Research Square

Preprints are preliminary reports that have not undergone peer review.
They should not be considered conclusive, used to inform clinical practice,
or referenced by the media as validated information.

Climate-Responsive Labour Law in the Anthropocene: Occupational Heat Risk and Outdoor Worker Protection in Saudi Arabia

Muath Alqarni

muath.ali.alqarni@gmail.com

Islamic University of Madinah

Article

Keywords: Anthropocene, Saudi Labour Law, Climate Change, Heat Stress, Occupational Safety and Health, International Labour Organisation

Posted Date: November 27th, 2026

DOI: https://doi.org/10.21203/rs.3.rs-11648324/v1

License: This work is licensed under a Creative Commons Attribution 4.0 International License.
Read Full License

Additional Declarations: No competing interests reported.

Climate-Responsive Labour Law in the Anthropocene: Occupational Heat Risk and Outdoor Worker Protection in Saudi Arabia

Muath Alqarni*

Abstract: Climate change is a defining challenge of the Anthropocene, with rising temperatures posing significant occupational risks to outdoor workers exposed to extreme heat. This article critically investigates whether Saudi labour law provides adequate protection against climate-related heat risks facing outdoor workers and considers how the changing nature of occupational risk challenges existing models of labour regulation. It argues that the central regulatory challenge is not simply the absence of preventive occupational safety measures, but the capacity of labour law to adapt existing protections to occupational risks whose intensity, duration, and temporal distribution are being altered by climate change. Adopting a doctrinal legal research methodology and a comparative approach, the article analyses the Saudi Labour Law and relevant occupational safety and health regulations against applicable International Labour Organisation (ILO) standards and contemporary scholarship on labour law in the Anthropocene. It finds that Saudi Arabia has developed significant preventive measures addressing occupational heat exposure, but that the regulatory framework remains insufficiently climate-responsive because key protections operate through fixed temporal restrictions, general statutory duties, and preventive measures whose legal status and capacity for adaptation require further strengthening. The article therefore distinguishes between regulation that is preventive in addressing recognised occupational hazards and regulation that is climate-responsive in adapting legal protection to changing patterns of occupational heat risk. It argues that Saudi labour law should develop towards a more adaptive framework through strengthened occupational safety obligations, binding preventive standards, risk-based heat protection, periodic regulatory review, and closer alignment with relevant ILO standards to ensure effective protection for outdoor workers under changing climatic conditions.

Keywords: Anthropocene; Saudi Labour Law; Climate Change; Heat Stress; Occupational Safety and Health; International Labour Organisation

II. INTRODUCTION

This paper critically examines the current labour law protection standards available to outdoor workers in Saudi Arabia governing occupational heat stress, highlighting the challenges posed by the increased workplace heat exposure and the existing preventive measures. It addresses the principal research question of the study: to what extent does Saudi Labour Law adequately protect outdoor workers from climate-related heat risks in the Anthropocene? In doing so, the paper examines how the Anthropocene reshapes the objectives of labour law in responding to climate-related occupational risks and evaluates the extent to which Saudi Arabia's occupational safety and health framework protects outdoor workers from heat-related hazards. It further explores the extent to which the existing regulatory framework aligns with relevant ILO occupational safety and health standards and considers how these standards can strengthen Saudi labour law's response to climate-related occupational heat risks for outdoor workers.

* Assistant Professor of Law, Labour Law, Islamic University of Madinah, Saudi Arabia. Email: Muath.Alqarni@iu.edu.sa. An earlier version of this paper was presented at "Rethinking Work and Legal Regulation for the Anthropocene," University of British Columbia, Vancouver, Canada (22–24 May 2026). The author thanks Professors Simon Deakin and Supriya Routh for their support.

Ultimately, this article argues that Saudi labour law should develop from a framework containing important preventive measures into a more climate-responsive regulatory framework capable of adapting worker protection to changing patterns of occupational heat risk.

Climate change-driven heat exposure has been identified as an increasingly significant occupational safety and health challenge that threatens workers' health, safety, and productivity worldwide.[1] In particular, heat stress can cause heat-related illnesses, reduce outdoor worker productivity, increase workplace accidents, and, in severe cases, result in death.[2] Consequently, increasing attention has been given to whether existing legal and occupational safety frameworks require stronger preventive and climate-responsive measures, supported by international labour standards, to better protect outdoor workers from occupational heat risks, especially in the context of rising temperatures and changing weather patterns.[3] The ILO indicated that many national legal frameworks remain inadequate to address the growing occupational hazards intensified by climate change, including Saudi Arabia.[4] The ILO reported on 29 October 2026 that 2.4 billion workers worldwide are exposed to excessive heat, with nearly 19,000 work-related deaths attributed to excessive heat annually.[5] These global figures highlight the continuing importance of occupational heat protection and provide context for examining the adequacy of Saudi labour law in protecting outdoor workers.

A growing body of research has examined legal protection on working conditions under Saudi Labour Law. Khahro and others argue that Saudi Labour Law provides a broad legal framework for protecting workers, including occupational safety and health obligations, but find that limited awareness of statutory rights among construction workers undermines the effective implementation of these protections.[6] However, Khahro and others do not examine whether the existing legal framework is adequate to address climate-related occupational heat risks or evaluate its consistency with relevant ILO standards. Other studies examining occupational safety and health under Saudi Labour Law argue that the existing legal framework imposes comprehensive employer obligations to protect workers against occupational hazards and diseases.[7] The literature has begun to examine occupational hazards under Saudi Labour Law; however, it has not adequately extended, to the best of the researcher's knowledge, this analysis to critically examine climate-related heat risks or evaluated the adequacy of the legal framework through the lens of the Anthropocene and relevant ILO standards. The studies highlight that comparatively less attention has been given to whether existing labour law frameworks provide an adequate legal response to climate-related heat risks. Although emerging scholarship on labour law in the Anthropocene argues that labour law must evolve to

---

[1] International Labour Organisation, Heat at Work: Implications for Safety and Health: *A Global Review of the Science, Policy and Practice* (ILO 2024) 11-12.

[2] International Trade Union Confederation, Heat Stress and Climate Change <https://www.ituc-csi.org/heat-stress-and-climate-change> accessed 30 June 2026.

[3] International Labour Organisation, Heat at Work: Implications for Safety and Health: *A Global Review of the Science, Policy and Practice* (ILO 2024) 17.

[4] ILO, *Heat at Work: Implications for Safety and Health – A Global Review of the Science, Policy and Practice* (ILO 2024) 1-2.

[5] ILO, 'New ILO Studies Reveal Growing Impact of Heat Stress on Jobs and Productivity in Six Countries' (*ILO*, 29 October 2026) <https://www.ilo.org/resource/news/new-ilo-studies-reveal-growing-impact-heat-stress-jobs-and-productivity-six> accessed 4 November 2026.

[6] Shabir Khahro and others, 'Workers Protection in Saudi Law: An Awareness Assessment of Construction Industry' (2020) 23(3) *Journal of Legal*, Ethical and Regulatory Issues.

