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CLIMATE MIGRANTS: LABOUR RIGHTS WITHIN BHR AND DIGITALIZATION FRAMEWORKS*

SUMMARY: 1. Introduction to the issue of labour rights of climate migrants and digitalization. – 2. Interconnection between digitalization, climate and migration laws. – 3 the role of digital platforms in climate migration: BHR toolkit. – 4. AI and partial automation as a pathway for OHS rights of climate-dependent workers under BHR. – 5. Concluding remarks.

1. Introduction to the issue of labour rights of climate migrants and digitalization

Climate change – including rising temperatures, sea-level rise, and desertification – is severely impacting various sectors of the economy, particularly agriculture, forestry, and fisheries¹. These sectors are especially vulnerable due to their dependence on environmental conditions². This environmental pressure is accompanied by increased mobility among people, including labour-related mobility. However, labour mobility in the context of climate change remains understudied as a distinct phenomenon in today's realities. Exemplary in this scenario is the use of digital platforms, which are generally of a broad na-

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¹ D. IONESCO, D. MOKHNACHEVA, F. GEMENNE, *The Atlas of Environmental Migration*, Routledge, 2017, pp. 2-30. See also Intergovernmental Panel on Climate Change (IPCC), AR6 Synthesis Report: Climate Change 2023, Interlaken, 2023, available at www.ipcc.ch.

² Ivi, pp. 2-30.

ture³, and not tailored to the specific needs and vulnerabilities of climate-displaced workers. The convergence of climate change, labour mobility, i.e. migration, and digitalization reveals the inherently interdisciplinary nature of the issue, necessitating comprehensive legal responses that span multiple domains⁴ and aim to create mechanisms that mitigate the impact of climate change on individuals and help societies adapt to new conditions, while balancing economic development with environmental protection⁵. As these issues concern the global common good, national efforts alone are insufficient⁶. Thus, we must primarily rely on international law and global governance.

(A) Legal problem. The scale of mentioned issues is vast: climate change affects more than one billion workers across a minimum of 91 countries⁷, and the growing scale of these changes is leading to significant consequences in labour law⁸: temporary incapacity to work, destruction of production infrastructure, or more specifically, jobs, risks to workers' health and reduced working capacity or destruction of productive infrastructure⁹, as a result of such climate change. This is accompanied by changes in the labour market: internal¹⁰ and exter-

³ P. CONNOR, *The Digital Footprint of Europe's Refugees*, 2017, available at www.pewresearch.org.

⁴ S. MASIERO, M. VON DEDEN, *ICTs and Forced Migration: A Critical Discourse Review*, in www.arxiv.org, 20th March 2022.

⁵ *Ibidem*.

⁶ A. YUENGERT, *The Right to Migrate and the Universal Common Good*, in *Journal for Peace and Justice Studies*, n. 14, 2004, pp. 43-64, p. 44. M. CURAJAR, *The Environment and the Common Good*, in *Online Law Journal*, 2024, pp. 1-5, p. 2.

⁷ International Organization for Migration, *Climate change and migration in vulnerable countries: A snapshot of least developed countries, landlocked developing countries, and small island developing states*, 2019, p. 4.

⁸ International Organization for Migration (IOM), *World Migration Report 2024: Chapter 8 – Towards a Global Governance of Migration? From the 2005 Global Commission on International Migration to the 2022*, (ed. M. MCAULIFFE, L.A. OUCHO), *International Migration Review Forum and beyond*, Geneva, 2024.

⁹ International Labour Organisation, *Ensuring safety and health at work in a changing climate. Global Report*, 2024, pp. 1-124, pp. 1-3.

¹⁰ 143 million people in three regions of the world (sub-Saharan Africa, South Asia and Latin America) could be forced to migrate within their own countries due to the worsening effects of climate change by 2050, such as decreasing crop productivity, shortage of water and sea-level rise. See International Organization for Migration, *Pol-*

nal¹¹ climate human mobility, as well as growing interest from digital platforms in their recruitment and employment¹². Despite numerous debates on labour rights, existing international legal regulations on migrants' rights and climate legislation, migrant workers continue to remain unfairly vulnerable and unprotected¹³. The number of violations, as well as their nature, raises questions about the reasons behind this negative situation in the labour area. Achieving this target has proved challenging at the interface of multiple legal jurisdictions and branches of law. For example, climate policies inevitably intersect with migration law, human rights law, labour law and domestic legislation. This complexity of target suggests a need for specialized legal regimes that bridge climate commitments with these other fields.

However, to date, the international instruments specifically addressing climate-induced migration or climate mobility remain fragmented and largely of soft law or *sui generis* nature¹⁴. While states have yet to decide whether to grant such climate-displaced persons a special status and corresponding rights – whether as migrants, as refugees, or as people under other protection regimes (such as humanitarian visas)

icy brief: the interaction between climate change, labour markets and migration in the IGAD region, 2022, pp. 1-17, p. 2.

¹¹ See Human Rights Watch, *UAE: Migrant Worker Abuses Linked to Broader Climate Harms. Upholding Migrant Rights Critical to Address Climate Crisis at COP28*, 2023, available at www.hrw.org.

¹² Big tech firms are racing to track climate refugees; Facebook, Palantir, Microsoft, and more see big money in migration caused by global warming – and they're betting on everything from biometrics to blockchain. See more L. KINSTLER, *Big tech firms are racing to track climate refugees*, in *MIT Technology Review*, 2019, par. 2-4.

¹³ Human Rights Watch has reported that a number of migrant fishers of different Asian nationalities have fallen victim to modern slavery. See T. MUHAMAD, *Migrant fishers prone to modern slavery*, 2021, available at www.ilo.org. See International Labour Organization, *Global Action Programme against forced labour and trafficking of fishers at sea (GAPfish)*, 2015.

¹⁴ See S. JOLLY, N. AHMAD, M. SCOTT, *Conclusion*, in *Climate-Related Human Mobility in Asia and the Pacific. Sustainable Development Goals Series*, (eds. S. JOLLY, N. AHMAD, M. SCOTT), Singapore, 2024, p. 261-267. See M. MCADAM, *The International Law of Climate Migration: Challenges and Responses*, in *Research Handbook on Climate Change, Migration and the Law*, (ed. F. MICHELETTI, D. SALCITO), Cheltenham, 2021.

