

MUHAMMAD SUKRI RAMLI¹

¹Affiliation not available

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Abstract

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STRAINED BY CLIMATE AND REFUGEE MIGRATION: *Malaysia's Challenges and the Urgent Need for ASEAN's Collective Response*

MUHAMMAD SUKRI BIN RAMLI
Asia School of Business
Kuala Lumpur, Malaysia
Email: m.binramli@sloan.mit.edu

Abstract

Malaysia has become a major refugee-hosting country in ASEAN, facing considerable strain as it shoulders a disproportionate burden of refugee protection despite the absence of a formal legal framework for refugee status. This paper examines the mounting challenges Malaysia faces at the intersection of increasing climate-induced displacement and the vulnerabilities of these populations. Malaysia is also struggling with severe climate change impacts, such as flooding, while managing growing refugee populations. Recurrent climate threats, notably severe monsoon flooding which disproportionately impacts refugees and asylum seekers residing in flood-prone, affordable areas, exacerbate these vulnerabilities. This research investigates the interplay between humanitarian protection and climate vulnerability, highlighting the precarious livelihoods and housing conditions of displaced individuals in Malaysia, and how the absence of legal recognition compounds their susceptibility to climate extremes, creating a dual crisis. Analyzing the dynamic relationship between climate threats, refugee vulnerability, and the resultant strain on Malaysia, this study underscores the urgent need for comprehensive climate action and a collective response within ASEAN to mitigate these challenges. Furthermore, it includes a comparative analysis of Malaysia's challenges with other ASEAN countries. By examining the causal links between these factors and analyzing Malaysia's current situation, this research contributes to a deeper understanding of the necessity for robust regional and national frameworks. These frameworks must not only address the immediate needs of displaced populations but also prioritize long-term climate resilience and sustainable development strategies across the ASEAN region.

1. Introduction

Climate change is unequivocally altering global systems, leading to more frequent and intense extreme weather events, rising sea levels, and significant environmental degradation (IPCC, 2022). These changes pose profound challenges to human societies and ecosystems worldwide, impacting everything from agricultural productivity and water availability to human health and economic stability (World Bank, 2024). The impacts of climate change are not evenly distributed, with vulnerable populations and regions often bearing a disproportionate burden (Adger, 2006). Alongside climate change, the world is witnessing unprecedented levels of forced displacement, driven by conflict, persecution, violence, and increasingly, environmental factors (UNHCR, 2023). These movements of people create complex humanitarian, political, and social challenges for both displaced persons and host communities, straining resources and requiring complex policy responses (Martin, 2010). The ASEAN region is particularly vulnerable to the combined impacts of climate change and displacement. The region is characterized by extensive coastlines, reliance on agriculture, and a high prevalence of climate-sensitive sectors, making it susceptible to climate-related disasters (Christensen & Duncan, 2020). Many countries in the region also face challenges related to poverty, inequality, and governance, which can exacerbate the impacts of climate change and displacement, creating a complex web of interconnected vulnerabilities (Tacoli, 2009).

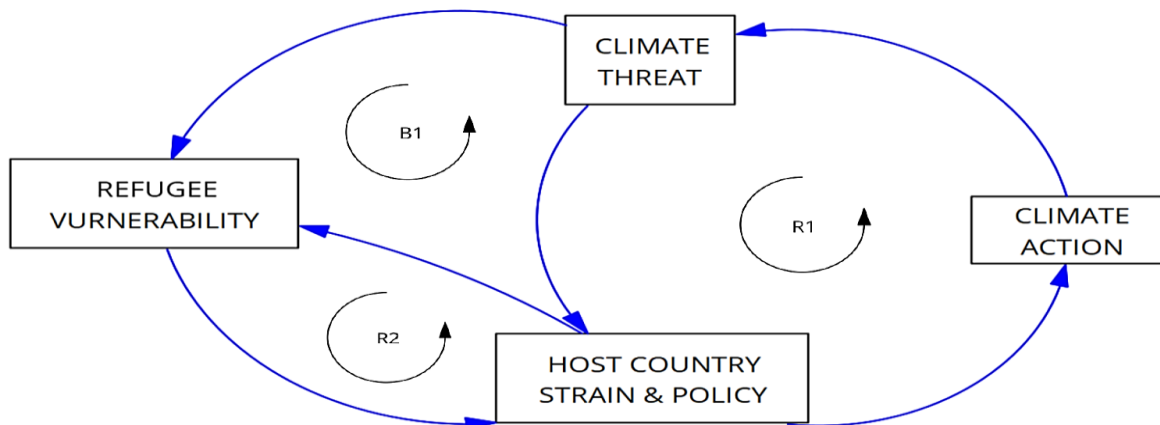


Figure 1: Causal Loop Diagram Illustrating the Interplay of Climate Threats, Refugee Vulnerabilities, and Host Country Strain