[7] Yusra Aldhubyani, 'Protection of the Worker from Hazards and Diseases in the Saudi Labour Law' (2025) 4(3) *International Journal of Law Research and Studies* 183 <https://doi.org/10.59992/IJLRS.2025.v4n3p7> accessed 30 June 2026.

address the labour law response to the accelerating environmental challenges, comparatively little attention has been devoted to evaluating national labour law frameworks against this perspective.[8] More specifically, limited doctrinal study has critically examined the adequacy of Saudi Labour Law in protecting outdoor workers from climate-related heat risks through the combined lens of the Anthropocene and relevant ILO standards. This represents an important gap in the literature, particularly given Saudi Arabia's increasing exposure to extreme heat and the vulnerability of outdoor workers.

This study aims to critically analyse the adequacy of the protection criteria under Saudi Labour Law for addressing climate-related heat risks and evaluate the relevant legal framework through the lens of the Anthropocene and relevant ILO standards. It employs a doctrinal legal research method, complemented by an analytical comparative approach examining the differences between Saudi regulations and relevant ILO standards. The comparison examines the regulatory dimensions, using Convention No. 187 as binding and Convention No. 155 and relevant ILO guidance as comparative benchmarks. By identifying key deficiencies in Saudi Labour Law and assessing how alternative models may provide stronger outdoor worker protection, this research provides guidance for a climate-responsive legal framework to strengthen protection against occupational heat stress and improve working conditions in Saudi Arabia.

The remainder of this article is structured as follows. Part II develops the conceptual framework of climate-related heat risks in the Anthropocene and examines how the changing nature of occupational risk challenges traditional labour law paradigms. Part III critically evaluates the extent to which the current Saudi Labour Law framework adequately protects outdoor workers from climate-related heat risks, with particular attention to occupational safety and health obligations governing heat exposure. Part IV analyses the relevant ILO standards on occupational safety and health, assessing the extent to which they establish a climate-responsive benchmark for outdoor worker protection. Part V undertakes a comparative and critical evaluation of the Saudi and ILO frameworks, exposing the normative and regulatory deficiencies of the current Saudi approach and assessing their implications for effective outdoor worker protection in a warming climate. Building on this analysis, Part VI proposes a climate-responsive legal framework aimed at strengthening occupational heat protection and improving working conditions in Saudi Arabia, and concludes with Part VII.

II. THE ANTHROPOCENE AND CLIMATE-RELATED OCCUPATIONAL HEAT RISKS

This section defines the Anthropocene and examines its implications for climate-related occupational heat risks. This is important because it provides the conceptual and factual foundation for assessing whether the existing Saudi legal framework adequately protects outdoor workers from climate-related occupational heat risks.

The term 'Anthropocene' refers to the current geological epoch in which human activities have become the dominant force shaping the Earth's geology, climate, and ecological systems.[9] Thus, the Anthropocene signifies that humans have become central agents in transforming the Earth system, marking not merely an extension of existing environmental pressures but a

[8] ILO, *Heat at Work: Implications for Safety and Health – A Global Review of the Science, Policy and Practice* (ILO 2024) 1-75.

[9] Paul J Crutzen, Eugene F Stoermer and Will Steffen, 'The "Anthropocene"' in Libby Robin, Sverker Sörlin and Paul Warde (eds), *The Future of Nature: Documents of Global Change* (Yale University Press 2013) 484.

deeper shift towards increased instability, unpredictability, and risk.[10] This understanding has prompted legal scholarship to reconsider how environmental problems are perceived and has highlighted the need to confront the theoretical, conceptual, and methodological challenges that the Anthropocene poses for law.[11]

Climate-related hazards may arise from natural climatic variability, while their frequency and intensity may also be affected by anthropogenic climate change,[12] thereby presenting significant challenges for labour law and requiring effective measures to protect outdoor workers from occupational heat risks. Therefore, the Anthropocene provides a useful lens for analysing labour law by recognising that climate-related occupational risks are persistent rather than isolated hazards.[13] For labour law, the significance of this perspective lies in the problem of regulatory stability. Occupational safety rules are commonly designed around identifiable workplace hazards and established methods of prevention. Climate change complicates this model where the frequency, duration, and intensity of environmental exposure progressively change. A climate-responsive labour-law framework must therefore not only prevent recognised hazards but also possess mechanisms through which protective standards can adjust to changing risk conditions. This requires a critical assessment of whether existing occupational safety and health frameworks remain adequate and, where necessary, whether adaptive measures are required to protect outdoor workers from escalating climate-related risks.[14] Global temperatures have already risen by more than 1.2°C above pre-industrial levels, with human-induced greenhouse gas emissions identified as the principal driver of this warming.[15] As temperatures rise, extreme heat events are expected to become more frequent and intense, increasing environmental and occupational risks.[16]

These changes increase outdoor workers' exposure to excessive heat and heighten risks in outdoor and physically demanding occupations, such as those in construction jobs. The effects of rising temperatures are evident in Saudi Arabia, where July is the hottest month. The National Centre for Meteorology reports an average July maximum of 40.3°C, with temperatures exceeding 44°C in parts of the Eastern Province and central regions, and a peak of 51.3°C recorded in Al-Ahsa in July 2024.[17] These extreme conditions have continued, with

[10] Emily Webster and Laura Mai, 'Transnational Environmental Law in the Anthropocene' (2020) 11(1–2) *Transnational Legal Theory* 1, 2.
[11] Emily Webster and Laura Mai, 'Transnational Environmental Law in the Anthropocene' (2020) 11(1–2) *Transnational Legal Theory* 1, 3.
[12] From an Islamic perspective, all natural phenomena ultimately occur by the will of Allah. Qur'an 57:22 (Surah Al-Hadid) affirms that all events are known and decreed by Allah before they occur. However, an analysis of Sharīʿah principles is beyond the scope of this article. This perspective is particularly relevant in the Saudi context, where Islamic principles form an important part of the legal and normative framework.
[13] Shane Godfrey and Debbie Collier, 'Climate-proofing' Labour Law: Adapting to Increased Heat and Extreme Weather Events (NEDLAC Labour Law Series No 5, *Centre for Transformative Regulation of Work*, University of the Western Cape 2024) 7.
[14] Shane Godfrey and Debbie Collier, 'Climate-proofing' Labour Law: Adapting to Increased Heat and Extreme Weather Events (NEDLAC Labour Law Series No 5, *Centre for Transformative Regulation of Work*, University of the Western Cape 2024) 7.
[15] Shilu Tong and others, 'Current and Future Threats to Human Health in the Anthropocene' (2022) 158 Environment International 1.
[16] Shilu Tong and others, 'Current and Future Threats to Human Health in the Anthropocene' (2022) 158 Environment International 2.
[17] Saudi Gazette, 'July Is Saudi Arabia's Hottest Month: What 40 Years of Climate Data Reveals' *Saudi Gazette* (24 June 2026) <https://saudigazette.com.sa/article/662461> accessed 1 July 2026.

temperatures reaching 50°C in Al-Ahsa in July 2026, reinforcing the growing frequency and intensity of extreme heat events that heighten occupational heat risks.[18]

