



Solar Photovoltaic Industry and Precarious Work: A Theoretical and Conceptual Research Framework

Assessing the Impact on Workplace Wellbeing

Ahmad Shahrul Nizam^{1*}, Paras Behrani², Rozilah Binti Shabor Rameli³

^{1,2,3} Department of Management and Humanities, Universiti Teknologi Petronas, Malaysia

*Corresponding Author Email: shahrul.nizam@utp.edu.my

Abstract. The transition to renewable energy sources holds promise for improving human health by reducing pollution and associated health risks. While preliminary studies suggest that renewable energy may mitigate occupational hazards and health issues for workers, research in this area remains limited. This study proposes a conceptual framework based on the rigorous theoretical underpinning. The proposed framework assesses the impact of precarious work (employment contract, vulnerability, wages and work schedule) on wellbeing of employees working in solar photovoltaic industry. To achieve the objectives of the proposed study quantitative methodology will be used and solar photovoltaic employees/workers are the targeted sample of current study.

Keywords: Precarious Work, Occupational Health and Safety, Solar Photovoltaics, Wellbeing.

1 Introduction

The global shift towards renewable energy sources, such as solar photovoltaics (PV), is driven by the urgent need to mitigate climate change and reduce dependence on fossil fuels. Malaysia, with its abundant sunlight and government support for renewable energy development, has seen significant growth in the solar PV industry in recent years ("International Energy Agency ", October 2017). While the expansion of solar energy infrastructure promises environmental benefits, the well-being of workers in this sector is a critical yet often overlooked aspect of sustainable development.

Occupational health and safety in the renewable energy sector, particularly in the solar PV industry, is a multifaceted issue that warrants closer attention. Workers in energy industry are exposed to various occupational hazards, including but not limited to hazardous materials, ergonomic risks, and other hazards like electrical hazards, bio-hazards etc. Ensuring the health and safety of workers is not only a moral imperative but also crucial for the long-term sustainability of the renewable energy sector. One of the key challenges faced by workers in the solar PV industry is the prevalence of precarious work conditions (Stock, 2021). Precarious work is characterized by unfair

working condition, insecurity, and lack of social protection, all of which can have detrimental effects on employee health and well-being (Vives et al., 2010). Research in other industries has shown that precarious work is associated with increased risks of occupational injuries, mental health issues, and lack of motivation at work (Simões et al., 2019). Despite the growing recognition of the importance of occupational health and safety in the renewable energy sector, there remains a gap in research on the specific challenges faced by solar PV workers in Malaysia. Understanding the impact of precarious work conditions on the occupational health outcomes of workers is essential for developing effective interventions and policies to protect employee well-being (Benach et al., 2016).

This study aims to address the gap by assessing the prevalence of precarious work conditions, occupational health hazards, and health outcomes among solar PV workers in Malaysia. By a thorough literature focusing on the theoretical frameworks of occupational health and safety, as well as the social determinants of health, we have proposed a conceptual research framework to assess/investigate the impact of precarious work on employee wellbeing among solar PV workers. This quantitative study aims to contribute to occupational health research in the context of renewable energy and promote a safer and healthier work environment for solar PV workers in Malaysia.

Despite the rapid growth of the solar photovoltaics (PV) industry in Malaysia, there is a notable gap in research on the occupational health and safety challenges faced by workers renewable energy sector (Izam et al., 2022), particularly regarding precarious work conditions. Precarious work, characterized by job unfair working conditions, inadequate safety measures, and low wages, poses significant risks to the well-being of employees in the renewable energy industry. The lack of comprehensive research on the prevalence of precarious work conditions and occupational health hazards in the solar PV industry impedes efforts to ensure the safety and well-being of workers (Islam et al., 2009).

Furthermore, the limited empirical evidence on the relationship between precarious work and occupational health outcomes like wellbeing at work among solar PV workers emphasizes the urgency of conducting research in this area (Kalleberg, 2009).

