependencies between environmental change and migration. The climate risk management with impact on human mobility involves economic, political, cultural, and demographic factors. It also shows how a devastating natural disaster shapes people's mobility towards a friendlier environment protected shelter. The development of resilience community strategies implies a joint effort of communities and stakeholders in protecting human beings against effects of natural disasters.

Keywords: migration, environmental changes, climate change, policies, resilience

Résumé

Le mouvement des personnes aux changements de l'environnement n'est pas un phénomène nouveau. Malgré cela, la communauté internationale a commencé récemment à reconnaître comme un défi sans précédent en termes de ressources durables impliquées. Partout dans le monde, le nombre de tempêtes, de sécheresses et d'inondations a triplé au cours des 30 dernières années, avec des effets dévastateurs sur les communautés. Le document présente une brève analyse du changement climatique mondial ces dernières années et de la mobilité humaine due à ce phénomène. La recherche est basée sur des réglementations internationales traitant des interdépendances entre le changement environnemental et la migration. La gestion des risques climatiques ayant un impact sur la mobilité humaine implique des facteurs économiques, politiques, culturels et démographiques. C'est aussi une catastrophe naturelle dévastatrice façonne la mobilité des personnes vers un abri protégé plus respectueux de l'environnement. L'élaboration de stratégies communautaires de résilience implique un effort conjoint des communautés et des parties prenantes pour protéger les êtres humains contre les effets des catastrophes naturelles.

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Mots clés: migration, changements environnementaux, changement climatique, politiques, resilience

Rezumat

Mișcarea oamenilor din cauza schimbărilor de mediu nu este un fenomen nou. În ciuda acestui fapt, numai în ultimii 20 de ani, comunitatea internațională a început să o recunoască drept o provocare fără precedent în ceea ce privește resursele durabile implicate. În întreaga lume, numărul furtunilor, secetelor și inundațiilor s-a triplat în ultimii 30 de ani, cu efecte devastatoare asupra comunităților. Lucrarea prezintă o scurtă analiză a schimbărilor climatice globale din ultimii ani și a mobilității umane din cauza acestui fenomen. Cercetarea se bazează pe reglementări internaționale care abordează interdependențele dintre schimbările de mediu și migrație. Gestionarea riscului climatic cu impact asupra mobilității umane implică factori economici, politici, culturali și demografici. De asemenea, arată cum un dezastru natural devastator modelează mobilitatea oamenilor către un adăpost protejat de un mediu mai prietenos. Dezvoltarea strategiilor comunitare de rezistență implică un efort comun al comunităților și părților interesate în protejarea ființelor umane împotriva efectelor dezastrelor naturale.

Cuvinte-cheie: migrație, schimbări de mediu, schimbări climatice, politici, rezistență

Introduction

Climate hazards, both in terms of size and potential impact on human, represent a reality that threatens the most fundamental human needs, from access to food and drinkable water to settlement options. Globally, the impact of climate devastations events on human mobility is by far a complex issue involving various dimensions such as socio-economic, political, demographic and last but not least, life style preferences (Hugo, 2008, Perch-Nielsen *et al.*, 2008, Ferro, 2009, Guterres 2009).

In the last 30 years, the number of cyclones, droughts and floods has tripled, the wildfires with devastating effects on vulnerable communities, especially in developing countries. Among the recent five major natural disasters affecting millions of lives we mention: 2019 Cyclones Idai and Kenneth, 2020 Australian wildfires, 2011, 2017 and 2019 East Africa drought, South Asia floods, and the 6th year of Central American's Dry Corridor.³ As the effects of extreme climate change intensify during the recent years (e.g. rising sea levels, climate variability, water scarcity, and declining crop production), the effects on people's lives and living conditions are amplifying. One of the most visible impact of changing climate is the reconfiguration of coasts (where most of the world's population is located), alongside the degradation of productive land and reduced agricultural productivity among people whose livelihoods depend on direct exploitation of natural resources (e.g. farmers, fishermen or shepherds).

Millions of people are already on the move all over the world, by choice or forced because of the climate impact (Piguet, 2008, Tacoli, 2009, Jonsson, 2010, Martin, 2010, McAdam, 2012). When people can no longer earn a living due to

³ <https://www.oxfam.org/en/5-natural-disasters-beg-climate-action>

environmental changes, their migration from the vulnerable places became the only sustainable option.