The Saudi labour market is characterised by a segmented structure comprising the public and private sectors. According to the General Authority for Statistics (GASTAT), the total registered workforce in Saudi Arabia reached approximately 19.39 million in the first quarter of 2026, including Saudi and non-Saudi workers across both sectors and domestic workers.[19] Of these, approximately 7.53 million were Saudi nationals, while 11.86 million were non-Saudi workers, including around 4.30 million domestic workers.[20] Employment remains overwhelmingly concentrated in the private sector, which accounts for approximately 16.24 million workers, compared with around 1.15 million employees in the public sector.[21]

Reflecting the segmented nature of the Saudi labour market, foreign workers account for approximately 80% of registered private-sector employment and are concentrated in manual, office, and outdoor occupations, whereas Saudi nationals predominate in public-sector employment.[22] Yet, the recent increase in the Saudization requirement to 30% across 46 private-sector engineering professions reflects the continuing evolution of the Saudi labour market; however, a substantial proportion of the workforce remains employed in private-sector occupations exposed to climate-related heat risks.[23] Although no official statistics identify the number or proportion of outdoor workers in Saudi Arabia, the construction sector, one of the sectors most heavily characterised by outdoor work, employed approximately 3.41 million workers, accounting for 14.6% of total employment in the first quarter of 2026.[24] This demonstrates that, although the composition of the private-sector workforce is evolving, climate-related occupational heat risks remain a significant concern for workers engaged in private-sector outdoor occupations, irrespective of nationality.

Accordingly, the structure of the Saudi labour market, combined with rising temperatures and the increasing frequency of extreme heat events, means that a significant proportion of the workforce is exposed to climate-related occupational heat risks. This underscores the importance of examining whether Saudi labour law provides an adequate legal framework to protect outdoor workers from these evolving risks.

---

[18] Hajar AlQusayer, 'Hottest Day of Year in Saudi Arabia as Temperatures Hit 50 C' *Arab News* (14 July 2026) <https://www.arabnews.com/node/2650858/saudi-arabia> accessed 15 July 2026.

[19] General Authority for Statistics (GASTAT). Register-based Labour Market Statistics – First Quarter 2026. Riyadh: *GASTAT*, 2026.

[20] General Authority for Statistics (GASTAT). Register-based Labour Market Statistics – First Quarter 2026. Riyadh: *GASTAT*, 2026. Domestic workers comprise various occupational categories and perform work for individuals or households in private homes. They are excluded from the protection of the Labour Law, are regulated under a separate legal framework, and are distinct from migrant workers employed in the public or private sectors. Domestic workers and public-sector employees fall outside the scope of this study because they are not employed under the Labour Law in occupations typically associated with significant occupational heat exposure.

[21] General Authority for Statistics (GASTAT). Register-based Labour Market Statistics – First Quarter 2026. Riyadh: *GASTAT*, 2026.

[22] Olivier Durand-Lasserve, 'Policies to Nationalize the Private Sector Labor Force in a Matching Model with Public Jobs and Quotas' (KAPSARC Discussion Paper, *King Abdullah Petroleum Studies and Research Centre* 2021) <https://www.kapsarc.org/our-offerings/publications/policies-to-nationalize-the-private-sector-labor-force-in-a-matching-model-with-public-jobs-and-quotas/> accessed 17 July 2026.

[23] Saudi Gazette, '30% Saudization in 46 Engineering Professions Takes Effect from Tuesday' *Saudi Gazette* (30 June 2026) <https://saudigazette.com.sa/article/662624> accessed 20 July 2026.

[24] Ministry of Economy and Planning, DataSaudi, 'Construction Sector' <https://datasaudi.sa/en/sector/construction> accessed 4 August 2026.

III: CLIMATE-RELATED HEAT RISKS UNDER SAUDI LABOUR LAW

This section examines the existing Saudi legal framework governing occupational heat risks. It introduces the principal legal protections that form the basis for assessing the adequacy of outdoor worker protection against climate-related heat risks before evaluating their consistency with relevant ILO standards.

The legal framework governing employment relations in Saudi Arabia are primarily established by the Labour Law and its Implementing Regulations.[25] Together, these instruments regulate key aspects of employment, including occupational safety and health, working conditions, and employer obligations. While the Labour Law sets out the substantive legal framework, the Implementing Regulations provide detailed guidance on its application.[26] This framework is further supplemented by ministerial resolutions and orders governing specific aspects of employment and occupational safety, including measures addressing occupational heat exposure.[27]

The Labour Law applies to all persons falling within its definition of a ‘‘worker,’’ namely any individual who undertakes to work for an employer under the employer’s management or supervision in return for wages.[28] This includes workers in the private and public sectors, whether employed on a full-time or part-time basis. Government ‘‘employees’’ are therefore excluded from the scope of the Labour Law.[29] Outdoor workers are covered by the Labour Law and are entitled to a comprehensive framework of occupational safety and health protections. Protection against heat stress forms one component of this broader framework, which also includes requirements for safe workplaces, personal protective equipment (PPE), safety training, fire prevention, medical care, and compensation for work-related injuries and occupational diseases.[30]

The Labour Law does not expressly regulate heat stress within its provisions, yet it establishes a general duty on employers to protect outdoor workers from occupational hazards. Viewed through the lens of the Anthropocene, however, the adequacy of this general duty depends not only on whether it covers heat as an occupational hazard, but also on whether it can adapt to heat risks whose intensity, duration, and timing are being altered by climate change. The Labour Law requires employers to ‘‘take the necessary precautions to protect workers against hazards’’ and to provide such protection at no cost to workers.[31] As heat stress falls within this general duty to protect outdoor workers from workplace hazards, this provides the statutory foundation for the adoption of specific heat stress measures, including the Ministerial

[25] Labour Law, Royal Decree No M/51 (23 Sha’ban 1426 H - 27 September 2005) amended by Royal Decree No M/44 (02 Sha’ban 1446 H-19 Feb 2025). The Implementing Regulations of Labour Law and its Annexes 2025, Annexe No. 5, <https://www.hrsd.gov.sa/en/knowledge-centre/decisions-and-regulations/ministerial-decisions/172156> accessed 22 July 26.
[26] Labour Law, article 243.
[27] Ministerial Decision No 3337, 15 Rajab 1435 AH (14 May 2014).
[28] Labour Law, article 5.
[29] Civil Service Law in 1976, Royal Decree No M/49 (1 Muharram 1397 H - 22 December 1976). Public employee is an individual employed by a public body. Every person appointed by the ‘government’ with a permanent job in the service of a ‘public body’, which falls within the scope of serving their central or regional government, is a public employee in Saudi Arabia. See Implementing Regulations of the Human Resources Regulations for the Civil Service (Ministerial Decision No 1550, 2019) article 1.
[30] Ministry of Human Resources and Social Development, Health and Safety in the Work Environment <https://www.hrsd.gov.sa/en/care-about-you/health-and-safety> accessed 25 July 2026.
[31] Labour Law, article 122.

prohibition and guide on outdoor work under direct sunlight during the summer months.[32] This matters because it demonstrates that heat stress regulation in Saudi Arabia is legal obligations, affording that employers are legally required to comply with protective measures and that enforcement actions have a clear statutory basis.[33] The protection affords outdoor workers the essential right to safeguard their health and safety by ensuring that employers cannot require them to perform work in areas exposed to direct sunlight between 12:00 p.m. and 3:00 p.m. during the period from 15 June to 15 September each year.[34] The fixed temporal character of this prohibition is significant for the present analysis. Although the measure is preventive because it restricts exposure before injury occurs, its operation is determined by predetermined dates and hours rather than by a continuously assessed level of occupational heat risk. This distinction becomes increasingly important where climate change alters the timing, duration, and intensity of hazardous heat exposure. This is precisely where the Anthropocene challenges a fixed regulatory model: occupational heat protection based primarily on predetermined dates and hours may become progressively disconnected from the changing temporal distribution of climate-related heat risk.