By investigating the impact of precarious work conditions on the occupational health and safety of solar PV workers in Malaysia, this study aims to address this critical gap in the literature and contribute to the development of occupational health research in the context of renewable energy industry. Through a quantitative survey approach, this study seeks to achieve the following research objectives:

1. To investigate the prevalence of precarious work conditions in the solar PV industry in Malaysia.
2. To examine the relationship between precarious work and wellbeing among solar PV workers in Malaysia.

2 Literature Review

The literature on occupational health and safety in the renewable energy sector, particularly the solar PV industry, provides valuable insights into the challenges faced by

workers and the effecting their well-being (Behrani et al., 2023). While renewable energy sources are lauded for their environmental benefits, the occupational health and safety concerns for workers in this industry are often overlooked (Karanikas et al., 2021).

Research on precarious work conditions in the renewable energy sector is limited but developing. Precarious work, characterized by unfair working conditions, lack of benefits, and poor working conditions, has been shown to have detrimental effects on employee health and safety (Benach et al., 2016). Research in other industries have highlighted the negative impact of precarious work on mental health, physical well-being, and overall job satisfaction (Anagnostou et al., 2022). In the context of the solar PV industry, research on occupational health and safety hazards is crucial for ensuring the well-being of workers. Exposure to hazardous materials, ergonomic risks, and electrical hazards are among the occupational risks faced by solar PV workers (Bakhiyi et al., 2014). These hazards can result in injuries, illnesses, and even fatalities if proper safety measures are not taken. Research on the relationship between precarious work and occupational health outcomes in the renewable energy sector are scarce, especially in the context of Malaysia (Isha et al., 2023). Understanding how precarious work conditions affect the health and wellbeing of solar PV workers is crucial for developing effective interventions and policies to safeguard employee well-being (Coalition, 2009).

Looking at the current energy transition, researchers believe that the new form of work may bring many challenges of occupational health and safety (Blustein et al., 2022). Ensuring the wellbeing of employees is considered as one of the major goals of energy transition (Work & Health, 2016). Yet there are risks present in renewable industry, like precarious work, high strain jobs and gig work etc. (Bodin et al., 2020).

The need to have decent work accelerate as it becomes crucial to reach the goals. Among all the renewable energy sources, solar photovoltaics (PVs) are leading the world, be it energy generation or employment (Fig. 1). Solar PV industry's recent popularity encourages many researchers to explore different scenarios which may help in building better transition and can help achieve the notion of safer and decent work/jobs in the face of energy transition.

Drawing on theories of occupational health and safety, as well as the social determinants of health framework, this research aims to fill the gap in the literature by investigating the prevalence of precarious work conditions, occupational health hazards, and health outcomes among solar PV workers in Malaysia. By integrating insights from existing literature and empirical data from the quantitative survey, this study seeks to contribute to the advancement of occupational health and safety research in the solar PV industry, with implications for policy and practice in Malaysia and beyond.

2.1 Theoretical Underpinning

This study is guided by the social determinants of health framework, which emphasizes the impact of social and economic factors, such as precarious work, on health outcomes. Drawing on theories of occupational health and safety, the research will explore the

relationship between precarious work conditions and worker well-being in the solar PV industry.

To comprehensively analyse the relationship between precarious work conditions, occupational health hazards, and health outcomes among solar PV workers in Malaysia, this study will draw upon the key theoretical frameworks in the fields of occupational health and safety, social determinants of health, and labour studies (Fig. 2). By integrating these theoretical perspectives, this research aims to provide a robust foundation for understanding the complex interplay between work conditions and employee well-being in the context of the renewable energy sector.