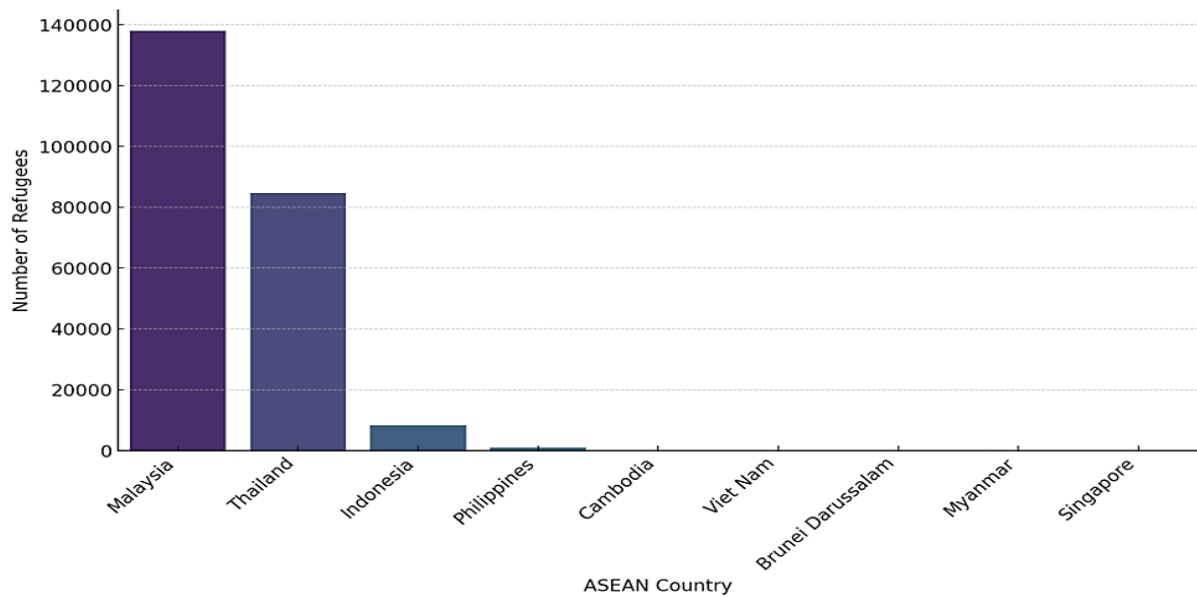


Figure 2: Refugee Population in ASEAN Countries (2024). Adapted from UNHCR Refugee Data Finder. <https://www.unhcr.org/refugee-statistics>

Malaysia has become a significant destination and host country for refugees and asylum seekers in the ASEAN region (UChew, 2018). Despite not being a signatory to the 1951 Refugee Convention, Malaysia hosts a substantial number of displaced persons, creating unique challenges for the country's social and economic systems (Human Rights Commission of Malaysia [SUHAKAM], 2023). Concurrently, Malaysia is experiencing the adverse impacts of climate change, including increased frequency and intensity of floods (Department of Irrigation and Drainage Malaysia, 2023; Tang & Abidin, 2018), rising temperatures (Malaysian Meteorological Department [METMalaysia], 2023; Liew, Yusof, & Tham, 2013), sea-level rise (McGranahan, Balk, & Anderson, 2007), and other environmental changes. These dual pressures—managing a large refugee population and facing significant climate change impacts—create a compounding crisis for Malaysia. The vulnerabilities of refugee populations, who often face precarious living conditions and limited access to resources, are exacerbated by climate-related disasters, placing additional strain on the country's resources and capacity (IDMC, 2023).

To provide context, it is important to briefly compare Malaysia's challenges with those of other ASEAN nations. Thailand also hosts many refugees but has a different approach to refugee management, including some forms of legal recognition and integration policies (UNHCR, 2023a). Indonesia is highly vulnerable to climate change impacts, such as sea-level rise and extreme weather events (IPCC, 2022), but its refugee situation is characterized by different dynamics and policy responses, often involving temporary protection measures (Kälin & Schrepfer, 2012). The Philippines has developed strong disaster response mechanisms due to its experience with typhoons and other natural hazards (Tang & Abidin, 2018) and has also shown a willingness to engage in international discussions on refugee protection (Edwards, 2010). However, the country also faces significant challenges with internal displacement caused by climate-related disasters (IDMC, 2023), highlighting the complex interplay of displacement drivers in the region.

2. Research Objectives

The primary objective of this research was to analyze how climate change impacts exacerbated Malaysia's challenges in supporting and protecting refugees. This primary objective was crucial for understanding the core issue at the intersection of climate change and refugee studies. It acknowledged that climate change acted as a stressor that compounded existing challenges faced by refugee-hosting nations, increasing the complexity and intensity of existing vulnerabilities (Warner, 2010). It was supported by the broader literature on climate-induced migration and the vulnerability of displaced populations (Foresight, 2011), which highlighted the increasing pressure placed on host countries due to environmental factors, often leading to humanitarian crises and requiring more comprehensive responses (Kälin, 2013). To achieve this, several specific objectives were pursued.

First, the research analyzed specific climate change threats, with a focused examination of flooding, and their impact on refugees. This objective aimed to identify the direct impacts of climate change on refugees, focusing on specific threats relevant to Malaysia. Flooding, for example, was a major concern in Malaysia (Tang & Abidin, 2018), and its effects on vulnerable communities, including refugees, were analyzed, considering the increased frequency and intensity of extreme rainfall events (Christensen et al., 2013). The study investigated how increased flooding affected refugee settlements, access

to resources, and overall safety. Research on environmental hazards and their disproportionate impact on marginalized groups (Hunter, 2005; Wisner, Blaikie, Cannon, & Davis, 2004) further supported the need to examine these specific climate threats, considering the intersectionality of vulnerabilities (Adger, 2006).

Second, the research assessed vulnerabilities of refugees in Malaysia (housing, livelihoods, services, and social integration), particularly in the context of flooding events. This objective addressed the pre-existing vulnerabilities of refugee populations that were exacerbated by climate change. Housing conditions for refugees were often precarious, with many living in informal settlements or areas prone to disasters (UNHCR, Various years; Human Rights Commission of Malaysia [SUHAKAM], Various years), which were further compromised by flood events. Livelihoods were insecure due to limited legal rights to work and reliance on informal employment, making refugees particularly susceptible to economic shocks following floods (Dun, 2011). Enhancing access to essential services such as healthcare, education, and social support can improve resilience and adaptation following flooding incidents (Hyndman, 2004). Moreover, challenges related to social integration and discrimination further marginalized refugee communities and increased their vulnerability to flood impacts (Castles, 2003). Research on vulnerability and resilience (Ribot, 2014) provided a framework for understanding these multifaceted challenges, emphasizing the need for a holistic approach that considered social, economic, and environmental factors (Bebbington, 1999) in the context of flood disasters.