In addition, the Procedural Guide for OSH to Prevent the Effects of Exposure to Sunlight and Heat Stress provides guidance on reducing the risks of work-related heat stress.[35] It recommends scheduled rest breaks, shaded or cooled rest areas, and access to drinking water, advising workers to hydrate every 15-20 minutes.[36] The Guide also promotes a team-based system, encouraging outdoor workers not to work alone and to stop work and inform nearby colleagues if they experience heat-related symptoms.[37] In addition, it emphasises the importance of wearing light-coloured clothing and taking regular rest breaks.[38] The Procedural Guide provides that employers should monitor workplace temperature and humidity, provide adequate drinking water, adjust work schedules to minimise prolonged heat exposure, establish designated rest areas, and conduct annual health assessments to identify workers at increased risk of heat-related illness.[39]

In addition to the general preventive measures, the Guide further provides for training, counselling and education for management and outdoor workers exposed to hot workplaces on all relevant heat-associated risks and methods of prevention.[40] It also provides for personal protective equipment, such as head protective caps, and ensure the implementation of comprehensive heat-safety measures, including engineering controls, heat risk assessments,

[32] Ministerial Decision No 3337 (15 Rajab 1435 AH/14 May 2014) on the Prohibition of Work under Direct Sunlight in Private Sector Establishments. Ministerial Decision No 196086 (29 Shawwal 1442 AH/10 June 2021) approving the Procedural Guide for Occupational Safety and Health to Prevent the Effects of Exposure to Sunlight and Heat Stress.

[33] Labour Law, article 131. It expressly authorising the Minister to designate hazardous work, impose special conditions, and regulate working hours, thereby providing the statutory basis for the Midday Work Ban and related heat stress measures.

[34] Ministerial Decision No 3337 (15 Rajab 1435 AH/14 May 2014) on the Prohibition of Work under Direct Sunlight in Private Sector Establishments.

[35] Ministerial Decision No 196086 (29 Shawwal 1442 AH/10 June 2021) on the Procedural Guide for Occupational Safety and Health to Prevent the Effects of Exposure to Sunlight and Heat Stress.

[36] ibid para 5.4.

[37] ibid paras 4.1.10, 4.1.14, 4.3.1, 5.4.

[38] ibid paras 4.1.13, 14.

[39] ibid paras 4.2.4.

[40] ibid paras 4.1.1.

and worker acclimatisation.[41] Outdoor workers are also required to inform their supervisor or safety officer if they experience symptoms of stress or fatigue.[42]

The Guide recommends using the Heat Index, which combines atmospheric temperature and relative humidity to assess heat-related risks, and provides guidance on recognising the symptoms of sunstroke and heat stroke, administering appropriate first aid, and implementing engineering controls, such as insulation, ventilation, and air-conditioned workplaces, to minimise workplace heat exposure.[43] (Figure 1 displays the Heat Index). Occupational heat obligations are enforced as part of the broader Labour Law framework, under which labour inspectors monitor compliance with the Labour Law, its regulations, and the decisions issued in its implementation, record violations, and propose appropriate fine of SR 1,000 (approximately US$267), with the penalty imposed separately for each affected worker.[44] Where violations persist or are repeated, the establishment's licence may be suspended, with continued non-compliance potentially resulting in its revocation.[45] According to the Ministry of Human Resources and Social Development (HRSD), more than 17,000 inspections were conducted between 15 June and 26 August 2025, resulting in the detection of 1,910 violations of the midday work-under-the-sun ban across the country.[46]

Heat Index

Risk degree	Heat Index °C	Symptoms/illnesses of exposure to high temperature	Breaks	Need to water per hour
CAUTION	29-25	Possibility of developing fatigue upon the prolonged exposure or hard physical effort	Scheduled usual position	4-6 cups*
EXTREME CAUTION	38-30	Possibility of muscle cramps, heat stroke, sunstroke upon the prolonged exposure or hard physical effort	25% of working hours divided in equal breaks	4-6 cups*
DANGER	51-39	Most probably of exposure to muscle cramps, heat stress, sunstroke upon the prolonged exposure or hard physical effort	50% of working hours divided in equal breaks	4-6 cups*
EXTREME DANGER	52+	Is about to being exposure to a sunstroke	75% of working hours divided in equal breaks, and It is recommended that the work is suspended when the heat index reaches 56 and more.	4-6 cups*

*One cup = 250 ml

Figure 1: Heat Index for occupational heat risk
Source: Procedural Guidelines for Occupational Safety and Health for Preventing the Effects of Exposure to the Direct Sun and Heat Stress (2021).

Figure 1 is important because it illustrates the risk assessment tool recommended by the Saudi Procedural Guide to assist employers in objectively assessing occupational heat risks and implementing appropriate preventive measures in fulfilment of their occupational safety

[41] ibid paras 4.1.2.
[42] ibid para 5.4.
[43] ibid para 5.1.
[44] Ministry of Human Resources and Social Development, Ministerial Decision No 112377 of 21 Sha'ban 1447H (9 February 2026), Schedule of Labour Law Violations and Penalties, para 5.
[45] Ministry of Human Resources and Social Development, Ministerial Decision No 112377 of 21 Sha'ban 1447H (9 February 2026), Schedule of Labour Law Violations and Penalties, article 6.
[46] Saudi Gazette, 'HR Ministry Inspectors Detect 1910 Midday Work Ban Violations' (1 September 2025) <https://saudigazette.com.sa/article/654625/SAUDI-ARABIA/HR-Ministry-inspectors-detect-1910-midday-work-ban-violations> accessed 31 July 2026.

obligations. For present purposes, however, the important legal question is not merely whether heat risk can be measured, but whether identified levels of heat risk trigger corresponding and enforceable employer obligations. The distinction between technical risk assessment and legally binding regulatory consequences is therefore central to evaluating the adequacy of the existing framework. In the Anthropocene, this connection assumes particular importance because a climate-responsive legal framework must be capable of translating changing levels of environmental heat risk into corresponding adjustments in legally enforceable worker protection.

This regulatory framework is further complemented by broader occupational safety and health policy initiatives, including the National Strategic Program for Occupational Safety and Health, which seeks to strengthen compliance with occupational safety and health standards across the Saudi labour market.[47] While this programme reinforces the general occupational safety and health framework, it does not specifically address climate-related occupational heat stress for outdoor workers, leaving the management of such risks to the existing legislative and regulatory framework.

The foregoing analysis demonstrates that labour regulations in Saudi Arabia provides an important framework of preventive measures to protect outdoor workers from occupational heat risks. However, whether these protections are adequately implemented, enforced, and aligned with international best practice requires further examination. The following section therefore analyses the relevant ILO standards to evaluate the adequacy of the relevant Saudi framework and determine whether it provides adequate protection against climate-related occupational heat risks.