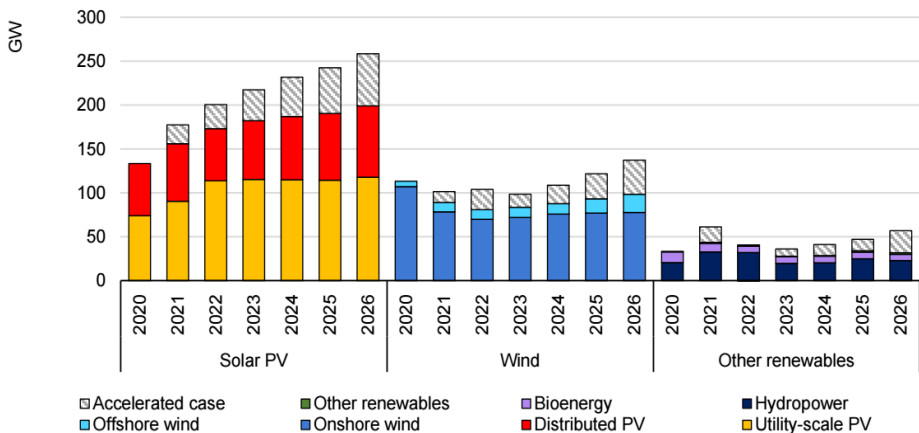


Fig. 1. Annual capacity additions of solar PV, wind and other renewables, main and accelerated cases, 2020-2026 (IEA, 2021)

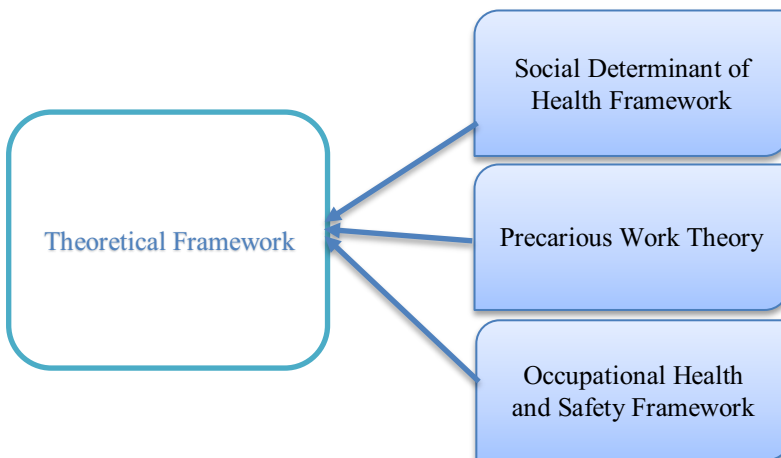


Fig. 2. Theoretical Framework

Social Determinants of Health. The social determinants of health framework emphasizes the impact of social, economic, and environmental factors on individual and population health outcomes (Organization, 2010). In the context of precarious work in the solar PV industry, factors such as job insecurity, low wages, and inadequate safety measures can contribute to increased occupational health risks and negative health outcomes among workers (Aman et al., 2015). By considering the broader social determinants that shape work conditions and health outcomes, this framework will help contextualize the findings of this study within the larger socio-economic landscape of Malaysia.

Precarious Work Theory. Drawing on theories of precarious work, this study will explore the characteristics of precarious employment arrangements in the solar PV industry, including temporary contracts, lack of job security, and limited access to social protections. Precarious work theory posits that these conditions can lead to heightened levels of stress, job insecurity, and occupational hazards, which in turn can negatively impact the health and well-being of workers (Kalleberg & Vallas, 2017). By examining the manifestations of precarious work in the solar PV sector, this framework will provide insights into the specific challenges faced by workers in this industry.

Occupational Health and Safety Framework. The occupational health and safety framework focuses on identifying and mitigating workplace hazards to protect the health and well-being of employees (Schulte & Chun, 2009). In the context of the solar PV industry, workers are exposed to a range of occupational hazards, such as electrical risks, ergonomic strain, and heat-related illnesses. By applying principles of occupational health and safety, this study will assess the prevalence of these hazards among solar PV workers in Malaysia and examine their potential impact on employee health outcomes. Additionally, this framework will guide the development of recommendations for improving safety measures and promoting a healthier work environment in the renewable energy sector (Chari et al., 2018).