Third, the research evaluated the strain on Malaysia's resources and systems (healthcare, infrastructure, public finances, and social cohesion) resulting from increased flooding and refugee presence. This objective examined the consequences of the combined pressures of climate change-induced flooding and refugee influx on Malaysia's resources and systems. Flood impacts damaged infrastructure, disrupted essential services, and strained public finances (The World Bank, 2010; Abdullah & Mohd, 2016), requiring significant investments in disaster relief (Tang & Abidin, 2018). The presence of a large refugee population further strained healthcare systems, housing availability, and other social services following flood events, potentially leading to resource scarcity and increased competition for limited resources (Tacoli, 2011). Furthermore, the combined pressures strained social cohesion and created tensions within communities, requiring careful attention to social equity and inclusion (Giddens, 2009) after major flooding. Studies on the economic and social impacts of disasters and migration (Dun, 2011; Tacoli, 2011) highlighted the importance of assessing these strains, considering the complex interplay of factors affecting resource allocation and social stability (Young et al., 2006) in the context of flood related disaster.

Fourth, the research critically compared Malaysia's situation with selected ASEAN countries (Indonesia, Thailand, Philippines) regarding flood response and refugee support. This objective provided a comparative perspective by examining how other ASEAN countries addressed similar challenges in the context of flooding. Comparing Malaysia's policies and experiences with those of Indonesia, Thailand, and the Philippines offered valuable insights into best practices and areas for improvement particularly in the context of flooding events. These countries had varying approaches to refugee protection, climate change adaptation, and disaster risk reduction (UNHCR, 2023), reflecting different legal frameworks, institutional capacities, and socio-political contexts (Achieme, 2019). Analyzing these differences provided a rich context for comparative analysis, highlighting the importance of regional cooperation and shared responsibility (Biermann & Boas, 2010) in the face of flood disasters affecting vulnerable populations.

Finally, the research formulated policy recommendations for climate resilience and refugee protection, with a focus on mitigating flood impacts. This objective aimed to translate the research findings into actionable policy recommendations. Drawing on the analysis of flood impacts, refugee vulnerabilities, and the strain on host country resources, the research proposed evidence-based strategies to enhance climate resilience and improve the protection of refugees in Malaysia and the broader ASEAN region, specifically in the context of increasing flood events. Policy-oriented research and reports (Foresight, 2011; Kälin & Schrepfer, 2012; UNHCR, 2011) provided valuable guidance for developing effective and sustainable policy solutions, emphasizing the need for integrated approaches that addressed both climate change and refugee protection in a comprehensive manner when facing the increasing challenges of flooding (McAdam, 2016).

3. Literature Review

The ASEAN region is identified as a hotspot for climate change impacts, with significant vulnerabilities to rising temperatures, sea-level rise, altered rainfall patterns, and increased frequency and intensity of extreme weather events (Asian Development Bank, Various years; IPCC, 2022). These trends and projections are based on extensive climate modeling and scientific assessments, indicating a trajectory of increasing climate risks for the region. The impacts are projected to affect various sectors, including agriculture, water resources, coastal zones, and human health, posing significant challenges to sustainable development (Christensen et al., 2013). The diverse geography and socio-economic conditions within ASEAN contribute to varying degrees of vulnerability across member states (Adger, 2006).

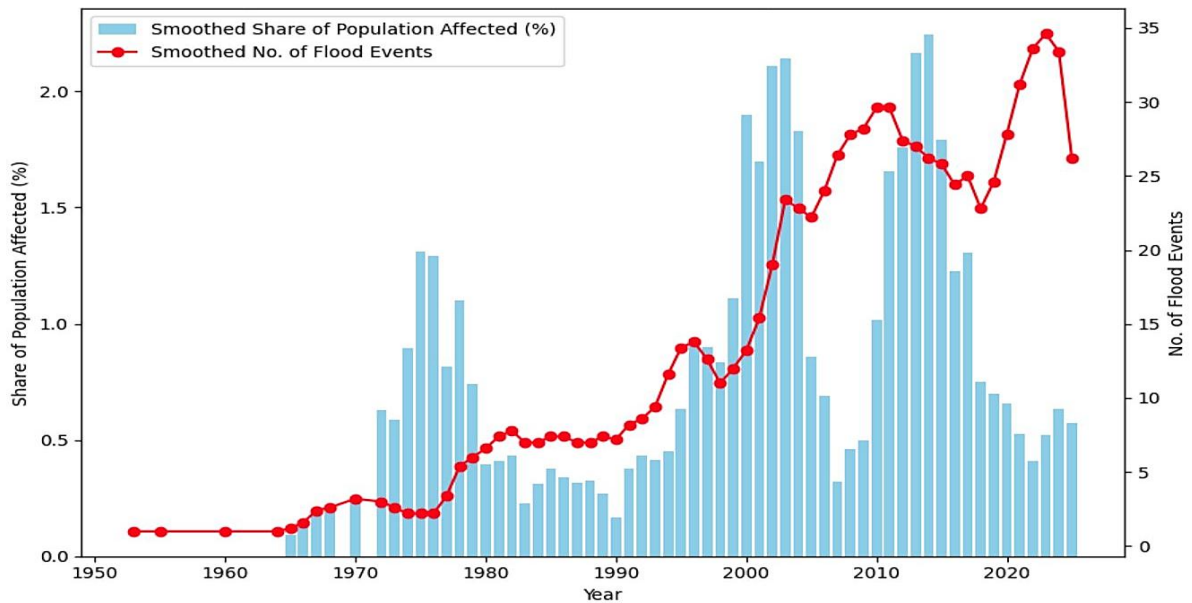


Figure 3. 5-Year Smoothed Share of Population in ASEAN Affected by Floods. Adapted from IDMC. <https://www.internal-displacement.org/database/displacement-data/>