IV: INTERNATIONAL LABOUR ORGANISATION STANDARDS ON OCCUPATIONAL HEAT RISKS

This section examines the ILO's occupational safety and health standards relevant to occupational heat risks. These standards are important because they establish the international benchmark for assessing national labour law responses to occupational heat exposure. The discussion introduces the key ILO instruments that inform the comparative analysis undertaken in the following section.

The ILO is the primary international organisation responsible for promoting international labour standards. However, other actors, including non-state actors, also contribute to the promotion of labour standards, particularly through corporate social responsibility (CSR) initiatives that support the protection of workers' fundamental rights.[48] The ILO shapes its standards by adopting Conventions, binding on ratifying States, or nonbinding recommendations as a guideline for national laws of the member States.[49] Following their adoption, article 19 of the ILO Constitution requires Member States to submit Conventions and Recommendations to their competent national authority for consideration, with Conventions becoming legally binding upon ratification and Recommendations serving as non-binding

[47] Saudi Press Agency, 'Saudi Arabia's HRSD Participates in ILO's High-Level Discussion on Safe and Healthy Working Environment' (28 April 2023) <https://www.spa.gov.sa/w1894821> accessed 4 August 2026.
[48] ILO, *Rules of the game: An introduction to the standards-related work of the International Labour Organisation* (4th edn, ILO 2019) 26.
[49] ILO, 'Conventions, Protocols and Recommendations' <https://www.ilo.org/international-labour-standards/conventions-protocols-and-recommendations> accessed 27 July 2026.

guidance. Saudi Arabia has been a member of the ILO since 12 January 1976.[50] It ratified the Promotional Framework for Occupational Safety and Health Convention, 2006 (No. 187) on 4 June 2024 but has not ratified the Occupational Safety and Health Convention, 1981 (No. 155).[51] Saudi Arabia has not ratified Convention No. 155, and no official explanation for its non-ratification has been identified.[52] The different legal status of these instruments must be distinguished. Convention No. 187 is binding upon Saudi Arabia following ratification, whereas Convention No. 155 has not been ratified and is therefore employed in this article as a comparative and normative benchmark rather than as a treaty obligation binding upon Saudi Arabia. The accompanying Recommendations and ILO Codes similarly provide interpretative and policy guidance rather than binding treaty obligations.

In pursuing its objectives, the ILO seeks to improve unjust and inadequate conditions of labour that may threaten international peace.[53] This includes developing occupational safety and health standards that are relevant to occupational heat risks, despite the absence of a specific convention, with the aim of promoting safe and healthy working conditions.[54] The ILO Constitution identifies measures aimed at improving labour conditions, including the regulation of working hours, the prevention of unemployment, the provision of adequate wages, the protection of workers against illness, disease and workplace injury, the promotion of equal remuneration for work of equal value, the recognition of freedom of association, and international cooperation to achieve humane conditions of labour.[55]

More specifically, Convention No. 155 establishes, for Member States that have ratified it, the substantive principles of the ILO instrument on occupational safety and health, setting the core legal duties of employers to ensure a safe and healthy workplace through hazard prevention, risk assessment, and risk control, but does not contain specific provisions addressing heat stress.[56] It applies broadly to all workers and economic sectors, allowing Member States to make limited, justified exclusions.[57] Convention No. 155 establishes, in ratifying Member States, broad employer duties to ensure safe workplaces, safe work processes, and protection from physical, chemical and biological hazards, inspection, worker participation, and

[50] ILO, 'ILO Member States' <https://normlex.ilo.org/dyn/nrmlx_en/f?p=1000:11110:0::NO:11110:P11110_COUNTRY_ID:103208> accessed 28 July 2026.
[51] ILO, 'Saudi Arabia Ratifies the Promotional Framework for Occupational Safety and Health Convention, 2006 (No. 187)' <https://www.ilo.org/resource/news/ilc/112/saudi-arabia-ratifies-promotional-framework-occupational-safety-and-health> accessed 28 July 2026. ILO, 'Saudi Arabia – Country Profile' NORMLEX https://normlex.ilo.org/dyn/normlex/en/f?p=NORMLEXPUB:11110:0::NO::P11110_COUNTRY_ID:103208 accessed 28 July 2026.
[52] ILO, 'Complaint Submitted under Article 26 of the ILO Constitution Alleging Non-observance by Saudi Arabia of Conventions Nos 29, 95 and 111' (GB.356/INS/15 (Rev 2), 2026) 3-5. See ILO Constitution, article 19, paragraph 5(e).
[53] ILO, Constitution of the International Labour Organization (1919, as amended) Preamble, art 1.
[54] ILO, Occupational Safety and Health Convention, 1981 (No 155) (adopted 22 June 1981, entered into force 11 August 1983); ILO, Occupational Safety and Health Recommendation, 1981 (No 164) (adopted 22 June 1981), and ILO, Promotional Framework for Occupational Safety and Health Convention, 2006 (No 187) (adopted 15 June 2006, entered into force 20 February 2009); ILO, Promotional Framework for Occupational Safety and Health Recommendation, 2006 (No 197) (adopted 15 June 2006), and ILO, Guidelines on Occupational Safety and Health Management Systems (ILO-OSH 2001) (ILO, 6 December 2001).
[55] ILO, Constitution of the International Labour Organization (1919, as amended) Preamble, art 1.
[56] ILO, The Occupational Safety and Health Convention (No 155): A Fundamental Convention (Factsheet, 27 February 2025) <https://www.ilo.org/resource/other/occupational-safety-and-health-convention-no-155-fundamental-convention> accessed 29 July 2026.
[57] ILO Convention No 155, arts 1-3.

training.[58] Its general principles of hazard prevention, risk assessment, and employer responsibility can provide the legal foundation for managing heat-related occupational risks. It further requires Member States to provide adequate penalties for employers' violations of applicable laws and regulations.[59]

Similarly, Recommendation No. 164 does not specifically address occupational heat stress. Yet, its direct relevance to heat stress at work identifies 'temperature, humidity and movement of air in the workplace' as key occupational safety and health considerations.[60] Also, it refers to the control of 'the atmosphere and other ambient factors of workplaces'.[61] These provisions recognise the workplace thermal environment as an occupational hazard requiring appropriate control but do not provide heat-specific exposure limits or preventive measures.