– or as individuals entitled to freedom of movement under the multi-lateral agreements between countries, e.g. on climate-labour matter¹⁵, private digital labour platforms continue to track such persons, not always for legitimate purposes¹⁶.

Pursuant to the Business and Human Rights (hereinafter BHR) legal framework, and especially under the umbrella of the Guiding Principles on Business and Human Rights (hereinafter UNGPs)¹⁷, as a soft law instrument, and the hopeful future adoption of a UN Treaty on business and human rights¹⁸, states and private companies must be held accountable for respecting labour rights. So far, there has been very limited success in this regard for climate-induced mobility or climate migration. As a matter of fact, agreements between countries on support during climate disasters are insufficient to serve the purpose of enabling people to seek refuge in other countries¹⁹, find work there and provide for themselves to some extent. These agreements do not impose any obligations on companies to respect the labour rights of climate labour migrants as a vulnerable group, nor do they impose clear obligations on states to promote their fair employment. There are rare exceptions such as the Economic Community of West African

¹⁵ V. MANGIN, *Climate refugees left in legal limbo*, 2025, available at www.swissinfo.ch.

¹⁶ M. MAZZOLI, B. DIECHTIAREFF, A. TUGORES, W. WIVES, N. ADLER, P. COLET, J. J. RAMASCO, *Migrant mobility flows characterized with digital data*, in *PLoS ONE*, n. 15, 2020. LinkedIn, *Targeting Options for LinkedIn Advertisements*, available at www.linkedin.com.

¹⁷ UN, Office of the High Commissioner for Human Rights, *Guiding Principles on Business and Human Rights: Implementing the United Nations «Protect, Respect and Remedy» Framework*. New York-Geneva, 2011.

¹⁸ UN, *Open-ended intergovernmental working group on transnational corporations and other business enterprises with respect to human rights*. Updated draft legally binding instrument to regulate, in international human rights law, the activities of transnational corporations and other business enterprises by 20th December 2024, available at www.ohchr.org.

¹⁹ See OECD, *What role for migration and migrants in climate adaptation?*, in *Migration Policy Debate*, n. 32, 2023, pp. 1-8.

States²⁰, where a range of government-led initiatives have successfully promoted the inclusion of climate migrants in the labour market, leading to a notable narrowing of the gender gap in labour force participation among this population²¹. In the Horn of Africa, a Protocol on the Free Movement of Persons has been finalised, formalising in Article 16 the possibility of free movement in anticipation of, during and after a climate disaster²². Few countries have implemented specific programmes to facilitate the temporary stay or settlement of people fleeing natural disasters²³. Nevertheless, the lack of a precise definition of disaster and the absence of specific criteria may lead to inconsistent treatment of similar cases²⁴. The Sydney Declaration of Principles on the Protection of Persons Displaced in the context of Sea Level Rise emphasizes the importance of conducting evacuations with utmost regard for the life, dignity, liberty, and security of the evacuees²⁵, but it does not address labour rights matters. Case law, such as *Ioane Teitiota v. New Zealand*²⁶, emphasizes that countries have a legal responsibility

²⁰ W. KÄLIN, *Locating International Law on Human Mobility in the Context of Climate Change*, in *Proceedings of the ASIL Annual Meeting*, n. 116, 2022, pp. 160-162.

²¹ N. ELMALLAKH, Q. WODON, *Climate Shocks, Migration, and Labor Markets: A Gender Analysis from West Africa*, in *The Journal of Development Studies*, 2025, pp. 1-35, p. 1.

²² Ivi, pp. 160-162.

²³ E.g. Argentina (humanitarian visa), see *ibidem*, pp. 160-162. E.g. in Europe-Sweden, Finland, Italy, Switzerland, France – (temporary protection). See Article 20 of Legislative Decree 286/1998 which recognizes the obligation to offer protection where returning to and staying in the home country is unsafe due to serious calamities. See H. DEMPSTER, A. DAL PRA, M. TRAORE CHAZALNOËL, *Facilitating Environmental Migration through Humanitarian and Labour Pathways: Recommendations for the UK Government*, in *Policy Papers*, n. 245, 2021, pp. 1-46, pp. 28-29. See European Migration Network, *Displacement and migration related to disasters, climate change and environmental degradation*, available at www.home-affairs.ec.europa.eu.

²⁴ See V. MENCE, A. PARRINDER, *Environmentally related international migration: Policy challenges*, in *A Long Way to Go: Irregular Migration Patterns, Processes, Drivers and Decision-Making*, (eds. M. MCAULIFFE, K. KOSER), Canberra, 2017, pp. 317-342, p. 327.

²⁵ White House, *Report on the Impact of Climate Change on Migration*, 2021, available at www.whitehouse.gov.

²⁶ UNHRC, *Ioane Teitiota v. New Zealand*, CCPR/C/127/D/2728/2016.

to protect people whose lives are threatened by the climate change crisis. However, now there are hardly binding and universally self-executing legal norms regarding the protection of this category of migrant workers.

Workers in climate mobility context remain susceptible to hazardous work environments that pose a threat to their physical and/or mental well-being. Furthermore, workers are vulnerable to exploitation through unduly low wages or unfair selection processes and susceptible to trafficking and smuggling²⁷, which are serious violations of their human rights and fundamental labour rights²⁸. Some of these serious violations may fall within the scope of criminal liability²⁹; however, this dimension lies beyond the scope of the present study. Instead, this paper aims at revisiting and rethinking existing legislation in the field of climate labour mobility.

Digitalization highlights the gaps in the legal framework. While some digital labour platforms (DLPs) worsen the plight of migrant workers – for instance, by exploiting location data to target vulnerable individuals – others contribute positively. This goes hand in hand and highlights the importance of a balanced approach to legal regulation, as well as the creation of reliable mechanisms for the implementation of guaranteed rights. Some workers are subject to various violation factors, including but not limited to unfair practices on the part of digital platforms due to climate conditions' (e.g. by tracking their geographical location to find vulnerable group of people), often with the objective of increasing and creating their own profits³⁰. Other plat-

²⁷ Human Rights Watch has reported that a number of migrant fishers of different Asian nationalities have fallen victim to modern slavery. See T. MUHAMAD, *Migrant fishers prone to modern slavery*, 2021, available at www.ilo.org. See International Labour Organization, *Global Action Programme against forced labour and trafficking of fishers at sea (GAPfish)*, 2015.