When comparing climate change challenges in Malaysia with other ASEAN countries, several key differences and similarities emerge. Flooding is a major climate-related hazard across ASEAN, but its specific characteristics and impacts vary. Malaysia experiences frequent and severe monsoon flooding, particularly affecting low-lying areas and urban centers (DID, 2023; Tang & Abidin, 2018). The low-lying coastal areas and urban centers in Malaysia are particularly susceptible to the impacts of increased rainfall and storm surges (Liew, Yusof, & Tham, 2013). Other ASEAN countries, such as Indonesia, also face significant flood risks, exacerbated by rapid urbanization and land-use change (IDMC, 2023). Indonesia's vulnerability is heightened by its large population density and extensive coastal regions. The Philippines is highly vulnerable to flooding associated with typhoons, leading to both riverine and coastal flooding, causing widespread damage and displacement (Tang & Abidin, 2018). This diversity in flood impacts is visually represented in Figure 4, which illustrates the relationship between flood frequency and average annual damages (% of GDP) across several ASEAN countries. Notably, Malaysia is positioned near the origin, indicating a moderate frequency of flood events, around 100, and a relatively low economic impact, just above 0.00% of GDP, compared to other nations. Malaysia clusters with Myanmar, Viet Nam, and the Philippines, all exhibiting low average annual damages, while experiencing a flood frequency between countries with fewer events, like Timor-Leste and Cambodia, and those with more, such as Indonesia, suggesting that despite experiencing floods, Malaysia's economic impact, measured as a percentage of GDP, is comparatively minimal. These comparisons highlight the diverse nature of flood risks in the region, with each country facing unique challenges that require context-specific adaptation strategies and effective disaster risk management (Tang & Abidin, 2018).

Rising temperatures and heatwaves pose increasing threats throughout ASEAN (METMalaysia, 2023). Malaysia, along with other equatorial countries in the region, is experiencing a trend of increasing average temperatures and more frequent heat extremes. These heatwaves have significant implications for human health, particularly for vulnerable populations, including the elderly, outdoor workers, and marginalized communities (Mordecai, 2024). The impacts of heatwaves can be exacerbated by the urban heat island effect, particularly in rapidly urbanizing areas, where built environments trap heat and increase temperatures even further (Liu, Couclelis, & Groffman, 2007). The health impacts of heatwaves can be particularly severe in urban areas with limited green spaces and inadequate infrastructure (Tacoli, 2011).

Sea-level rise is a critical concern for many ASEAN countries with extensive coastlines and low-lying areas. Malaysia, along with Indonesia, the Philippines, and Vietnam, faces significant threats from sea-level rise, which can lead to coastal erosion, inundation of coastal communities, and loss of valuable land and ecosystems (McGranahan, Balk, & Anderson, 2007). These impacts can disproportionately affect coastal communities that rely on fisheries and other marine resources for their livelihoods, leading to displacement and economic hardship (Oliver-Smith, 2009). The long-term consequences of sea-level rise necessitate proactive adaptation measures and coastal zone management strategies (Warner et al., 2010).

The international legal framework, grounded in the 1951 Refugee Convention and its 1967 Protocol, offers a foundation for refugee protection, though its application varies across ASEAN, reflecting diverse legal and socio-economic contexts. While some nations have integrated aspects of refugee protection into their national laws, others, like Malaysia, are presented with an opportunity to enhance their frameworks by aligning with international standards (UNHCR, 2023a). This alignment can lead to more consistent and supportive approaches for displaced populations (McAdam, 2012).

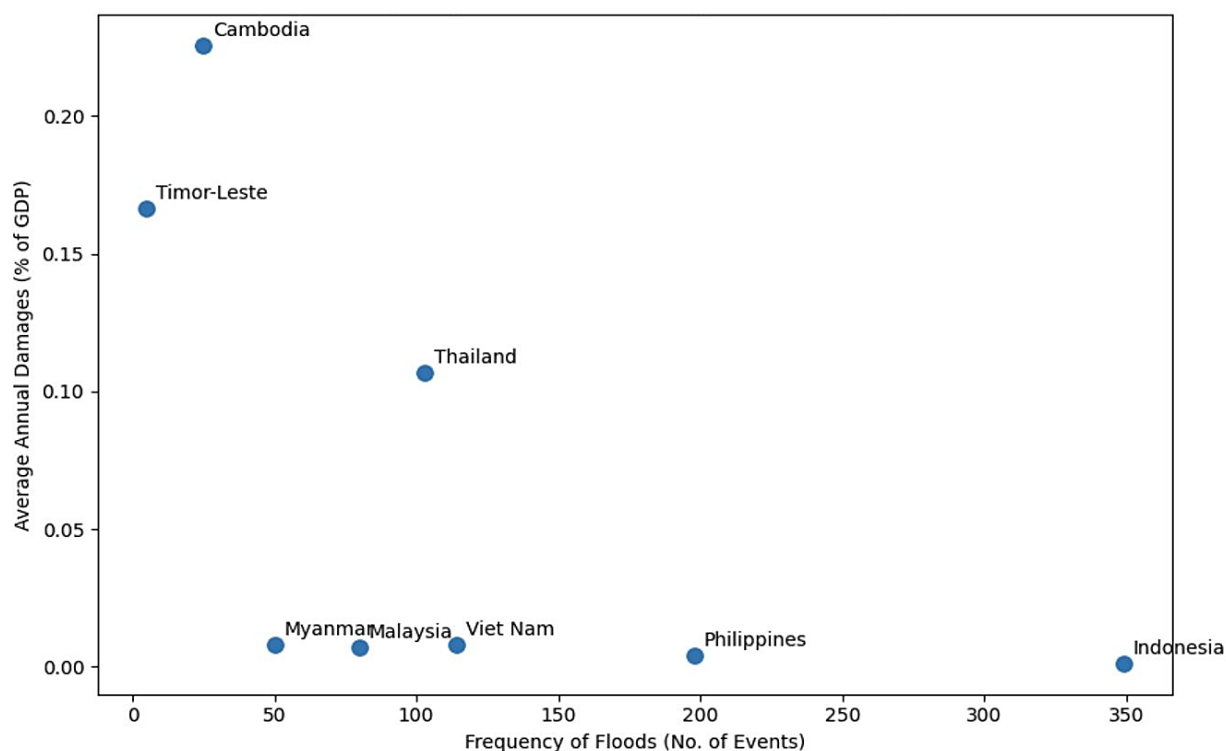


Figure 4: Scatter Plot of ASEAN Countries: Relationship Between Flood Frequency and its Annual Average Damage. Note. Data from the Internal Displacement Monitoring Centre (IDMC) Global Internal Displacement Database