By integrating these theoretical frameworks, this research aims to propose a research framework. The proposed framework assesses the impact of precarious work consisting of its major dimension namely i.e. Employment contract, vulnerability, wages and working hours on employee health and wellbeing (Fig. 3). Through a rigorous theoretical analysis, this study seeks to contribute to the advancement of occupational health research in the renewable energy sector and inform evidence-based interventions to protect the well-being of workers in this growing industry.

2.2 Proposed Conceptual Framework

The proposed conceptual framework (Fig. 3) encompasses the following dimensions, where employment contract, wages and benefits, vulnerability and work schedule are independent variables and wellbeing at work is the dependent variable which may help in achieving the aims of the study.

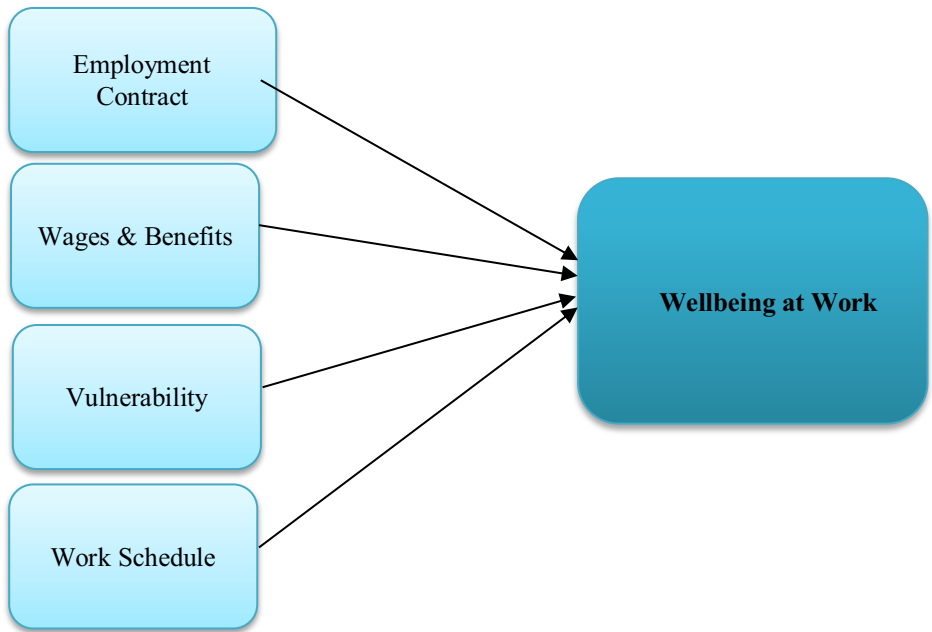


Fig.3. Conceptual Research Framework

1. *Employment Contracts:* Types of Contracts (Temporary, Permanent, Subcontracted) and Job Security

The nature of employment contracts in the solar PV industry significantly influences job security and workers' overall stability. Precarious work often manifests through temporary and subcontracted positions rather than permanent employment.

- *Temporary Contracts:* Workers on temporary contracts face high levels of job insecurity due to the short-term nature of their employment. According to (Kalleberg et al., 2015), temporary contracts can lead to stress and uncertainty as workers are unsure about the continuity of their income and job prospects.
 - *Permanent Contracts:* While more secure, permanent contracts are less common in rapidly growing industries like solar PV, where project-based work predominates. Studies have shown that permanent employment can improve worker morale and productivity (Keller & Seifert, 2013).
 - *Subcontracted Work:* Subcontracting is prevalent in the solar PV industry, where large companies often outsource installation and maintenance tasks to smaller firms. This can result in lower job security and weaker labor protections for subcontracted workers (Harvey, 2019).
2. *Wages and Benefits:* Level of Wages, Access to Health Insurance, Retirement Plans, and Other Benefits
- Precarious work conditions often involve inadequate wages and limited access to essential benefits, exacerbating economic vulnerability for workers.