Building on these principles, the ILO Code of Practice, Ambient Factors in the Workplace, is directly relevant to Convention No. 155 and Recommendation No. 164 as it provides practical guidance for implementing their occupational safety and health (OSH) principles.[62] Specifically, it translates the broad requirements for hazard prevention, risk assessment, worker protection, health surveillance, and training into concrete measures for managing workplace ambient hazards such as chemicals, noise, radiation, vibration, and temperature extremes.[63] The ILO Code of Practice aims to prevent work-related illness and injury by providing practical guidance on managing hazardous ambient factors in the workplace. It outlines the responsibilities of authorities, employers, and outdoor workers for hazard prevention, risk assessment, workplace monitoring, and training, and applies across all sectors to hazards, including extreme temperatures.[64]

In particular, the Code requires employers to, if practicable, eliminate the need for work in hot conditions or reduce the thermal load from the environment.[65] It prescribes engineering controls, including reducing the temperature of hot surfaces, insulating the surfaces, using radiation barriers, water-cooling hot surfaces, remote control operations, and ventilation, cool air, or evaporative cooling.[66] Where risks arise from the metabolic heat produced during work, employers should implement work-rest cycles, provide appropriate mechanical aids, and ensure tasks are well designed ergonomically to minimize physical stress.[67] Where residual risks remain, employers should provide protective clothing, ensure hydration maintenance, and provide adequate supervision and first-aid facilities and staff trained in their use.[68]

In addition, Convention No. 187 does not prescribe specific workplace safety measures but establishes a national framework for the continuous improvement of occupational safety and health to prevent occupational injuries, diseases, and deaths.[69] It requires Member States to promote the right to a safe and healthy working environment;[70] implement preventive

[58] ILO Convention No 155, arts 4-21.
[59] ILO Convention No 155, art 9(2).
[60] ILO Recommendation No 164, para 3(c).
[61] ILO Recommendation No 164, para 3(k).
[62] ILO, *Ambient Factors in the Workplace: An ILO Code of Practice* (International Labour Office 2001) 1.
[63] ILO, *Ambient Factors in the Workplace: An ILO Code of Practice* (International Labour Office 2001) 2.
[64] ILO, *Ambient Factors in the Workplace: An ILO Code of Practice* (International Labour Office 2001) 1.
[65] ILO, *Ambient Factors in the Workplace* para 8.3.1.
[66] ILO, *Ambient Factors in the Workplace* paras 8.3.2-8.3.7.
[67] ILO, *Ambient Factors in the Workplace* para 8.3.8.
[68] ILO, *Ambient Factors in the Workplace* paras 8.3.9-8.3.12.
[69] ILO Convention No 187, art 2(1).
[70] ILO Convention No 187, art 3(2).

occupational safety and health policies based on risk assessment and hazard prevention, and develop national programmes to eliminate or minimise work-related risks so far as is reasonably practicable;[71] and to ensure that national programmes contribute to the protection of workers by eliminating or minimizing, so far as is reasonably practicable, work-related hazards and risks, in order to prevent occupational injuries, diseases and deaths and promote safety and health in the workplace.[72] Although it does not specifically address occupational heat risks, its preventive framework encompasses them through national occupational safety and health policies, systems, and programmes.

Its blueprint Recommendation No. 197 provides only practical guidance for developing and implementing national occupational safety and health policies, systems, and programmes.[73] While it does not specifically address occupational heat risks, its emphasis on hazard identification, risk assessment, preventive management, worker participation, training, and the protection of workers in high-risk sectors provides a flexible framework through which occupational heat risks may be identified, managed, and progressively reduced.[74] This approach is consistent with the ILO's recognition that extreme temperatures constitute occupational hazards, with exposure to excessive heat capable of causing heat stress, heat-related illnesses, and an increased risk of workplace injuries, thereby underscoring the need for preventive occupational safety and health measures.[75]

While the ILO has not adopted a convention specifically addressing occupational heat risks, its occupational safety and health framework is founded on the core principles of prevention, risk assessment, employer responsibility, and worker participation. Reflected in Conventions No. 155 and 187, their accompanying Recommendations, and the ILO Code of Practice on Ambient Factors in the Workplace, these principles provide the international benchmark for occupational safety and health by recognising extreme temperatures as a physical workplace hazard and establishing a preventive framework for managing occupational heat risks,[76] albeit not through heat-specific convention. Against this benchmark, the Saudi Labour Law can be evaluated to determine the extent to which it protects outdoor workers from occupational heat risks.

V: A COMPARATIVE AND CRITICAL ANALYSIS OF SAUDI LABOUR LAW AND ILO STANDARDS

This section examines the extent to which labour regulations in Saudi Arabia governing occupational heat risks aligns with the relevant ILO standards and whether the existing legal framework provides adequate protection against climate-related heat risks. Such a comparison is essential because it assesses the adequacy of the current regulatory framework in responding to the increasing occupational risks associated with climate change and identifies areas where legal protection may require further development. The discussion ultimately argues that, although labour regulation in Saudi Arabia incorporates important occupational safety measures consistent with the preventive principles of the ILO framework, its regulatory

[71] ILO Convention No 187, art 3(3).
[72] ILO Convention No 187, art 5(2)(b).
[73] ILO Recommendation No 197, paras 1-14.
[74] ILO Recommendation No 197, paras 3, 5-10.
[75] ILO, *Extreme Temperatures* <https://www.ilo.org/topics-and-sectors/safety-and-health-work/areas-work/occupational-safety-and-health-management-systems/extreme-temperatures> accessed 30 July 2026.
[76] ILO, *Extreme Temperatures* <https://www.ilo.org/topics-and-sectors/safety-and-health-work/areas-work/occupational-safety-and-health-management-systems/extreme-temperatures> accessed 30 July 2026.

architecture remains insufficiently adaptive to changing patterns of climate-related occupational heat risk.

The analysis reveals that the Labour Law in Saudi Arabia adopts a preventive occupational safety and health framework by imposing a general statutory duty on employers to protect workers from occupational hazards, including outdoor workers from heat-related risks.[77] This aligns with Convention No. 155, which requires employers to ensure, so far as is reasonably practicable, that workplaces, work processes, and working environments are safe and without risks to health through hazard prevention and risk control.[78] Although neither the Labour Law nor Convention No. 155 expressly and specifically regulates occupational heat stress for outdoor workers, both recognise heat-related risks as falling within employers' general occupational safety and health obligations. Accordingly, the Labour Law in Saudi Arabia is broadly consistent with the preventive approach underpinning the ILO's occupational safety and health framework.

The Labour Law in Saudi Arabia is supplemented by ministerial measures and procedural guidance that establish a comprehensive range of preventive measures for managing occupational heat risks, including restrictions on outdoor work during periods of extreme heat, work-rest regimes, hydration, shaded rest areas, heat monitoring, worker training, engineering controls, acclimatisation, and annual health assessments.[79] These measures closely correspond with the ILO Code of Practice on Ambient Factors in the Workplace, which recommends engineering controls, work-rest cycles, hydration, protective equipment, health surveillance, and training to minimise heat-related risks for outdoor workers.[80]

Although Saudi Arabia relies on the Heat Index to assess occupational heat exposure, whereas the Wet Bulb Globe Temperature (WBGT) is the most widely recognised and internationally adopted indicator for assessing occupational heat stress, the ILO does not prescribe a mandatory heat stress indicator.[81] Consequently, Saudi Arabia's use of the Heat Index does not, in itself, indicate inconsistency with international standards, as both indicators serve the common objective of assessing heat exposure and informing appropriate preventive measures. The more significant legal issue, however, is not whether international standards mandate a particular heat-stress indicator, but whether the chosen indicator is integrated into the regulatory framework in a manner that triggers enforceable preventive obligations when occupational heat risk becomes dangerous. A climate-responsive framework therefore requires an effective connection between the measurement of changing heat risk and the legal duties activated by that risk. From an Anthropocene perspective, this adaptive connection is critical because the effectiveness of labour law increasingly depends on its capacity to recalibrate protective obligations as the environmental conditions generating occupational risk continue to change.