Malaysia is in a position to develop a more robust legal framework for refugee recognition and protection. By moving towards a formal system, Malaysia can create a more predictable and secure environment for refugees and asylum seekers, currently addressed under immigration laws (Chew, 2018; Human Rights Commission of Malaysia [SUHAKAM], Various years). This development would enhance refugees' access to essential rights and services, fostering better integration (Castles, 2003). Additionally, establishing a clear legal framework would provide a solid foundation for addressing the unique needs of climate-displaced persons (Kälin & Schrepfer, 2012).

Thailand and Indonesia are also actively working towards strengthening their refugee management mechanisms, including temporary protection and registration processes (UNHCR, 2023). The Philippines, as a signatory to the 1951 Convention, offers a model for developing comprehensive legal frameworks, and continues to improve its capacity to address both refugee protection and internal displacement (IDMC, 2023). These diverse approaches across ASEAN highlight the region's commitment to evolving refugee protection strategies, reflecting each nation's policy priorities and institutional capacities (Martin, 2010).

Refugee settlements and urban refugee communities across ASEAN are actively engaged in building resilience, with opportunities to enhance their living conditions and self-reliance (UNHCR, Various years). Initiatives aimed at improving housing, healthcare access, and economic opportunities are underway. By focusing on providing access to formal employment, education, and essential services like clean water and sanitation, ASEAN nations can empower refugee communities to thrive (UNHCR, Various years; Ellis, 2000; Tacoli, 2011). These efforts contribute to creating more inclusive societies and fostering long-term well-being.

Climate change is increasingly recognized as a significant driver of migration and displacement, both within and across borders, adding a new layer of complexity to global migration patterns (Foresight, 2011; McLeman, 2020). Climate-related disasters, such as floods, droughts, and storms, and slow-onset environmental degradation, such as sea-level rise and desertification, can force people to leave their homes and seek safety or better opportunities elsewhere, leading to both temporary and permanent displacement (IOM, 2023). This climate-induced migration can intersect with existing refugee situations in complex ways, as climate change impacts can exacerbate vulnerabilities and displacement among refugee populations, creating a "double exposure" scenario where individuals face multiple and overlapping risks (Warner, 2010; Kälin, 2013). For instance, refugees living in coastal areas or flood-prone regions are particularly vulnerable to climate-related disasters, which can further displace them, destroy their shelters, and disrupt access to essential services, creating additional challenges for both displaced populations and host communities (IDMC, 2023). The lack of durable solutions for refugees, combined with the increasing frequency and intensity of climate-related disasters, can create a cycle of displacement and vulnerability.

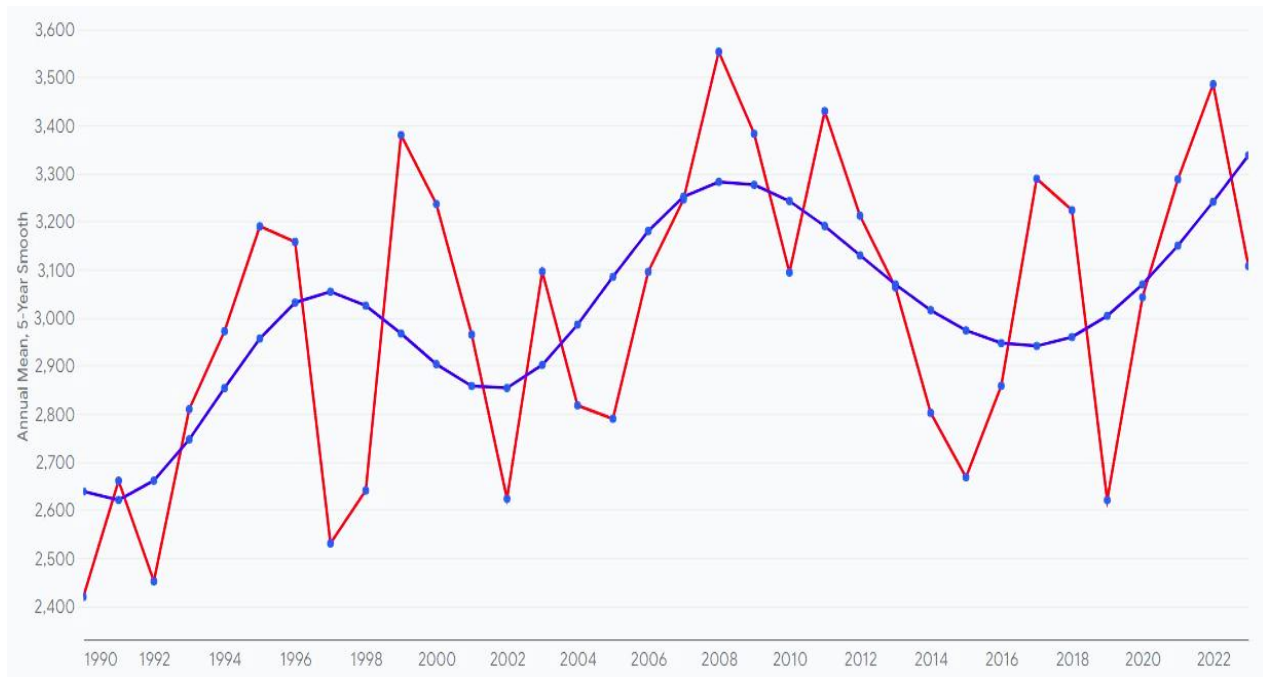


Figure 5. Annual Mean Precipitation (mm) in Malaysia, 1990-2022. Note. Data from the World Bank Climate Change Knowledge Portal.