²⁸ A. GISEBURT, *Wage-related abuses in fishing industry exacerbated by pandemic response*, in www.news.mongabay.com, 12th May 2022. Business and Human Rights Resource Centre, *Migrant workers in global supply chains*, 2024, available at www.business-humanrights.org.

²⁹ International Labour Organisation, *Global Report, Ensuring safety and health at work in a changing climate*, Geneva, 2024, pp. 1-113, p. 17, p. 35, p. 47, p. 61, p. 73.

³⁰ See more L. KINSTLER, *op. cit.*, par. 3-5.

forms, such as the Platform on Disaster Displacement³¹, serve as a positive example by filling gaps in international cooperation between states, supporting regional efforts, and collecting and processing data related to climate migrant workers. Being however unable to find a significant number of positive examples from private digital labour platforms that provide right to work guarantees to climate migrants, we highlight the importance of a balanced approach to legal regulation without overregulation, as well as the creation of reliable mechanisms for the implementation of guaranteed rights.

(B) Research question. What are the legal gaps and challenges in protecting the labour rights of climate migrants in the context of the digitalization of labour, and how can international law and digital solutions contribute to or hinder the protection of their decent work?

(C) Methodology. This study employs a legal-analytical methodology, combining doctrinal legal research with contextual interdisciplinary analysis. The primary objective is to examine the normative gaps and operational shortcomings in international legal frameworks related to labour rights, climate-induced mobility, digital labour platforms, and AI, particularly under the lens of the BHR approach. The research draws on primary sources of international law – including binding treaties (e.g. ILO Conventions) and soft law instruments (e.g. the UNGPs). These are interpreted using the positivist legal method, with an emphasis on normative content, structural consistency, and enforceability. The application of the BHR framework to climate migrants in platform work is justified by the fact that international migration law acknowledges mobility but does not provide sufficient detail regarding labour rights and corporate obligations. This approach operates along two complementary dimensions: firstly, it supplies a normative assessment and expected standards for business due diligence, grounded in the UNGPs' three pillars – state duty to protect, corporate responsibility to respect, and access to remedy; and secondly, it

³¹ E.g. «It offers States a toolbox to better prevent and prepare for displacement before a disaster strikes, or it helps States improve their responses to situations when people are forced to find refuge, either within their own country or across an international border». See Displacement Solutions, available at www.disasterdisplacement.org.

offers a pathway for subsequent consolidation of these issues in upcoming hard-law instruments³². The core instrument employed in BHR is Human Rights Due Diligence (hereinafter HRDD), which encompasses the identification and evaluation of risks (e.g., proxy discrimination associated with migration status), the prevention and mitigation of these risks (e.g., authoritative verification of employment contracts), ongoing monitoring and adjustment, transparent reporting, and effective grievance mechanisms with stakeholder participation. Digitalization has been identified as a key factor in the transfer of risk from states and traditional employers to platforms³³. This transfer occurs via pervasive tracking, opaque contracting, and downward pressure on pay and conditions. Addressing these risks falls squarely within business responsibilities under the UNGPs and should be tackled through HRDD.

In line with the interdisciplinary nature of the subject, the study integrates perspectives from labour law, climate governance, digital regulation, and human rights theory. This approach allows for the identification of intersections and regulatory blind spots that would be obscured in a purely doctrinal analysis. The methodological framework is structured around a three-tiered inquiry “what, why, how”: e.g. 1) What is the legal status of climate-induced labour migrants in international law, and how is it shaped by digitalization and platform-based employment models? 2) How are states and non-state actors (particularly digital labour platforms) obligated or incentivised to uphold labour rights under existing BHR frameworks? 3) Why do regulatory gaps persist, and what normative recommendations can be developed for future legal and policy reform?

To ground the analysis, the research includes case-specific assessments in regions particularly affected by climate change and labour migration, such as the UAE. These case studies are used not only illustratively but analytically, to test the coherence of legal norms against empirical realities.

³² See *Business and Human Rights in Europe: International Law Challenges* (ed. A. BONFANTI), Routledge, 2019, p. 264.

³³ *Ibidem*.

The study remains normatively driven, applying legal reasoning to propose reforms aligned with human rights due diligence, state obligations, and corporate accountability. The overarching method reflects a problem-oriented, governance-focused approach to international law, aiming to translate fragmented legal frameworks into actionable protection for vulnerable workers.

(D) Structure. In light of these challenges, this paper proceeds as follows: Part 2 explores the key legal shortcomings in current international regulatory frameworks under selected ILO Conventions, Convention Relating to the Status of Refugees (hereinafter, Geneva Convention), Paris Agreement to the United Nations Framework Convention on Climate Change (hereinafter Paris Agreement). The structure is followed by the *sui generis* nature of climate mobility, i.e. between migrants, refugees and impact of climate into forced and voluntary labour mobility. Part 3 examines the role of digital platforms in climate migration, focusing on the risks of unfair treatment and rights violations faced by climate migrants, with the UAE as a case study – a country selected for its climate vulnerability, large migrant population, and prevalence of platform-based labour in sectors such as renewable energy, transport, and cleaning. Part 4 assesses the outlook in future on environmental implications of expanding automation and AI, particularly regarding energy use and resource consumption.

2. Interconnection between digitalization, climate and migration laws

Current shortcomings in the right to work of climate migrants have legal implications (relevant under general legal provisions, such as Article 8 (1) of the International Covenant on Civil and Political Rights³⁴ on slavery or the ILO toolkit), social (e.g. lack of livelihoods, which drives the hardly decent working terms and conditions) and many others. We will focus on the legal aspects of the situation, acknowledging that companies are not inherently malevolent entities seeking to hire workers under disadvantageous conditions, but rather often lack a

³⁴ UNHRC, *Ioane Teitiota v. New Zealand*, CCPR/C/127/D/2728/2016 (2016).

clear understanding of the legal protections and regulations that apply to this particular category of workers.

In order to address issues in the field of labour climate mobility (i.e. migration), it is necessary to analyse the current regulatory framework: international and regional instruments governing migration and labour rights in the private sector of the economy, which is often the only option available to migrants. We will examine how the application of existing legal acts to climate migrants remains fragmented and insufficient. This is due to the complexity of classifying this type of migrant, which creates problems. In particular, legal norms often do not take into account the specific nature of climate migration and do not provide effective protection in the context of digitalization and the changing nature of the labour market. Below, we examine the key legal instruments and their limitations that affect the climate migrant workers' rights.