- *Wages*: Workers in the solar PV industry may receive lower wages compared to those in more established sectors. Low wages can be particularly prevalent among temporary and subcontracted workers (Janta et al., 2015). Adequate compensation is crucial for ensuring a decent standard of living and reducing poverty rates among workers.
- *Health Insurance*: Access to health insurance is often limited for precarious workers, leaving them vulnerable to medical expenses and health issues. Lack of health benefits can lead to increased absenteeism and decreased productivity (Weller & Hamilton, 2018).
- *Retirement Plans*: Many precarious workers do not have access to employer-sponsored retirement plans, compromising their financial security in the long term. This absence of retirement benefits further contributes to economic instability (Standing, 2011).
- *Other Benefits*: Additional benefits such as paid leave, sick days, and maternity leave are often unavailable to precarious workers, impacting their overall well-being and work-life balance (Vosko, 2011).

3. *Vulnerability*

Vulnerability in the workplace encompasses various aspects, including economic, social, and psychological dimensions, which precarious workers are particularly susceptible to.

- *Economic Vulnerability*: Economic instability due to fluctuating income, lack of job security, and inadequate benefits creates a high degree of economic vulnerability. Workers are often unable to save for future needs or unexpected expenses, perpetuating a cycle of financial insecurity (Burgess & Campbell, 1998).
- *Social Vulnerability*: Precarious workers often lack the social safety nets available to more secure employees. They may have limited access to social services and community support, increasing their isolation and stress (Lund, 2006).
- *Psychological Vulnerability*: Job insecurity and economic instability can lead to psychological stress, anxiety, and decreased mental health. The uncertainty associated with precarious work conditions can adversely affect workers' overall well-being and job satisfaction (Kim & von dem Knesebeck, 2016).

4. *Work Schedule*

Work schedules in precarious employment often lack regularity and predictability, contributing to instability and stress for workers.

- *Irregular Hours*: Precarious work frequently involves irregular and unpredictable work hours, making it difficult for workers to plan their personal lives and manage other responsibilities. Irregular schedules can also disrupt sleep patterns and lead to health issues (Costa, 2010).
- *Long Hours*: Workers in precarious positions may be required to work long hours to compensate for lower wages, leading to burnout and reduced productivity. Extended work hours can also impair work-life balance and negatively affect family life (Beckers et al., 2008).
- *Part-time Work*: Many precarious workers are employed on a part-time basis, often involuntarily. Part-time work typically comes with lower wages and fewer benefits, contributing to economic vulnerability (O'Reilly & Fagan, 1998).

5. *Wellbeing at Work*

Precarious work, characterized by temporary contracts, low wages, lack of benefits, and job insecurity, has significant implications for workers' well-being across various dimensions, including physical and mental health, and life quality in general. Physically, workers in precarious jobs often experience unsafe working conditions and lack access to health benefits, leading to higher rates of occupational injuries (Quinlan et al., 2001; Benach et al., 2014). Mentally, the insecurity and instability inherent in precarious work conditions contribute to increased levels of anxiety and depression, with job insecurity being a significant predictor of poor mental health outcomes (Ferrie et al., 2002; Kim & von dem Knesebeck, 2016).

Additionally, precarious work negatively impacts job satisfaction and overall life quality, as workers report lower levels of job satisfaction due to inadequate compensation and lack of career growth opportunities (Kalleberg, 2009). Irregular and unpredictable work schedules further disrupt work-life balance, which effects the individual's well-being (Costa, 2003).

Furthermore, precarious work exacerbates social and economic vulnerability, creating a cycle of poverty and unfair treatment. Without stable income and access to social benefits, workers struggle to achieve financial security and social mobility, limiting their ability to invest in essential areas like education and housing (Standing, 2011). This economic strain perpetuates a cycle of disadvantage and marginalization, impacting overall well-being of employees/workers. Addressing these issues requires comprehensive research and policy interventions to improve the working conditions. Such measures are crucial for enhancing the wellbeing of individuals workers in renewable energy sector i.e. solar PV industry, thereby mitigating the adverse effects of precarious work on wellbeing.