Figure 5 illustrates the annual mean precipitation in Malaysia from 1990 to 2022, showcasing both raw annual data (red line) and a 5-year smooth average (blue line) to highlight trends. The graph reveals significant year-to-year fluctuations in precipitation, indicating inherent variability in Malaysia's rainfall patterns, with annual totals ranging from approximately 2,400 mm to 3,600 mm. The 5-year smooth average demonstrates an overall upward trend from 1990 to the late 1990s, a subsequent downward trend into the early 2000s, followed by another upward trend leading to the early 2010s, and then a downward trend into the late 2010's, and finally an upward trend to 2022. These long-term shifts, combined with the observed variability, emphasize the challenges Malaysia faces in water resource management and disaster preparedness, informing climate adaptation and mitigation policies.

Enhanced climate resilience and robust refugee support systems can empower nations to effectively manage the combined pressures of climate change and refugee influx, fostering sustainable resource management and societal well-being, highlighting the need for integrated approaches that address both climate change adaptation and refugee protection (McAdam, 2016). Climate change impacts can damage infrastructure, disrupt essential services, and strain public finances, requiring significant investments in adaptation and disaster relief efforts, which can divert resources from other essential services (The World Bank, 2010; Abdullah & Mohd, 2016). At the same time, the presence of a large refugee population can strain resources such as healthcare, housing, education, and social services, particularly in urban areas where resources are already stretched (Tacoli, 2011). By building strong climate resilience and refugee support systems, we can empower communities to effectively address challenges and enhance their capacity to respond positively to the needs of both host populations and displaced individuals. This proactive strategy fosters stability and reduces potential social tensions (Young et al., 2006). Addressing the climate-displacement nexus requires a comprehensive and coordinated approach that involves strengthening climate resilience, improving refugee protection frameworks, and promoting sustainable development that benefits both host communities and displaced populations.

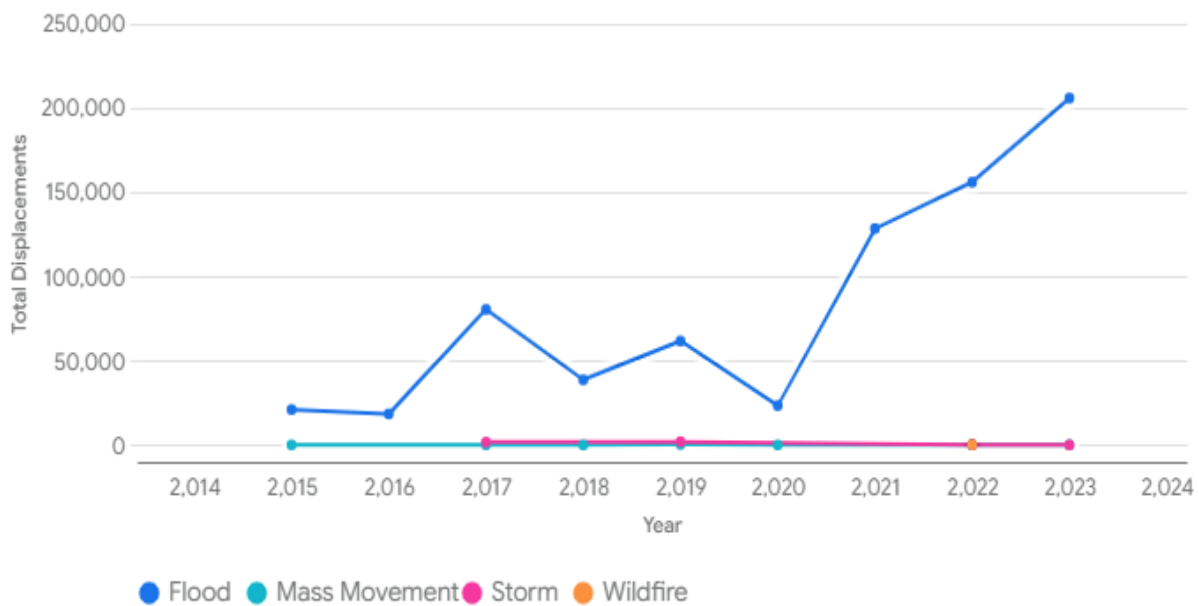


Figure 6. Total Disaster Internal Displacements in Malaysia (2015-2023), by Hazard Type. Data Source: Internal Displacement Monitoring Centre (IDMC) Global Internal Displacement Database.

Figure 6 illustrates the total disaster internal displacements in Malaysia from 2015 to 2023, categorized by hazard type. Internal displacement refers to the situation where people are forced or obliged to leave their homes but remain within the borders of their own country, often due to disasters, conflict, or human rights violations. The graph clearly demonstrates that floods are the dominant cause of internal displacement in Malaysia, with the blue line representing flood displacements showing significant fluctuations and an overall increasing trend, particularly in recent years.

The observed trend is corroborated by the empirical data pertaining to the 2021-2022 Malaysian floods, triggered by Tropical Depression 29W. This event resulted in the concurrent displacement of over 71,000 residents and a cumulative impact on over 125,000 individuals. The salient increase in flood-induced displacements depicted in Figure 6 for the years 2021 and 2022 directly correlates with the magnitude of this specific disaster. The 2021-2022 floods, characterized as a 'once in a century' event, underscore the acute severity of flood-related internal displacement in Malaysia. The substantial volume of displaced persons emphasizes the vulnerability of communities to extreme meteorological events, specifically floods, and thereby accentuates the imperative for robust disaster management protocols and climate change mitigation strategies. The data points reflecting a significant surge in displaced individuals are consistent with the reported figures associated with the 2021-2022 flood event.