(A) Categories of climate mobility and scale of the phenomenon. Climate change is only one of many factors driving migration, which leads to sectoral complexity in the areas of law involved, as well as multiple grey areas for unscrupulous companies in the private sector. Climate mobility covers a wide range of movements, from voluntary migration in search of work or services to forced displacement and planned resettlement of communities from risk areas, which collectively covers both forced and involuntary migration. Most of this migration is internal³⁵, which contributes to the issues addressed in the legal instruments discussed below.

(B) The specific features of international law in the context of climate migrants can be examined in the context of: 1) general provisions relating to labour and social rights, in particular those of the ILO, including the migration labour rights, 2) provisions in the field of refugees, as a smaller category of migration and 3) provisions of climate legislation and mitigating the consequences of climate mobility³⁶.

³⁵ M. BURZYŃSKIA, C. DEUSTER, F. DOCQUIER, J. DE MELO, *Climate Change, Inequality, and Human Migration*, in *IZA DP*, n. 12623, pp. 1-62, p. 3.

³⁶ F. MARTINES, *Diritti e tutela dei migranti climatici*, in *Diritto e clima*, n. 1, 2025, pp. 161-190.

In the context of climate mobility more broadly, and particularly in relation to migrants, the following legal provisions are of particular significance. The ILO is the central and primary organisation that is theoretically capable of filling the gaps in the field of climate migrants at international level which are applicable for both groups of climate migrants³⁷. However, in reality, this is not happening to a sufficient extent, either for internal migrants who have ratified its legal instruments or for transnational migrants, due to structural shortcomings within the organisation itself³⁸. For instance, sectoral specificity of labour rights is mainly regulated by technical ILO Conventions. These conventions almost always exclude the private sector of the economy and are often not precise and clear enough to invoke individual rights in court³⁹. Therefore, they cannot serve as a reliable basis for the protection of labour rights, at least until their structural shortcomings are remedied. Namely, such ILO Convention (hereinafter ILO C) as ILO Convention No. 188 on Work in Fishing (Article 8), which imposes liability primarily on the fishing vessel owner, have been ratified only by 22 countries, which are not the key representatives of the industry⁴⁰. Moreover, this ILO Convention No. 188 does not apply to digital labour platforms (DLPs) that facilitate networking, proactive human resources strategies, and support for intra-industry digitalization (data collection and processing, AI) as such platforms are of non-state nature. Notwithstanding its application in conjunction with UNGPs, the norms of this convention are of progressive (quasi-recom-

³⁷ S. BRUPBACHER, *Fundamentale Arbeitsnormen der Internationalen Arbeitsorganisation*, diss. Bern 2002, pp. 1-46.

³⁸ J. E. SAMWER, *The effect of ILO conventions on labor standards. The structural change*, Hamburg, 2017, pp. 1-24. P. ALSTON, *Facing Up to the Complexities of the ILO's Core Labour Standards Agenda*, in *The European Journal of International Law*, n. 16, 2005, pp. 467-480.

³⁹ R. RUDOLPH, *Richterliche Rechtsfindung im Arbeitsrecht*, Zürich, 2021, pp. 201-204.

⁴⁰ International Labour Organisation, *Work in Fishing Convention (No. 188)*, adopted June 14, 2007, entered into force November 16, 2017. World Population Review, *Fishing industry by country*, 2024, available at www.worldpopulationreview.com. ILO, *Normlex*, available at www.normlex.ilo.org.

mendable) nature with regard to the actionability of individual labour rights⁴¹.

This issue is fair for most of the ILO Conventions, which are crucial for climate mobility and migrants. For transnational migrants, two are the main ILO Conventions: No. 97 on Migration for Employment and No. 143 on Migrant Workers⁴². They are also insufficient instruments for the protection of labour rights for reasons similar to ILO No. 188⁴³. Being treaty law, the scope of these obligations is typically ascribed to member states rather than to companies or the private sector⁴⁴. Consequently, their application to private companies and platforms can be complex and inefficient⁴⁵. Furthermore, ILO Convention No. 181 on Private Employment Agencies⁴⁶ is not relevant in the context of digitalization and platform employment, as the countries that have ratified it and the companies under their jurisdiction are not major players in this market but by the Member-States which are typical victims of violations⁴⁷. It is overly optimistic to expect that, after several decades, a significantly higher level of ratification will be achieved that could meaningfully impact our research question.

These shortcomings mean that the ILO Conventions should not be considered in the context of protecting the rights of climate migrants as a main regulation until the current shortcomings of the ILO have been addressed. The lack of specificity on climate issues in these instruments may lead to an unjustified narrow interpretation and leave this group of workers unprotected, which also requires clarification at

⁴¹ L. I. SCHNEIDER, *The Regulatory Landscape of Transnational Corporations Embracing its Complexity by Adopting a Transnational Perspective*, Zürich, 2024, p. 70.

⁴² International Labour Organization, *Migration for Employment Convention (Revised)*, 1949 (No. 97), adopted July 1, 1949, entered into force August 22, 1952. International Labour Organization, *Migrant Workers (Supplementary Provisions) Convention*, 1975 (No. 143), adopted June 24, 1975, entered into force December 9, 1978. See ILO, *Normlex*, available at www.normlex.ilo.org.

⁴³ *Ibidem*.

⁴⁴ RUDOLPH, *Richterliche*, cit., pp. 201-204.

⁴⁵ *Ibidem*.

⁴⁶ International Labour Organization, *Private Employment Agencies Convention*, 1997 (No. 181), adopted June 19, 1997, entered into force May 10, 2000.

⁴⁷ D. ECKSTEIN, V. KÜNZEL, L. SCHÄFER, *Global Climate Risk Index 2021*, 2021, available at www.germanwatch.org.

the ILO level. Due to the lack of clear climate references, government and judicial authorities, as well as businesses, may interpret ILO standards instrumentally, limiting their application to traditional sectors and excluding climate vulnerability. Similarly, businesses may fail to include this in their human rights due diligence. As a result, even formally ratified instruments are practically inapplicable to climate-related labour mobility.