Through its tremendous consequences, the impact of environmental changes on migration has become the object of increased international interdisciplinary attention, both from decision makers and researchers (Nistor, 2008, p. 93). However, knowledge in this area remains under development: there are uncertainties concerning the number of people affected and the geographical areas concerned. There are debates between those who emphasize the direct impact of the environment on population flows and those who insist rather on the social, economic and political contexts in which particular flows occur. Therefore, in the current global context, the link between climate change and people's mobility is an on-going challenge for society, economies and governments requiring a strategic vision on designing the best coping strategies towards increasing community resilience (Stănescu *et al.*, 2014).

Human mobility

During the recent decades the globalisation process has significantly increased international migrations, especially towards developed countries perceived as reliable providers of better quality of life (Ferro, 2009, Șerban, 2011). As key determinants of human mobility all around the world, one can mention the environment (including environmentally unjust practices at local level), economic, political, sanitary, cultural, demographic factors (Mitu & Leon, 2011, Alexandrescu *et al.*, 2019, Lutz *et al.*, 2019). Through the centuries, people have migrated, often seasonally, forced by various changes in their environment, professional development opportunities, values and beliefs, presence of extended family or belonging to a migration network, or even as part of their lifestyle (e.g. nomadic people) (Horváth, 2009, Vasiluță-Ștefănescu & Vasiluță-Ștefănescu, 2012, Vlase & Voicu, 2013, Deliu, 2019). The ageing of the population, changes in their life style, the growing demand and decreased supply for personal and household services in rich countries have increased the demand for foreign workers who can fill those gaps. At the same time, highly educated workers have increased their international mobility driving an international competition for talent, needed to fuel innovation in science, technology and their applications to advanced sectors (Ferro, 2009). Migration therefore has been a phenomenon of great relevance in broadening the opportunities and sustaining socio-economic change in advanced market economies at the beginning of the twenty-first century with both skilled and unskilled immigrants playing a role. Social exclusion related to education, housing, health and employment (Apăteanu, 2016) can also become a drive force when moving from one place to another.

Migration due to environmental factors is presented as a „new” problem or as part of „future trends”. However, this type of migration is old, being documented in the first systematic theories of migration. The American geographer Semple considered that „the search for better land, milder climate and easier living conditions starts many a movement of people which, in view of their purpose,

necessarily leads them into an environment sharply contrasted to their original habitat” (Semple, 1911, p. 3).

In 2019, over 24.9 million people were relocated due to extreme climatic phenomena, compared to 8.5 million people internally displaced by conflict and violence. Globally, it is estimated that by the year of 2050 „the number of people affected by climate change will range from 25 million to 1 billion, with 200 million being the most cited”.⁴

The migration related literature switched from not taking into consideration the climate change as a source of migration (Gregory, 1928, Taft, 1936, Isaac, 1947, Zelinsky, 1971) to emphasising its role (Harris & Todaro, 1970, Castles & Kosack, 1973, Stark & Bloom, 1985). On this increased public interest trend, in the 1980s and early 1990s, the issue of migration due to environmental factors was raised, sometimes providing alarming estimates of the number of people expected to move due to climate change. By the end of the 21st century, more than 150 million people are expected to be refugees due to environmental factors (Myers, 1988).

Facing climate challenges, national governments and international bodies (e.g. International Organisation of Migration, Redd Cross) took various concrete actions towards the immediate protection of at risk population and areas as well as prevention of other catastrophes. Public information campaigns run by non-governmental (inter)national organisations raised awareness on the coping survival strategies.

Among the international initiatives that followed, United Nations (UN) launched the Intergovernmental Panel on Climate Change (IPCC). Several statements concluded that the greatest impact of climate change could be on human migration - with millions of people displaced by soil erosion, coastal flooding and agricultural disruption (Morrissey, 2009). Successive UN reports have argued that environmental degradation, and in particular climate change would potentially become a major driver of population movement design. In the mid-1990s, it was reported that worldwide, about 25 million people were forced to flee their homes due to land degradation, droughts, natural disasters and pollution. Also in 1994 UN raised attention on the recommendation that „Governments are encouraged to consider requests for migration from countries whose existence, according to available scientific evidence, is imminently threatened by global warming and climate change” (UNFPA 1994). The 2001 World Disaster Report of the Red Cross and Red Crescent Societies estimated 25 million people as „climate refugees”. The impact of climate changes are also related to the unequal distribution of risks within the economic system of each country. In the most economically, socially, politically and ecologically vulnerable areas of the planet, the impact of climate change is strongest on the population in all four dimensions (Ravenstein, 1889, Stern, 2012, Ionesco *et al.*, 2017). In these vulnerable areas, climate changes amplifies disputes and conflicts over the management control of