The substantial internal displacement shown in Figure 6 significantly strains Malaysian communities acting as hosts. Though fellow citizens, the displaced require immediate resources, shelter, and support, placing a sudden demand on existing infrastructure and social services within affected and adjacent regions. This surge can lead to resource competition, social tensions, and increased burdens on local communities. Consequently, Malaysian citizens in these host areas may experience heightened anxiety due to the disruption of normal life and potential long-term economic impacts. Fundamentally, the stress stems from the rapid and substantial pressure placed on local resources by fellow citizens in need.

It's crucial to differentiate between internal displacement and refugee status. Refugees' cross international borders seeking asylum, facing legal uncertainty and integration challenges under the 1951 Refugee Convention. Conversely, internally displaced persons (IDPs), as depicted in Figure 6, remain within their national borders. Despite being citizens, the scale of displacement can overwhelm national resources, rendering IDPs vulnerable and creating a de facto vulnerability similar to that faced by refugees, albeit without international legal protections. Both groups endure trauma and loss, but their differing legal and social contexts necessitate distinct support strategies. In Malaysia, the stress on host communities, composed of fellow citizens, underscores the significant impact of large-scale internal displacement.

4. Conceptual Framework

This research employs a conceptual framework that integrates climate change impacts, refugee vulnerabilities, and host country strain to analyze the compounding crises faced by Malaysia. By providing a structured understanding of the complex interplay between these factors, this framework highlights the urgent need for coordinated policy responses. A visual

representation, as illustrated in Figure 1, serves as a crucial tool for demonstrating these interactions and their broader implications.

At the core of this framework lies Host Country Strain & Policy, representing the immense pressure on Malaysia’s governance, resources, and infrastructure due to the combined effects of climate change and the increasing refugee population. This central element is interconnected with three key components: climate threats, refugee vulnerability, and climate action. Climate threats encompass Malaysia’s most pressing environmental challenges, including severe flooding, rising temperatures, and coastal erosion. These threats, documented by agencies such as the Department of Irrigation and Drainage and the Malaysian Meteorological Department, disproportionately affect vulnerable communities, especially refugees living in informal settlements. Refugee vulnerability captures the precarious conditions faced by displaced populations in Malaysia, including insecure housing, unstable livelihoods, restricted access to healthcare and education, and the lack of legal recognition. Data from UNHCR reports and human rights organizations illustrate how these factors heighten refugees’ susceptibility to climate extremes, further exacerbating their hardship. Climate action, on the other hand, encompasses both mitigation efforts to reduce climate change drivers and adaptation strategies to manage its effects. Effective climate policies can strengthen disaster preparedness, safeguard vulnerable communities, and alleviate pressure on Malaysia’s infrastructure. However, the absence of long-term, inclusive policies may worsen existing challenges. The framework also visually represents the causal relationships between these elements through directional arrows. Climate threats intensify refugee vulnerabilities, as extreme weather events disproportionately impact communities living in high-risk areas with limited access to adaptive resources. Climate action can play a pivotal role in reducing both climate threats and refugee vulnerabilities by implementing sustainable solutions such as flood management systems, inclusive disaster response planning, and climate-resilient infrastructure. However, ineffective or short-term climate action may fail to address the root causes, exacerbating the existing crisis and creating a negative feedback loop of increasing vulnerability and systemic strain.