(C) The consideration of climate migrants' rights from the perspective of refugee law is also not straightforward. While individuals displaced purely on the basis of climate-related impacts typically do not fulfil the criteria outlined in Article 1A(2) of the Geneva Convention (Refugee Convention), which stipulates the requirement of being subjected to persecution on the grounds set out in the Convention, Article 33 (non-refoulement), when interpreted in conjunction with broader human rights norms, can preclude a state from returning an individual to a situation where their life or liberty would be subjected to grave risk⁴⁸. Nevertheless, it should be noted that this provision does not inherently confer the status of a "refugee" and remains subject to the stipulated narrow exceptions⁴⁹. This Convention has little bearing on labour rights. Thus, it is a weak tool both for determining the status of a "climate refugee" and for protecting labour rights.

Due to comparable definitions in the other international legal acts, the terms such as climate-induced migrants or mobility in the context of climate change, transnational climate labour migrant are way more common than climate refugee. We believe that none of the terms currently in use fully captures the multifaceted nature of the phenomenon, which means we need to clarify each one when we adopt labour rights under them. Some clarifications of this nature typically arise when comprehensive climate legislation – e.g. those targeting the reduction of carbon dioxide emissions – intersects with the increasingly urgent issue of climate-induced mobility. This phenomenon manifests particularly in contexts where the international community has exhibited a marked deficiency in addressing climate-related events in a time-

⁴⁸ See MARTINES, *Diritti e tutela*, cit., pp. 161-190.

⁴⁹ F. PERRINI, *Cambiamenti climatici e migrazioni forzate. Verso una tutela internazionale dei migranti ambientali*, Napoli, 2018, p. 94.

ly and adequate manner. Such inaction typically precipitates crises in mobility.

(D) Climate and migration. The tension between climate mobility and the immediate labour needs of internal and transnational migrants revealed a critical policy gap that demands coordinated responses⁵⁰. In this regard, the following interrelated acts of hard and soft law, e.g. Paris Agreement or the Sendai Framework for Disaster Risk Reduction, are worthy of consideration. Together, these legal frameworks set ambitious mitigation targets, but they also create new legal questions at the intersection of climate policy and other fields, particularly regarding the protection and integration of climate-displaced workers.

The Paris Agreement (2015) emerged as the first major global hard-law treaty on climate change⁵¹. It obliges Parties to limit global warming (e.g. well below 2°C) through nationally determined contributions as well as addressed human rights matters⁵². As part of its implementation process, COP21 (the session of the Conference of the Parties as the annual United Nations Climate Change Conference) launched the Warsaw Mechanism's Task Force on Displacement to develop comprehensive strategies on climate displacement and few year after COP29 obliged all member states to include displacement in their National Adaptation Plans and Nationally Determined Contributions. In other words, Paris created an institutional mechanism under the loss-and-damage regime to address «*effective approaches [...] to address displacement*» linked to climate change⁵³. Although labour and social rights are essential, the Paris Agreement and its associated initiatives (COP21, COP29) provide minimal cover-

⁵⁰ F. UPADHYAY, *Migration as good, bad and necessary: examining impacts of migration on staying Himalayan communities affected by climate change*, in *Humanities and Social Sciences Communications*, n. 11, 2024, pp. 1-14.

⁵¹ L.E. ERICKSON, G.K. BRASE, *Paris Agreement on Climate Change*, in *Reducing Greenhouse Gas Emissions and Improving Air Quality*, London, 2019, pp. 11-22.

⁵² J.H. KNOX, *The Paris Agreement as a Human Rights Treaty*, in *Human Rights and 21st Century Challenges: Poverty, Conflict, and the Environment*, (ed. D. AKANDE et al), Oxford, 2018.

⁵³ See *How COP29 can address displacement*, 2024, available at www.internal-displacement.org.

age of these issues⁵⁴. There is no clarification of labour rights for this vulnerable group.

A later initiative has partly reinforced this trend. The Sendai Framework for Disaster Risk Reduction (2015) – a global soft law nature agreement on disaster management – explicitly addresses human mobility and well-managed migration as a form of disaster resilience through employment and decent work (Paragraph 36)⁵⁵. This provision appears in Chapter V of the Framework, which outlines the role of stakeholders, and it addressed mostly for state's duties in a vague way. Courts may struggle to assess the legality of corporate measures taken in the wake of state action affecting protected groups. Meanwhile, companies, particularly those without extensive legal resources, are unlikely to conduct a detailed, monograph-style analysis of the Framework's provisions (including Para. 36 and others) to determine their obligations under HRDD.⁵⁶ Thus, even being of a soft law nature, this Framework has not provided any detailed implementation solutions⁵⁷. This is explained by the fact that there is a difference in countries' economic and social development⁵⁸. However, such approach also has obvious negative consequences for the topic we are investigating. The Sendai Framework refers to the private sector only briefly, and with limited relevance to workers themselves. Namely, this only adds to the legal ambiguity that already exists within this Framework. Preamble (4) mentions the private sector only in terms of impacts on SMEs, with no reference to employees or labour rights. Preamble (6) calls the need for businesses to take climate into account in risk assessment, but again without any emphasis on employees or their

⁵⁴ See Letter from J.H. KNOX to Ambassador Carlos Fuller, Chair of the Subsidiary Body for Scientific and Technological Advice by 3rd of May 2016.

⁵⁵ See International Labour Organisation, *Disaster risk reduction for resilience through employment and decent work*, in *ILO Guide*, pp. 1-58, p. 15.

⁵⁶ It is the case with the ILO Conventions.

⁵⁷ R. MENA, *Humanitarianism and the Sendai Framework: A 10-Year Review of Converging and Diverging Paths*, in *International Journal of Disaster Risk Science*, n. 16, 2025, pp. 1-13.

⁵⁸ R.M. NEKOEI-MOGHADAM, S.M. MORADI, A. TAVAN, *How can the Sendai framework be implemented for disaster risk reduction and sustainable development? A qualitative study in Iran*, in *Global Health*, n. 20, 2024, pp. 1-16.

rights. Similarly, Sendai Framework's references i.e. Guiding Principle (19e)⁵⁹ and across various operational Priorities, including Priorities 1 (27a, 27d, 27j), and Priority 3 (29, 30 b, 30c, 30m, 30o, 30q, 31c, 31d, 31i)⁶⁰ focus on business roles but fail to address fundamental labour rights. This makes the Framework's coverage and impact very limited. Only Priority 4 mentions the need for workforce training in the context of climate challenges, but it is only so much serves as a solution. It is promising that the Sendai Framework thus includes migrants and displaced persons in its disaster planning, viewing migration not only as a risk but also as a potential adaptive response. However, it neither provides enforceable rights that can be invoked in domestic courts, nor does it offer a clear set of labour-related risk indicators to support risk assessment for labour rights under the HRDD.