⁴ <https://www.climateforesight.eu/migrations-inequalities/environmental-migrants-up-to-1-billion-by-2050/>

available remain resources in continuous decline such in the case of: Lake Chad (Coe, 2001, Nagarajan *et al.*, 2018); Syria (Kelley *et al.*, 2015, Selby *et al.*, 2017) and the Horn of Africa (Solomon *et al.*, 2018) which emphasised the strategic role of stakeholders involvement in land management (Alexandrescu *et al.*, 2016).

Climate refugees

A single unanimously accepted definition of „climate refugees” is still subject of debates as not all climate refugees migrate from other countries as they often travel within the same country. The term „environmental refugee” was firstly launched by Brown, McGrath and Stokes in 1976. The term „environmental refugees” was popularized by the UN Environment Program in a 1985 report, which defined this category as „people who have been forced to leave their traditional habitat, temporarily or permanently, because of a marked environmental disruption (natural and/or triggered by people) that jeopardized their existence and/or seriously affected the quality of their life” (Hinnawi, 1985, p. 4). In 1995, Myers and Kent conceptualized „environmental refugees” as individuals „who can no longer gain a secure livelihood in their traditional homelands because of environmental factors of unusual scope, notably drought, desertification, deforestation, soil erosion, water shortages and climate change, also natural disasters such as cyclones, storm surges and floods” (Myers & Kent, 1995, p. 18-19). The so-called „environmental refugees” include climate refugees, although its breadth makes it impossible to specify or quantify climate-related migration.

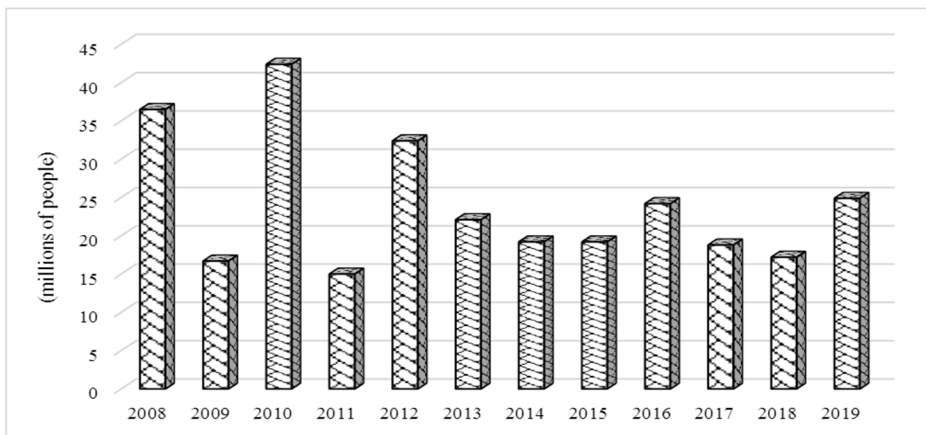
In 2007, the International Organization for Migration (IOM) proposed the definition: „environmental migrants are persons or groups of persons who, for compelling reasons of sudden or progressive changes in the environment that adversely affect their lives or living conditions, are obliged to leave their habitual homes, or choose to do so, either temporarily or permanently, and who move either within their country or abroad”⁵. The lack of conceptual clarity and consensus is a key issue hindering research on „climate refugees”, especially the size and structure of migrant flows, benchmarking and data collection.

Therefore, one of the important challenges in ensuring the protection of travellers due to climate change is the complexity involved in defining the term itself „climate refugee”, while discussing the term refugee in line with the Convention relating to the Status of Refugees (UN 1951). A comprehensive definition of „climate refugees” should simultaneously address the cause of migration, the type of migration and adopt an appropriate terminology (Docherty & Giannini, 2009). Climate changes relevant to population movement manifest in terms of: reducing available drinkable water; decreases in crop production; the risk of floods, storms and coastal floods; and the overall negative impact on health (especially for the poor, elderly, young and marginalized) (Kälin & Schrepfer, 2012). The climate change and human movement link is considered from two

⁵ <https://environmentalmigration.iom.int/environmental-migration>

perspectives: on one hand the slow onset of the effects of climate change and on the other hand immediate natural disasters, such as storms (*idem*).