The Labour Law in Saudi Arabia reinforces occupational heat protection for outdoor workers through an enforcement framework that empowers labour inspectors to monitor compliance,

[77] Labour Law, article 122.
[78] ILO Convention No 155, arts 4-21.
[79] Ministerial Decision No 3337 (15 Rajab 1435 AH/14 May 2014) on the Prohibition of Work under Direct Sunlight in Private Sector Establishments. Ministerial Decision No 196086 (29 Shawwal 1442 AH/10 June 2021) approving the Procedural Guide for Occupational Safety and Health to Prevent the Effects of Exposure to Sunlight and Heat Stress.
[80] ILO, *Ambient Factors in the Workplace: An ILO Code of Practice* (International Labour Office 2001).
[81] ILO, *Heat at Work: Implications for Safety and Health – A Global Review of the Science, Policy and Practice* (ILO 2024) 42.

record violations, and impose administrative sanctions on employers who fail to comply with occupational safety obligations.[82] However, the persistence of widespread non-compliance suggests that the existing enforcement framework may not be sufficiently effective in ensuring full compliance with the regulation.[83] Despite this non-compliance, the enforcement framework itself reflects the principles embodied in Convention No. 155, which emphasises that enforcement system shall provide for adequate penalties for violations of the laws and regulations on occupational safety and health.[84] Accordingly, the Labour Law in Saudi Arabia accords with the ILO's emphasis on ensuring that occupational safety obligations are supported by effective compliance and enforcement mechanisms.

Despite these areas of convergence, an important distinction exists between the Labour Law in Saudi Arabia and the broader ILO occupational safety and health framework. The Labour Law regulates occupational heat risks primarily through general occupational safety and health obligations and subordinate procedural guide on manging heat stress rather than explicit statutory binding provisions addressing climate-related occupational heat risks.[85] By contrast, Convention No. 187 promotes the continuous development and improvement of national occupational safety and health policies, systems, and programmes through risk assessment, prevention, and the adaptation of national frameworks to emerging workplace hazards. Although Convention No. 187 does not specifically regulate occupational heat risks, its emphasis on continuous improvement provides a more dynamic framework capable of responding to the increasing occupational risks associated with climate change. This principle of continuous improvement is particularly significant in the Anthropocene because it shifts occupational safety regulation away from a static model of hazard control towards an adaptive model capable of responding to an evolving environmental risk baseline.

A further distinction concerns Saudi Arabia's ratification of relevant ILO instruments. This study reveals that Saudi Arabia ratified Convention No. 187 in 2024, thereby committing itself to the continuous improvement of its national occupational safety and health system.[86] However, it has not ratified Convention No. 155, which establishes the principal international framework governing employers' occupational safety and health obligations.[87] Although the Labour Law in Saudi Arabia reflects many of the preventive principles contained in Convention No. 155, its non-ratification means that Saudi Arabia is not legally bound by the Convention's substantive obligations under the ILO constitution. In the Anthropocene, this distinction is significant because adaptive occupational protection increasingly depends on continuously developing legal standards in response to evolving climate-related risks.

---

[82] Ministry of Human Resources and Social Development, Ministerial Decision No 112377 of 21 Sha'ban 1447H (9 February 2026), Schedule of Labour Law Violations and Penalties, para 5.

[83] Saudi Gazette, 'HR Ministry Inspectors Detect 1910 Midday Work Ban Violations' *Saudi Gazette* (1 September 2025) <https://saudigazette.com.sa/article/654625/SAUDI-ARABIA/HR-Ministry-inspectors-detect-1910-midday-work-ban-violations> accessed 31 July 2026.

[84] ILO Convention No 155, article 9(2).

[85] Labour Law, article 122. Ministerial Decision No 196086 (29 Shawwal 1442 AH/10 June 2021) on the Procedural Guide for Occupational Safety and Health to Prevent the Effects of Exposure to Sunlight and Heat Stress.

[86] ILO, 'Saudi Arabia Ratifies the Promotional Framework for Occupational Safety and Health Convention, 2006 (No. 187)' <https://www.ilo.org/resource/news/ilc/112/saudi-arabia-ratifies-promotional-framework-occupational-safety-and-health> accessed 31 July 2026.

[87] ILO, 'Saudi Arabia – Country Profile' NORMLEX https://normlex.ilo.org/dyn/normlex/en/f?p=NORMLEXPUB:11110:0::NO::P11110_COUNTRY_ID:103208 accessed 28 July 2026.

The analysis demonstrates that the Labour Law in Saudi Arabia broadly aligns with the ILO's occupational safety and health framework by adopting preventive employer duties, implementing comprehensive measures for managing occupational heat risks, and providing mechanisms for monitoring and enforcement. Saudi Arabia has also adopted a broader policy framework through the National Strategic Program for Occupational Safety and Health.[88] However, while this programme demonstrates a commitment to strengthening occupational safety and health generally, it does not specifically address climate-related occupational heat stress. This reinforces the need for a more explicit climate-responsive legal framework. Although occupational heat risks are addressed through general occupational safety and health obligations and detailed ministerial measures, the Labour Law does not expressly recognise climate change as an emerging occupational safety challenge or establish a statutory framework specifically designed to address escalating climate-related occupational heat risks. Consequently, although the Labour Law provides a sound foundation for protecting outdoor workers from occupational heat exposure, further legislative and regulatory development would strengthen its alignment with the evolving preventive and adaptive principles reflected in the ILO. Therefore, the following section proposes legislative and regulatory reforms to improve the Labour Law in Saudi Arabia and promote a more climate-responsive legal framework for protecting outdoor workers from occupational heat risks.

VI: TOWARDS A CLIMATE-RESPONSIVE LEGAL FRAMEWORK FOR OUTDOOR WORKER PROTECTION

The preceding analysis suggests that reform should not simply add further preventive measures. Rather, it should connect existing preventive protections to an adaptive regulatory architecture in which employer obligations respond to assessed heat risk and protective standards are periodically reviewed as climatic conditions change.

This study proposes that, to strengthen the protection of outdoor workers against climate-related occupational heat stress, the Labour Law should expressly recognise occupational heat stress as a fundamentally distinct occupational safety and health hazard. Although the existing legal framework protects outdoor workers through general occupational safety obligations and ministerial regulations, it does not expressly identify occupational heat stress as a specific workplace hazard requiring dedicated preventive measures. Explicit statutory recognition would provide a coherent legal foundation for regulating occupational heat stress, clarify employer obligations, and ensure that the Labour Law responds proactively to the increasing occupational heat risks associated with climate change in Saudi Arabia.

This study proposes that, to strengthen legal protection against climate-related occupational heat stress in Saudi Arabia, the principal prevention measures contained in the Procedural Guide for Safety and Health in the Prevention of Heat Stress should be incorporated into legally binding implementing regulations under the Labour Law as a fundamental right to outdoor workers. Although the Guide establishes measures for preventing occupational heat stress, including work-rest schedules, hydration, acclimatisation, engineering controls, heat monitoring, emergency response procedures, and outdoor worker training, its incorporation into binding regulations would transform these measures into enforceable minimum legal standards. This would strengthen legal certainty, promote consistent implementation across workplaces, and provide labour inspectors with a clearer statutory basis for monitoring compliance and enforcing occupational heat stress protection requirements.