Both discussed above documents are interrelated and aim to address certain issues arising at the intersection of climate and labour migration. However, neither document provides solutions for climate labour migrants, labour market resilience to crises, or a clear action plan. To this extent the UN drafted the Global Compact for Safe, Orderly and Regular Migration (hereinafter GCM, 2018) that can be seen as a step forward⁶¹. The GCM covers migration caused by disasters, climate change and environmental degradation (para. 18(h))⁶². Despite not legally binding, it is the first international framework to systematically address migration and, what is more important, recognise climate change among the adverse drivers of it. This legal instrument mainly requires countries to respond to climate change in a context that goes

⁵⁹ «Disaster risk reduction and management depends on coordination mechanisms within and across sectors and with relevant stakeholders at all levels, and it requires the full engagement of all State institutions of an executive and legislative nature at national and local levels and a clear articulation of responsibilities across public and private stakeholders, including business and academia, to ensure mutual outreach, partnership, complementarity in roles and accountability and follow-up».

⁶⁰ Y. ABE, I. ZODROW, D.A.K. JOHNSON, L. SILERIO, *Risk informed and resilient development: Engaging the private sector in the era of the Sendai Framework*, in *Progress in Disaster Science*, n. 2, 2019, pp. 1-5, p. 2.

⁶¹ UNGA, *Global Compact for Safe, Orderly and Regular Migration*, 19 December 2018, UN DOC A/RES/73/195.

⁶² W. KÄLIN, *Locating International Law*, cit., pp. 160-162.

beyond labour law, such as strengthening early warning and monitoring systems for climate threats, including migration and population displacement in disaster preparedness measures, and developing adaptation and resilience strategies⁶³.

In calling on states to combat the effects of climate change in accordance with the GCM, it should be recognised that digital labour platforms could provide invaluable assistance and cooperation in labour law matters. Our opinion is based on the fact that the results and experience gained over the years could form the basis for intergovernmental cooperation on these matters: for example, countries could exchange data on the number of available jobs and the recognition of workers' qualifications for these positions. The establishment of a clearly articulated framework outlining state obligations would facilitate the effective integration of climate-displaced migrants and would also make them less vulnerable to digital platforms that track their vulnerable status (i.e. subsequently exploit them for very low pay, slave labour, work under very unfavourable conditions, and other examples from the introduction). This is also consistent with the overall objective of the Paris Agreement and the Sendai Framework, filling gaps in the area of labour law.

Despite all legal instruments not referring explicitly to climate refugees or climate migrants, they focus on different groups of people in vulnerable situations due to climate changes. In our opinion, the multifaceted nature of this phenomenon does not allow them to be classified as either refugees or migrants in strict sense. This further emphasizes the need for a special legal regime for this category of vulnerable workers which will allow to stay in between migrants and refugees by having features of both which are depending on the situation and each individual case.

3. The Role of Digital Platforms in Climate Migration: BHR toolkit

The socio-economic factor of migration is characterised by the fact that many people change their place of residence due to unfavourable

⁶³ *Ibidem.*

climatic conditions in their regions. This data is often analysed by platforms such as Facebook or LinkedIn,⁶⁴ as well as digital labour platforms.

However, it is digital labour platforms that help climate migrants, who represent the majority of workers in this and other industries, to get these jobs⁶⁵. In some instances, migrant workers are compelled to rely on digital labour platforms of non-state nature as their sole source of income⁶⁶. While this provides a viable alternative to the traditional labour market, it can also be exploitative⁶⁷. Shortcomings in international legal regulation of the obligations of states and, to an even greater extent, companies in respecting fundamental labour rights result in inconsistent and uncertain working conditions for climate migrant workers.

(A) One of the typical violations is that individuals who immigrate to a new place but do not hold the nationality from that country can face risks such as social exclusion, i.e. restricted or lack of access to work⁶⁸, often due to tracking this migration status by such platforms and proxy discrimination of them. It is necessary to recognise the need

⁶⁴ Platforms like LinkedIn are used widely in research to trace skilled migration (e.g. Ukraine), but this raises ethical questions around consent and surveillance as this is hardly regulated from legal perspective (more positive side of proxy discrimination). M. BERTÈ, D. PAOLOTTI, K. KALIMERI, *From Ukraine to the World: Using LinkedIn Data to Monitor Professional Migration from Ukraine*, in Conference: GoodIT '23: ACM International Conference on Information Technology for Social Good, 6-8 Sept. 2023, pp. 213-222.

⁶⁵ O. ALYANAK, C. CANT, T. LÓPEZ AYALA, A. BADGER, M. GRAHAM, *Platform work, exploitation, and migrant worker resistance: Evidence from Berlin and London*, in *The Economic and Labour Relations Review*, n. 34, 2023, pp. 667–688, p. 668. See Business and Human Rights Resource Centre, *UAE climate migrants and exploitation* Business and Human Rights Resource Centre. UAE: *Catalysed by climate crises, migrants face rights abuse building renewable energy projects, working for digital platforms, labouring in Expo city, finds Equidem report*, in Equidem 2024, Submission to UN Special Rapporteur consultation on access to information on climate change and human rights: Delivery service.

⁶⁶ Ivi, p. 668.

⁶⁷ Ivi, p. 667.

⁶⁸ J. MAHONEY, K. LE LOUVIER, S. LAWSONPP, *The Ethics of Social Media Analytics in Migration Studies*, (ed. B. AKHGAN, K.L. HOUGH, Y.A. SAMAD, P.S. BAYERL, A. KARAKOSTAS), Cham, 2022, pp. 1-20, p. 3.

for a thorough re-examination of issues of discrimination and proxy discrimination by such platforms in order to prevent this phenomenon.

The flip side of the coin is the deliberate inclusion of workers arriving from climate change-affected areas for work at negligible pay or slave labour. This should also be considered by digital labour platforms, which should develop minimum standards below which certain services or goods cannot be provided – naturally taking into account the location and minimum typical standards both for the place where the service is provided and for the country of origin of the worker.