The affected persons are forcibly displaced and in need of protection and assistance from another state which emphasised the international regulations in this respect in line with Climate Action goal of Sustainable Development Agenda (ONU 2015). According to International Displacement Monitoring Centre data, approximately 1,900 natural disasters that occurred in 2019 triggered 24.9 million new displacements in 140 countries and territories. Out of these, 23.9 million were due to weather changes (528.5 thousand due to wildfires in Australia, 276.7 thousand due to drought, 65.8 thousand due to landslides and 24.5 due to extreme temperatures) (International Displacement Monitoring Centre, 2020). Comparatively, the 2008-2019 natural disaster dynamic (Figure 1) was four times higher than conflict and violence related movements.

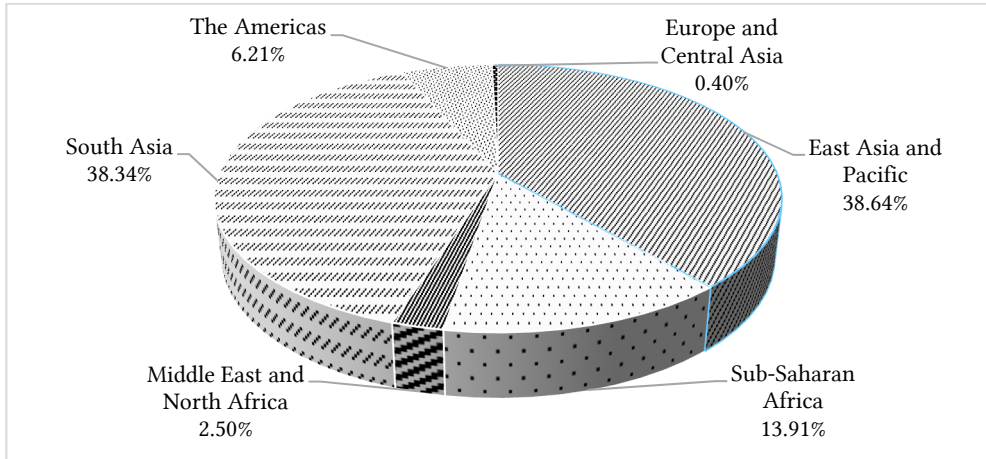


Source: International Displacement Monitoring Centre's 2020 Global Report on Internal Displacement

Figure 1. New displacements by disasters worldwide (2009-2019)

Taking a closer look, 2019 disasters recorded in East and Pacific Asia and South Asia (Figure 2) in terms of abundant rains in mountainous regions, floods and tropical storms have hit large area where millions of people lived.

Taking into account cumulated experience in dealing with natural catastrophes, one of the first measure taken by governments in order to protect potentially affected population was to immediately evacuate at risk residents (Kălin & Schrepfer, 2012, Jakobsson, 2018b). This international preventive measure has substantially reduced the number of people killed as victims of natural disasters. This Global Deal could benefit from country to country cooperation as well as public support due to economic implications (Stern, 2012, p. 26-27).



Source: IDMC's 2020 Global Report on Internal Displacement

Figure 2. Disasters: new displacements by region in 2019

The challenges of linking human mobility to climate change

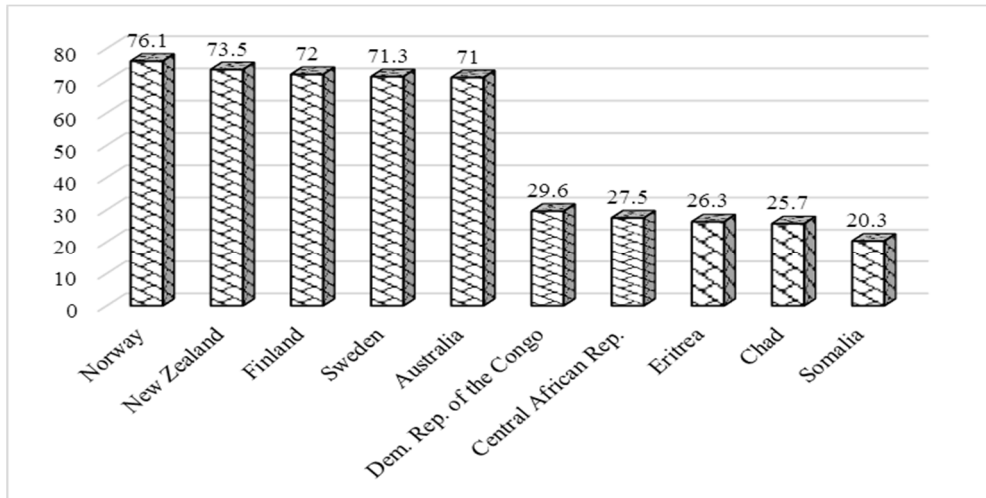
Human mobility is a phenomenon driven by several interlinked factors: search of a better life with more economic and employment opportunities, try to escape war conflicts and social persecution areas, natural hazards and environmental degradation that affect livelihoods (Stern, 2012, IOM, 2018, Alexandrescu *et al.*, 2019, UN, 2019). It is in fact a complex interaction between social, political, economic, cultural and environmental factors that determines the vulnerability of a person, family or community and challenge their ability to uproot and adapt to a new climate.