3 Proposed Methodology

The quantitative research design will be employed for the proposed study, using survey instrument to collect the data (Ong & Puteh, 2017). The sample of the study are solar PV employees/workers.

The survey instrument will be adapted via existing literature on precarious work and OHS in the solar PV industry.

Quantitative data analysis will involve both descriptive and inferential statistical techniques. Descriptive statistics will be used to summarize the characteristics of the study population and the prevalence of precarious work indicators. Structure Equation Modelling will be employed to examine the relationships between the major variables and outcomes related to occupational health and safety in the solar PV employees (Hair et al., 2014). The study will adhere to ethical guidelines for research involving human subjects, including obtaining informed consent from participants, ensuring the confidentiality of sensitive information, and minimizing any potential risks or harm associated with participation.

4 Discussion

The solar photovoltaics (PV) industry in Malaysia has witnessed significant growth in recent decade, driven by both domestic demand and international interest in renewable energy production. However, alongside this growth comes a pressing concern for occupational health and safety (OHS) standards within the sector (Sen et al., 2021). Precarious work conditions, characterized by factors such as job insecurity, low wages, lack of benefits, and inadequate safety measures, pose serious risks to the health and safety of workers in the solar PV sector.

This proposed study aims to address the gap in research on OHS issues specific to the solar PV industry, with a particular focus on precarious work. By undertaking a quantitative approach, the study seeks to gather empirical data to better understand the extent and nature of precarious work conditions, as well as their impact on the well-being of employees/workers in the renewable industry.

The proposed framework will provide an overview of the existing literature on OHS issues in the solar PV industry in Malaysia and globally. It will highlight the gap in comprehensive research addressing precarious work conditions in this industry, underscoring the need for empirical studies to fill this gap.

The findings will contribute to the development of evidence-based policies and interventions aimed at improving OHS standards and promoting decent work not only in the Solar PV industry but in the renewable industry at large.

5 Conclusion

The solar photovoltaic (PV) industry in Malaysia presents ample economic and environmental betterment opportunities. However, this potential may get compromised by the health hazards to its workforce like precarious work conditions. The proposed framework provides a comprehensive understanding of these dimensions and their impacts on workers' well-being and industry productivity. Addressing these challenges requires a multifaceted approach, involving policy reforms, labour standards, better worker representation, and targeted skill development programs. The proposed conceptual framework guides and answer the gap regarding the prevalence of precarious work factors, ultimately aiming to improve labour conditions and promote sustainable growth in the renewable energy sector.

The key contributions of this research to the field of Occupational Health and Safety (OHS) and precarious work include a comprehensive analysis of precarious work dimensions, identification of contributing factors, a structured framework for the assessment of the afore mentioned research gap. The theoretical implications highlight the importance of integrating multidimensional factors to assess the outcome i.e. wellbeing at workplace. Future research should focus on longitudinal studies, comparative analyses, gender and diversity considerations for better outcome-based results. The proposed framework will enhance the understanding of precarious work in the renewable energy sector and contribute to the development of effective strategies for improving labour conditions and OHS standards.

Acknowledgments. The authors would like to thank Universiti Teknologi Petronas (UTP), Malaysia and acknowledge that the current research is funded by the project entitled *Assessing the Impact of Energy Transition and its speed on The Economical Disruption for PETRONAS* (grant number 015LC0-531).