Digital platforms, including DLPs, should be prohibited to facilitate the labour of climate migrants (especially internal migrants) for hardly decent wages or working conditions.

The example of climate migrant workers in the UAE demonstrates some typical violations of the right to work (RTW) at DLPs in the sectors of 1) renewable energy, 2) transport, 3) cleaning, and 4) delivery sectors⁶⁹. Thus, there is a need to consider some sectors as potentially risky for workers and to request a higher standards of labour HRDD for them.

(B) A critical evaluation of the classification of climate migrants based on relocation (internal or external), sectoral activity, and engagement with DLPs and the potential for integrating digital tools to enhance working conditions. This study sets out a comprehensive framework of legal measures that the ILO could adopt in order to address the identified gaps from the perspective of business and human rights (BHR). Non-exhaustive examples include State obligations to promote non-discriminatory integration of climate migrants, including by granting equal rights to work with domestic workers. The obligations of companies can be illustrated by the following: a wage area not lower than the minimum wage, taking into account national and international standards and coefficients, if the DLP is targeting climate migrant workers for employment; the obligations of DLPs to verify the

⁶⁹ Climate Change News, *Rights group alleges abusive conditions for migrant workers at UAE renewable projects*, 2024, available at www.climatechangenews.com. Mar more Mena, *The Rising Popularity of Online Food Delivery Platforms and Cloud Kitchens in the UAE*, Report, 2024.

employment contract by having such contract approved by the competent authorities both of the climate migrant's home jurisdiction and the place of work performance delivery. At present, no binding international legal instrument consolidates such initiatives. However, the combined analysis of the instruments discussed above supports the conclusion that these recommendations are necessary, developed in line with internationally recognised norms and principles (e.g. UNGPs) in the area of climate-related labour migration.

From the perspective of global governance and international law, it is advisable to develop a comprehensive and ethically oriented plan for coordinating labour migration, based on existing international mechanisms and multilateral agreements. Such a plan should include: 1) an analysis of country pairs with the highest degree of comparability of worker qualifications (using international classifiers such as ISCO⁷⁰ or the European Qualifications Framework⁷¹); 2) the identification of countries and occupations where structural labour shortages are projected, as well as potential reserves of skilled professionals – with a view to optimising the mutual recognition of diplomas and licences; 3) prioritising those areas and professions where language and cultural barriers have the least impact on professional adaptation and the quality of services, and ensuring that such relocation is proportionate to the number of workers whose integration will take longer⁷²; 4) taking into account not only economic efficiency but also the prevention of

⁷⁰ International Standard Classification of Occupations (ISCO): Developed by the International Labour Organization (ILO), ISCO provides a system for classifying and aggregating occupational information internationally. It is widely used for matching labour market data, analyzing skill levels, and facilitating international comparison of job qualifications. See International Labour Organization, *ISCO-08: International Standard Classification of Occupations*.

⁷¹ European Qualifications Framework (EQF): The EQF is a common European reference framework that helps compare qualifications across different education and training systems in Europe. It covers all types and levels of qualifications, promoting lifelong learning and mobility. See European Commission, *The European Qualifications Framework for Lifelong Learning (EQF)*, 2008. See Directive 2005/36/EC of the European Parliament and of the Council of 7th September 2005 on the recognition of professional qualifications, OJ L 255, 30.9.2005, pp. 22–142.

⁷² K. SHAPOVALOVA, *The Role of Labour Law in Enabling Mechanisms for Mitigating Military Conflicts: A Legal Model of Peace*, in *Conexus*, n. 7, 2024, pp. 213–235.

brain drain through the use of digital forms of employment that reduce the need for physical relocation when working from home is possible (e.g. IT) or when not all of the country's territory has been affected by climate change⁷³. The proposed framework underscores the intersection of human rights, corporate accountability, and climate justice to safeguard the dignity and rights of this growing vulnerable group of the workforce.

4. AI and partial automation as a pathway for OHS rights of climate-dependent workers under BHR

AI and automation can help create better working conditions in Occupational Health and Safety (hereinafter OHS) for climate migrants and refugees, whether they are internal or transnational. Individual employees affected by the implementation of automation have a high level of job satisfaction and automation can reshape the labor environment and shorten employees' stay in an enterprise in favor of autonomous and flexible jobs⁷⁴.

Taking into consideration the case-study on UAE, migrant workers form 88% of the UAE population often come from climate-vulnerable countries and often are exposed to escalating climate risks⁷⁵. Delivery service workers in the UAE risk their safety and their lives to deliver food fast, in extreme heat, under relentless pressure – these employment practices are acts that inflict physical harm – a recognized form of violence under many other ILO Conventions. These risks associated with heat stress interact with and compound other serious human and

⁷³ See ILO Convention No. 97; International Organization for Migration, *Migration Governance Framework (MiGOF)*, IOM Council Doc C/106/40 (26 November 2015).

⁷⁴ F. CHEN, R. LI, *Improvement and Replacement: The Dual Impact of Automation on Employees' Job Satisfaction*, in *Systems Practice in Social Science*, n. 12, 2024, pp. 1-13.

⁷⁵ Human Rights Watch, *UAE: Migrant Worker Abuses Linked to Broader Climate Harms. Upholding Migrant Rights Critical to Address Climate Crisis at COP28*, 2023, available at www.hrw.org.

labour rights abuses, including forced labour conditions⁷⁶. The situation is similar for workers in the construction industry. The positive side of automation and AI in this context could be the following.

It is advisable for companies to focus on developing automated technologies aimed at improving working conditions for workers in the construction and delivery sectors, which would minimise their direct involvement in tasks that are hazardous to health and occupational hygiene, and instead shift the focus towards AI control. For instance, a 30% increase in labour efficiency in construction when AI technology is involved would help keep workers paid but not working during the hottest hours of the day⁷⁷.

Positive examples include FANUC robots with Robosuit protection and heating/insulation, complemented by heat-resistant sensors, reducing the need for human intervention in hazardous temperature conditions⁷⁸. Companies such as “Built Robotics” are developing autonomous equipment for earthworks: humans only control the AI remotely and are not present at the site, where risks can be exacerbated by weather conditions (rain, heat, dust), which reduces the negative impact on workers⁷⁹. The Australian delivery robot Ari travels around the city in hot and cold weather and has temperature control systems in its cargo compartment, with humans only monitoring deliveries from their phones⁸⁰.