Natural caused hazards can increase the likelihood of security challenges when events contribute to severe impacts on livelihoods, food security and water. Although environmental change and natural disasters have always been the main drivers of migration, however, climate change predictions for the 21st century indicate that human mobility is expected to increase as weather-related disasters such as extreme rainfall and temperatures they become more frequent and intense with an impact on this phenomenon.

A number of approximate 272 million people were living outside their homeland, and another 24.9 million were internally displaced in 2019 (UN, 2020). It is difficult to quantify the proportion of this movement due life threats climate change. This is due, on the one hand, to the fact that not all countries regularly collect immigration related data, and on the other hand if they do, the methodology varies significantly (Bălan *et al.*, 2013, Lucas, 2015, Ginnetti, 2017).

Internal mobility associated with sudden-onset climate risks is more common when vulnerability is high in affected areas and the ability to cope with hazards is rather difficult. According with developed index The Notre Dame Global Adaptation Initiative (ND-GAIN), a country's vulnerability to climate change can be assessed and measured in correlation with its willingness and commitment to

improve resilience. It varies between 10 and 100 and the lower its value, the more vulnerable the country is. The 2017 ND-CAIN index data indicate that of the 181 UN Member States analysed, the most vulnerable to climate change are those from Central and East Africa, Central Asia and Haiti (Figure 3). There are also various countries where climate risks can lead to large displacements of population, in part due to early warning and evacuation specific mechanisms, such as in the case of China and the United States.



Source: Country Index, The Notre Dame Global Adaptation Initiative (ND-GAIN)

Figure 3. ND-GAIN Index Country Rankings (Top 5 Countries, Bottom 5 Countries)

Mobility of population offers both opportunities (e. g. new economic activities, poverty reduction, rising wages) and challenges (e.g. disruption of social networks, potential intensification of labour exploitation, access to different services and facilities than the one people are used to), both for those who travel and for the host communities (Jakobsson, 2018a). In the general framework of climate change, these opportunities and challenges are highly dependent on the context, being influenced by both public policies design (e. g. development of social services provision or fulfilment of social benefits eligibility criteria) (Arpinte & Baboi, 2009, Anghel, 2019, Arpinte, 2019) and cultural related aspects of the host location as well as the individual circumstances. Previous working experience (e.g. precarious work or in sensitive sectors such as the social assistance) as well as the capacity of the working environment to respond new challenges can also influence the switch to a new career (Lazăr *et al.*, 2016, Lazăr *et al.*, 2018, Preoteasa, 2018, Stănescu, 2018, Zamfir, 2019). From this perspective the working experience abroad can be explored when returning on homeland as entrepreneurial initiatives especially but not exclusively in the social economy area (Stănescu *et al.*, 2012, Căce & Stănescu, 2013, Cojocaru *et al.*, 2013, Croitoru, 2019).

On the other hand, migrating from a particularly degraded geographical area can reduce the human pressure on that area, allowing the nature to fully recover. Opportunities and challenges of human mobility due to climate change also appear in the urbanization process. Thus, many major urban areas are located in low-lying coastal areas, which may face either rising sea levels or are located near large watercourses exposed to floods. More than half of the world's population currently lives in cities and by 2030 forecasts indicate that 68% of the Earth's population will live in urban areas. Almost 15% of the urban population lives in areas less than ten meters above sea level and is therefore exposed to flooding, coastal flooding and coastal erosion (UN, 2020).