Disclosure of Interests. The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

References

1. Aman, M., Solangi, K., Hossain, M., Badarudin, A., Jasmon, G., Mokhlis, H., Bakar, A., & Kazi, S. N. (2015). A review of Safety, Health and Environmental (SHE) issues of solar energy system. *Renewable and sustainable energy reviews*, 41, 1190-1204.
2. Anagnostou, M., Gunn, V., Nibbs, O., Muntaner, C., & Doberstein, B. (2022). An international scoping review of rangers' precarious employment conditions. *Environment Systems and Decisions*, 42(4), 479-503.
3. Bakhiyi, B., Labrèche, F., & Zayed, J. (2014). The photovoltaic industry on the path to a sustainable future—Environmental and occupational health issues. *Environment International*, 73, 224-234.
4. Beckers, D. G., Van der Linden, D., Smulders, P. G., Kompier, M. A., Taris, T. W., & Geurts, S. A. (2008). Voluntary or involuntary? Control over overtime and rewards for overtime in relation to fatigue and work satisfaction. *Work & Stress*, 22(1), 33-50.
5. Behrani, P., Isha, A. S. N., Salleh, R., & Al Mekhlafi, A.-B. A. (2023). Determination of Occupational Health and Safety Risks in Solar Energy. *KnE Social Sciences*, 142–150-142–150.
6. Benach, J., Vives, A., Tarafa, G., Delclos, C., & Muntaner, C. (2016). What should we know about precarious employment and health in 2025? Framing the agenda for the next decade of research. *International journal of epidemiology*, 45(1), 232-238.
7. Blustein, D. L., Allan, B. A., Davila, A., Smith, C. M., Gordon, M., Wu, X., Milo, L., & Whitson, N. (2022). Profiles of Decent Work and Precarious Work: Exploring Macro-Level Predictors and Mental Health Outcomes. *Journal of Career Assessment*, 10690727221119473.
8. Burgess, J., & Campbell, I. (1998). The nature and dimensions of precarious employment in Australia. *Labour & Industry: a journal of the social and economic relations of work*, 8(3), 5-21.
9. Chari, R., Chang, C.-C., Sauter, S. L., Sayers, E. L. P., Cerully, J. L., Schulte, P., Schill, A. L., & Uscher-Pines, L. (2018). Expanding the paradigm of occupational safety and health: a new framework for worker well-being. *Journal of occupational and environmental medicine*, 60(7), 589-593.
10. Coalition, S. V. T. (2009). *Toward a Just and Sustainable Solar Energy Industry*. San Jose, 400.
11. Costa, G. (2010). Shift work and health: current problems and preventive actions. *Safety and health at Work*, 1(2), 112-123.
12. Hair, J. F., Gabriel, M., & Patel, V. (2014). AMOS covariance-based structural equation modeling (CB-SEM): Guidelines on its application as a marketing research tool. *Brazilian Journal of Marketing*, 13(2).