Drawing inspiration from the UNGPs pillars, the company’s obligation can be outlined as following: 1) to prioritise the sale of AI technologies aimed directly or indirectly at improving working conditions to countries with poor climate conditions and where such technologies can be useful for labour law matters; 2) improve the development of AI technologies aimed at improving working conditions for workers in

⁷⁶ *Ibidem*.

⁷⁷ L. BUTINA, *Transforming the construction and real estate sectors; How is AI making an impact, in these industries?*, 2025, available at www.easy.bi.

⁷⁸ R. KASSON, *Robotics in Extreme Environments: Designing for Environmental Adaptation*, 2025, available at www.blog.boston-engineering.com.

⁷⁹ K. JOHNSON, *Robots, AI, and the road to a fully autonomous construction industry*, 2020, available at www.entrepreneur.com.

⁸⁰ B. CORNWELL, *Food delivery just got smarter with temperature-controlled robots*, 2025, available at www.foodmagazine.com/news/.

sectors with particularly high climate risks (e.g. a shop worker is less exposed to the climate than a construction worker). The percentage of such AI developments that are done responsibly should be shown in companies' HRDDs, and this should be tracked in the supply chains of companies involved in both developing AI and AI components.

From the point of view of global governance, it is recommended that countries with favourable climatic conditions and unfavourable labour market attitudes towards migrants (including climate migrants) should consider increasing their involvement in the introduction of such technologies to countries with significant numbers of climate migrants⁸¹.

States are encouraged to intensify the exchange of information on the needs and possibilities for introducing such AI technologies, as well as to take additional measures to protect the wages of such workers: it is unacceptable to have a sharp reduction in jobs in these sectors, as well as a significant reduction in the wages of climate migrants and refugees (their wages are already often significantly lower than those of domestic workers).

It is recommended that the ILO and other international organization advocate for measures that encourage businesses to proactively develop and implement solutions for the automation of roles with climate-related health risks and the optimization of the mobility of remote and platform workers who are driven by climate changes. This encompasses an investigation into the potential of HRDD initiatives and sustainable business practices to encourage organisations to implement responsible automation strategies in regions where climatic conditions present a significant risk to labour safety.

5. Concluding remarks

There are legal gaps in the area of interaction between climate change and the resulting labour mobility. Digital platforms in this regard create both new employment opportunities and innovative ave-

⁸¹ E.g. Xylem Inc. (NYSE:XYL), Archer-Daniels-Midland (NYSE:ADM). See also Fn. 70-76.

nues for the exploitation and discrimination of such “climate labour migrants”. However, under conditions of legal uncertainty, the trend tends to increase the risks faced by these migrants. Thus, workers are vulnerable to incomplete compliance with HRDD by businesses, which has a detrimental effect on individual labour rights. Firstly, this matter is a case due to the complexity of defining the status of these workers under climate and migration (including refugee status) laws, which often exclude them from their scope. Secondly, numerous instruments, including the Paris Agreement, do not address labour law issues at all. In this regard, the present study posits that BHR, and HRDD in particular, provides a suitable framework for the distribution of responsibilities between the state and business. However, it is argued that this framework must be supplemented with sector-specific risk indicators to ensure the optimal functioning of digital labour platforms⁸².

The introduction of measures by actors at the international and national levels, in line with this concept, will allow for the clarification of fundamental labour rights (e.g. non-discrimination) and the application of geographic tracking of such migrants using digital platforms. This will promote human rights in development in the form of decent work, instead of the current exploitation of such workers and other violations. To this aim some developments are key: the introduction of state responsibility (e.g. to ensure equal access to employment for those displaced by climate change and to incorporate labour risk indicators into national adaptation plans); companies (e.g. to incorporate anti-discrimination wage checks and external verification of contract terms into HRDD), and global governance strategies (e.g. develop sectoral risk indicators for climate mobility in digital employment).

Furthermore, in regions characterised by unfavourable working environments, OHS may propose a transition from individual performance of work to AI monitoring of such work by the employee. The paper considers the feasibility of replacing workers exposed to climate change threats through automation. This is achieved by taking into account industry employment patterns and the availability of technologi-

⁸² Using technology to eliminate forced labour at sea. See World Economic Forum, *How AI can help us better prepare for climate migration*, 2022.

cal solutions. Positive practices are presented for improving the working conditions of workers engaged in delivery or construction in adverse climatic conditions through the introduction of full or partial automation. In this article, a call is made to companies and governments to promote efforts in this direction.

Consequently, this study provides a framework for future research, which is pertinent to both domestic and transnational workers affected by climate change. The strategic focus on HRDD has the potential to transform digital tools from a source of risk into a mechanism for ensuring decent work for people. The implementation of our recommendations by states and companies has the potential to enhance the protection of the rights of these categories of workers⁸³ and to mitigate the phenomenon of socio-economic crises in the field of climate mobility.

Abstract^{*}

Ita

Lo status giuridico dei lavoratori migranti colpiti dai cambiamenti climatici è incerto. La protezione di questi individui risente inoltre della crescente digitalizzazione, dell'uso di piattaforme di lavoro digitali e della parziale automazione delle prestazioni lavorative. Tuttavia, la questione non è sempre adeguatamente disciplinata dal diritto internazionale. Il presente studio esamina il quadro giuridico di riferimento e propone strategie e raccomandazioni agli Stati e alle imprese per migliorare il rispetto dei diritti fondamentali di questi lavoratori.

Parole chiave: diritti fondamentali dei lavoratori, giustizia climatica e migrazione, piattaforme digitali, governance responsabile dell'AI

⁸³ International Labour Organization, *Mapping organizations, institutions, and companies developing digital solutions for decent work*, 2022.

^{*} Articolo sottoposto a referaggio fra pari a doppio cieco (*double-blind peer review*).

En

The legal status of migrant workers affected by climate change is uncertain. The protection of these individuals is affected by increasing digitalization, the use of digital labor platforms, and the partial automation of work performance. However, the issue is not always adequately regulated by international law. This study examines the legal framework and proposes strategies and recommendations for states and companies to improve compliance with fundamental rights of these workers.

Keywords: fundamental labour rights, climate justice and human mobility, digital platforms, responsible AI governance