[88] Saudi Press Agency, 'Saudi Arabia's HRSD Participates in ILO's High-Level Discussion on Safe and Healthy Working Environment' (28 April 2023) <https://www.spa.gov.sa/w1894821> accessed 4 August 2026.

This study proposes that, to improve the preventive management of climate-related occupational heat stress in Saudi Arabia, the Labour Law should impose an express statutory duty requiring employers to identify, assess, and manage occupational heat stress risks before and throughout periods of elevated heat exposure in Saudi Arabia. Employers should be required to undertake documented occupational heat stress risk assessments that consider environmental conditions, workload, exposure duration, outdoor worker vulnerability, and the adequacy of existing control measures. The assessments should be reviewed periodically and whenever workplace conditions materially change. Periodic review should therefore be understood not merely as an administrative improvement but as a defining feature of climate-responsive labour regulation because it provides the mechanism through which legal protection can respond to a changing environmental risk baseline. Embedding this obligation within the Labour Law would strengthen its preventive approach by requiring employers to anticipate and manage occupational heat stress before outdoor workers are exposed to unacceptable levels of risk. In this sense, periodic review operationalises the Anthropocene within labour law by enabling legal standards to evolve alongside changes in the frequency, intensity, and duration of occupational heat exposure.

This study proposes that, to improve compliance with occupational heat stress requirements, the existing enforcement framework in Saudi Arabia should adopt a balanced regulatory approach that combines effective enforcement with the existing positive incentive mechanisms within the occupational safety and health framework. Inspection resources should be prioritised towards sectors and workplaces presenting the greatest risk of occupational heat stress, while repeated or serious breaches should attract proportionate administrative sanctions. At the same time, existing occupational safety and health incentive and recognition mechanisms, including the HRSD's programmes for excellence and compliance, could be used to reinforce sustained employer compliance with occupational heat stress requirements.[89] Such an approach would complement deterrence-based enforcement with positive recognition of a better occupational safety and health performance, encouraging employers not only to meet their legal obligations but also to maintain effective preventive practices and strengthen workplace safety culture.

This study proposes that, to ensure the continued adequacy of legal protection against climate-related occupational heat stress in Saudi Arabia, the Labour Law should establish a statutory mechanism requiring the periodic review of occupational heat stress regulations. Such reviews should be informed by labour inspection outcomes, occupational heat-related illness and injury data, emerging scientific evidence, and the increasing impacts of climate change. They should also involve consultation with employers, outdoor workers, and occupational safety specialists. Embedding continuous review within the statutory framework would ensure that occupational heat stress protection remains evidence-based, responsive to evolving climatic conditions, and capable of addressing future outdoor workplace risks.

Finally, this study proposes that, to strengthen the legal framework governing occupational heat stress, Saudi Arabia should consider ratifying the Occupational Safety and Health Convention,

[89] Ministry of Human Resources and Social Development, ''Labour Award' (Safety and Occupational Health Track)' *HRSD* (14 September 2026) <https://www.laboraward.sa/faq> accessed 17 September 2026. This includes the Institutional Excellence Award in Occupational Safety and Health and the Elite Occupational Safety and Health Pioneers and Partners Award. The latter is limited to private-sector establishments participating in the 'Pioneers and Partners' Incentives Programme for Excellence and Compliance in Occupational Safety and Health. The award criteria also include occupational safety and health compliance certification.

1981 (No. 155). Although the Labour Law already reflects many of the Convention's core principles relating to hazard prevention, employer responsibility, labour inspection, and enforcement, ratification would formally align Saudi Labour Law with the ILO's principal occupational safety and health instrument. It would also complement Saudi Arabia's obligations under Convention No. 187 and reinforce the legal and institutional framework for protecting outdoor workers against occupational heat stress in the context of increasingly frequent and intense heat exposure associated with climate change. Taken together, these reforms would translate the Anthropocene from a conceptual description of changing occupational risk into a regulatory principle requiring labour law to anticipate, assess, and adapt to evolving climatic conditions.

VII: CONCLUSION

This article has critically examined the adequacy of Saudi Labour Law in protecting outdoor workers from climate-related occupational heat stress in the Anthropocene. Through a doctrinal and comparative analysis of the Saudi legal framework and relevant ILO occupational safety and health standards, it has argued that although Saudi Arabia has established a comparatively comprehensive regulatory framework for managing occupational heat stress, the increasing frequency, intensity, and duration of extreme heat associated with climate change require labour law to develop from its existing preventive foundation towards a more adaptive and climate-responsive approach. The analysis demonstrates that the existing framework provides an important foundation for outdoor worker protection, but that its adequacy is constrained by the absence of express statutory recognition of occupational heat stress as a distinct occupational hazard and the fragmented legal status of several key preventive measures.

The analysis also demonstrates that Saudi Labour Law reflects many of the preventive principles embodied in relevant ILO occupational safety and health instruments, particularly Convention No. 187 and the ILO Code of Practice on Ambient Factors in the Workplace. At the same time, it reveals that important gaps remain between the existing framework and an integrated legal regime capable of responding effectively to climate-related occupational heat stress. In particular, the absence of binding statutory duties requiring the proactive assessment and management of occupational heat stress risks limits the capacity of the current framework to anticipate evolving workplace hazards rather than merely respond to their consequences.

The article further demonstrates that the challenge presented by occupational heat stress extends beyond the adoption of individual workplace measures. Instead, it raises a broader question concerning the evolving protective function of labour law in the Anthropocene. As climate change reshapes the nature of occupational risk, labour law must similarly evolve to ensure that its protective objectives remain effective under changing environmental conditions. In this respect, the adequacy of labour law increasingly depends not only on the existence of occupational safety obligations, but also on the extent to which legal frameworks are capable of adapting to foreseeable climate-related risks through coherent, preventive, and enforceable regulation. The broader contribution of the Saudi case is therefore to demonstrate the distinction between preventive and climate-responsive labour regulation. A legal framework may contain substantial measures designed to prevent occupational heat injury without being fully climate-responsive where those measures are not systematically adapted to changing climatic risks.

Ultimately, this article argues that strengthening the protection of outdoor workers against climate-related occupational heat stress requires the development of a more climate-responsive

legal framework that builds upon, rather than replaces, the existing Labour Law in Saudi Arabia. By embedding occupational heat stress more firmly within the Labour Law, strengthening the legal status of preventive measures, enhancing regulatory enforcement, and further aligning Labour Law in Saudi Arabia with relevant ILO standards, Saudi Arabia can reinforce the protection of outdoor workers' health, safety, dignity, and productivity in a warming climate. More broadly, the Saudi experience illustrates how labour law can respond to one of the defining occupational safety challenges of the Anthropocene, demonstrating that effective outdoor worker protection will increasingly depend upon the capacity of legal systems to anticipate and adapt to the realities of climate change rather than merely react to its consequences.

Data Availability: Data sharing is not applicable to this research as no data were generated or analysed.

Ethical Approval: This article does not contain any studies with human participants performed by any of the authors.

Informed Consent: Not applicable.