Addressing climate change and human mobility at the global level

Although human migration due to environmental change is not a new subject on public agenda and scientific research, one of the first officially referring document could be considered the 1985 UN report in which the term of „environmental refugees” and their lack of protection were mentioned (Hinnawi, 1985). In the same line, the Intergovernmental Panel on Climate Change (IPCC) specify that „the greatest impact of climate change could be on human migration” while climate-driven migration were considered as part of the field of climate change policy (IPCC, 1992). However, in 1990-2000 period, human mobility caused by climate change was a relatively peripheral approached problem. Climate change migration witnessed a major 2007-2009 leap in terms of visibility paid by international community due to its actively linkage to a growing general security interest on behalf of UN and the European Union. Thus, „climate refugees” and similar concepts have become „buzz words” and a large number of reports have been addressing this topic (Gemene, 2011a). Various 2007-2009 actions related to the connection between human mobility, climate change and security succeeded to set up this topic on the UN agenda.

The development of climate change migration policies took a new path in 2011 with the launched of the Nansen Initiative focus on Disaster Induced Cross-Border Displacement. It was based on the 2010 UNFCCC Cancun Agreement and was initiated by the Norwegian and Swiss Governments and intended as a discursive platform for states (mainly at the regional level) to exchange ideas, experiences and good practices on how to approach to cross-border travel due to disasters⁶. Between 2011 and 2015, the Nansen Initiative was one of the most important and influential platforms to discuss issues related to climate change, disasters and human displacement. This led to the subsequent approval of the Agenda for the Protection of Cross-Border Displaced Persons in the Context of Disasters, Climate Extremes and the Extended Risks Associated with Climate Change which was approved in 2015 by 109 countries (Nansen Initiative, 2015). The protection agenda of the Nansen initiative and the recommended approaches to the Task Force on Displacement at COP21 in Paris were important steps in

⁶ <https://www.nanseninitiative.org/>

addressing international issues of human mobility due to disasters and climate change.

Under the Sustainable Development Goals of the 2030 Agenda for Sustainable Development, adopted by the UN Member States in 2015, both migration and climate change are addressed, but very few connections are made between migration and climate change. For example, Sustainable Development Goal 13 focuses exclusively on climate change and calls on governments to take urgent action to combat its impact, but does not mention migration or displacement as a consequence. Sustainable Development Goals 8, 10 and 17 indicate the need for migration facilitation, planning and management policies, but do not link to climate change. The new Urban Agenda was adopted at the UN Conference on Housing and Sustainable Urban Development (Habitat III) in Quito, Ecuador, on October 20, 2016, aims to be a new global standard for sustainable urban development, commits itself to „respecting the rights of refugees, migrants and internally displaced persons, regardless of their migrant status”, but does not address the links between climate change and urban migration.

„Climate refugees”, migrants moving due to natural disasters and climate change, are officially recognized by the 2018 Global Compact For Safe, Orderly and Regular Migration in accordance with objective 2: „minimize the adverse drivers and structural factors that compel people to leave their country of origin” (IOM, 2018). In the special report of The Intergovernmental Panel on Climate Change (the UN body for assessing the science related to climate change) it is provided that if global warming increases by 1,5- 2°C, increased levels of food insecurity, water scarcity, extreme poverty and human mobility will be recorded (UN, 2018). Even if the size and structure of future migratory flows caused by climate change continue to be difficult to estimate, yet human displacement related to climate change is no longer just a theoretical future, but a current reality (Gemenne, 2011b).

Conclusions

Recent extreme climate changes represent a threat to the most basic human needs, impact people's livelihoods and can lead to freedom deprivation. Through the increased frequency and intensity of extreme weather episodes and changing seasons, the climate will influence the size and structure of migratory flows.

The complex effects of climate change on human mobility are manifested both by the danger itself and by the vulnerability and ability of people to move when there are at risk due to sudden life-threat climate change. The social dimension of vulnerability can represent a starting point towards increasing people's resilience to withstand climate change. International experience when facing climate change opens up new opportunities for joint efforts in gathering knowledge, developing measures and increasing protection. The research of the connections between climate change and human mobility is, however, still limited, on the one hand, by the complexity and interdependence of the various complex factors that lead human mobility, and on the other hand by the lack of data on domestic and international migration directly caused by environmental related

changes. In the current context, climate change is a process that exacerbates some of the most pressing issues of our time, which are closely associated with underdevelopment, domestic and international socio-economic disparities, global justice and solidarity between states, human rights or human security. Therefore, design of public policies based on the research outputs of the climate changes based human mobility must be accompanied by renewed international efforts and best-practices exchanges towards developing resilience community strategies.

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