13. Harvey, J. (2019). Homeworkers in Global Supply Chains: A Review of Literature. WIEGO Resource Document(11).
14. International Energy Agency ((October 2017).).
15. Isha, A. S. N., Behrani, P., Sarwa, U., & Serai, M. H. (2023). Effect of Precarious Work on Workplace Wellbeing and Musculoskeletal Disorders: A Systematic Review. *Proceeding International Conference on Economy, Management, and Business (Volume 1, 2023)*,
16. Islam, M., Saidur, R., Rahim, N., & Solangi, K. (2009). Renewable energy research in Malaysia. *Engineering e-Transaction*, 4(2), 69-72.
17. Izam, N. S. M. N., Itam, Z., Sing, W. L., & Syamsir, A. (2022). Sustainable Development Perspectives of Solar Energy Technologies with Focus on Solar Photovoltaic—A Review. *Energies*, 15(8), 2790.
18. Janta, B., Ratzmann, N., Ghez, J., Khodyakov, D., & Yaqub, O. (2015). Employment and the changing labour market. *Global societal trends to, 2030*.
19. Kalleberg, A. L. (2009). Precarious work, insecure workers: Employment relations in transition. *American sociological review*, 74(1), 1-22.
20. Kalleberg, A. L., Nesheim, T., & Olsen, K. M. (2015). Job quality in triadic employment relations: Work attitudes of Norwegian temporary help agency employees. *Scandinavian journal of management*, 31(3), 362-374.
21. Kalleberg, A. L., & Vallas, S. P. (2017). Probing precarious work: Theory, research, and politics. In *Precarious work* (pp. 1-30). Emerald Publishing Limited.
22. Karanikas, N., Steele, S., Bruschi, K., Robertson, C., Kass, J., Popovich, A., & MacFadyen, C. (2021). Occupational health hazards and risks in the wind industry. *Energy Reports*, 7, 3750-3759.
23. Keller, B., & Seifert, H. (2013). Atypical employment in Germany. Forms, development, patterns1. *Transfer: European Review of Labour and Research*, 19(4), 457-474.
24. Kim, T. J., & von dem Knesebeck, O. (2016). Perceived job insecurity, unemployment and depressive symptoms: a systematic review and meta-analysis of prospective observational studies. *International archives of occupational and environmental health*, 89, 561-573.
25. Lund, F. (2006). Working people and access to social protection. In *Gender and Social Policy in a Global Context: Uncovering the Gendered Structure of 'the Social'* (pp. 217-233). Springer.
26. O'Reilly, J., & Fagan, C. (1998). Part-time prospects. *An International Comparison of Part-Time*.
27. Ong, M. H. A., & Puteh, F. (2017). Quantitative data analysis: Choosing between SPSS, PLS, and AMOS in social science research. *International Interdisciplinary Journal of Scientific Research*, 3(1), 14-25.
28. Organization, W. H. (2010). A conceptual framework for action on the social determinants of health.
29. Schulte, P. A., & Chun, H. (2009). Climate change and occupational safety and health: establishing a preliminary framework. *Journal of occupational and environmental hygiene*, 6(9), 542-554.
30. Sen, A., Mohankar, A. S., Khamaj, A., & Karmakar, S. (2021). Emerging OSH issues in installation and maintenance of floating solar photovoltaic projects and their link with sustainable development goals. *Risk management and healthcare policy*, 14, 1939.
31. Simões, M. R. L., Souza, C., Alcantara, M. A. d., & Assunção, A. Á. (2019). Precarious working conditions and health of metropolitan bus drivers and conductors in Minas Gerais, Brazil. *American journal of industrial medicine*, 62(11), 996-1006.
32. Standing, G. (2011). *The precariat: The new dangerous class*. Bloomsbury academic.

33. Stock, R. (2021). Praeclariat: Theorising precarious labour geographies of solar energy. *Antipode*, 53(3), 928-949.
34. Vives, A., Amable, M., Ferrer, M., Moncada, S., Llorens, C., Muntaner, C., Benavides, F. G., & Benach, J. (2010). The Employment Precariousness Scale (EPRES): psychometric properties of a new tool for epidemiological studies among waged and salaried workers. *Occupational and environmental medicine*, 67(8), 548-555.
35. Vosko, L. F. (2011). Precarious employment and the problem of SER-centrism in regulating for decent work. In *Regulating for Decent Work: New Directions in Labour Market Regulation* (pp. 58-90). Springer.
36. Weller, C., & Hamilton, D. (2018). More retirement stability in an unstable world: expanding qualifying credit options for social security benefits. *Public Policy & Aging Report*, 28(suppl_1), S46-S54.
37. Work, I. f., & Health. (2016). OHS Vulnerability Measure. In: Institute for Work & Health Toronto, Canada.

Open Access This chapter is licensed under the terms of the Creative Commons Attribution-NonCommercial 4.0 International License (<http://creativecommons.org/licenses/by-nc/4.0/>), which permits any noncommercial use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons license and indicate if changes were made.

The images or other third party material in this chapter are included in the chapter's Creative Commons license, unless indicated otherwise in a credit line to the material. If material is not included in the chapter's Creative Commons license and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder.