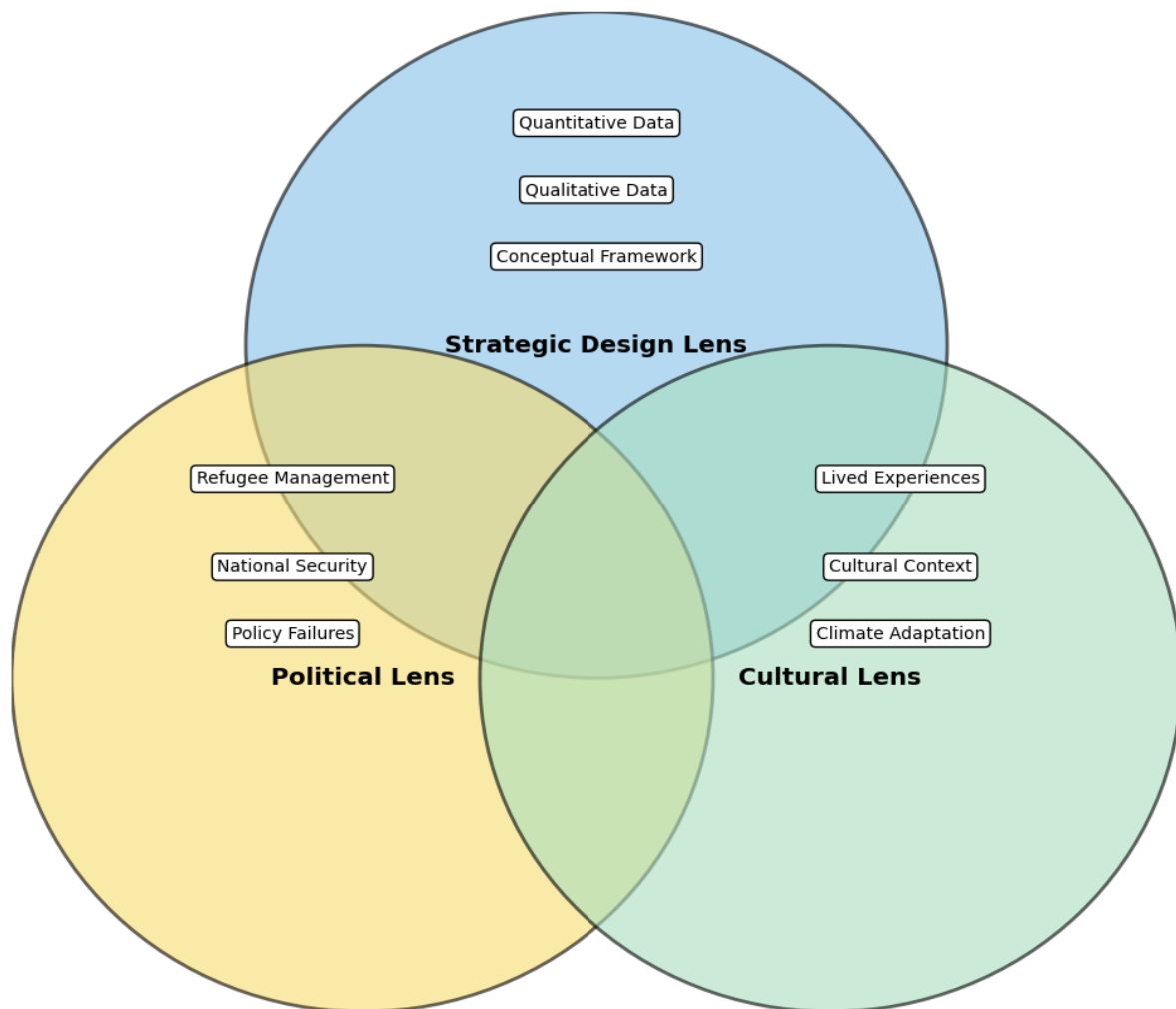


Figure 7: Triple Lens Framework for Climate Change and Refugee Migration

The Triple Lens Framework offers a visual representation of the multifaceted challenges at the intersection of climate change and refugee migration, focusing on the case of Malaysia. This framework employs three interconnected lenses—Strategic Design, Political, and Cultural—to provide a holistic analysis. The Strategic Design Lens, depicted by a light blue circle, emphasizes the importance of data and conceptual frameworks in addressing the issue. The Political Lens, represented by a yellow circle, highlights policy opportunities for refinement, national security concerns, and refugee management as critical factors. The Cultural Lens, shown in a light green circle, underscores the significance of lived experiences, cultural context, and climate adaptation strategies. These lenses collectively illustrate the complex interplay between climate threats, refugee vulnerabilities, and the resultant strain on the host country, Malaysia.

This research explicitly frames Malaysia as a case study of compounding crises, exemplifying the complex challenges arising from the intersection of climate change and refugee migration. This analysis focuses on Malaysia due to its status as a major refugee-hosting country in ASEAN, its high vulnerability to climate change impacts, and the opportunity to explore better solutions for refugee protection. Studying Malaysia provides valuable insights for other ASEAN countries facing similar challenges and contributes to a broader understanding of the climate-displacement nexus in the region.

5. Methodology

This research adopted a mixed-methods design to comprehensively investigate the complex interplay between climate change, refugee migration, and host community dynamics. Employing a mixed-methods approach facilitated the integration of quantitative and qualitative data, providing a robust and holistic analysis (Creswell & Plano Clark, 2018; Teddlie & Tashakkori, 2009). Quantitative data offered statistical evidence and comparative insights, while qualitative data provided in-depth perspectives from diverse stakeholders.

Leveraging open data and Python within a Google Colab environment, this study transformed raw data into actionable findings. Quantitative data, encompassing climate trends, refugee statistics, and socioeconomic indicators, were sourced from reputable repositories, including UNHCR, the World Bank, METMalaysia, IPCC, IDMC, and DOSM. Python libraries (Pandas, NumPy, SciPy) were utilized for data cleaning, statistical modeling, and comparative analysis. Data visualization tools (Matplotlib, Seaborn) were employed to enhance the presentation of key findings.

Qualitative data comprised policy documents from national and regional sources, including climate change, disaster management, and refugee protection policies, ASEAN frameworks, and relevant international agreements.

Data analysis integrated both quantitative and qualitative methods. Statistical analysis of climate data identified trends and patterns in temperature, rainfall, and extreme weather events, utilizing descriptive statistics, trend analysis, and correlation analysis. Refugee data was summarized using descriptive statistics, highlighting demographic characteristics and displacement patterns. Comparative analysis of climate change impacts, refugee situations, and policy responses across selected ASEAN countries was conducted through statistical comparisons and indicator assessments. Thematic analysis (Braun & Clarke, 2006) was employed to analyze interview data, identifying recurring themes and patterns. Content analysis systematically examined policy documents to identify key themes, priorities, and policy gaps.

The comparative analysis was guided by criteria encompassing climate change and refugee policies, institutional capacity, resource allocation, and impacts on refugee populations and host communities. This involved integrating diverse data sources for a comprehensive comparison of selected ASEAN countries. Ethical standards were strictly adhered to, with informed consent obtained from all participants and confidentiality and anonymity ensured.

6. Findings and Discussion

6.1 Malaysia's Host Country Strain

Malaysia faces a significant strain due to the escalating impacts of climate change, which are causing substantial internal displacement among its own citizens, alongside the challenges posed by hosting refugees and asylum seekers. The increasing frequency and severity of flooding events, exacerbated by monsoon seasons and rapid urbanization, have led to widespread displacement, damage to infrastructure, and economic losses (DID, 2023; Tang & Abidin, 2018). For example, the severe floods in December 2021 and early 2022, triggered by Tropical Depression 29W, resulted in an estimated RM 6.1 billion (approximately US\$1.46 billion) in overall losses. This 'once-in-a-century' event, impacting Selangor, Kuala Lumpur, Pahang, and other states, underscores the vulnerability of both urban and rural Malaysian communities. The strain on disaster response capacity from these events necessitates significant resource allocation, potentially diverting funds from other essential services

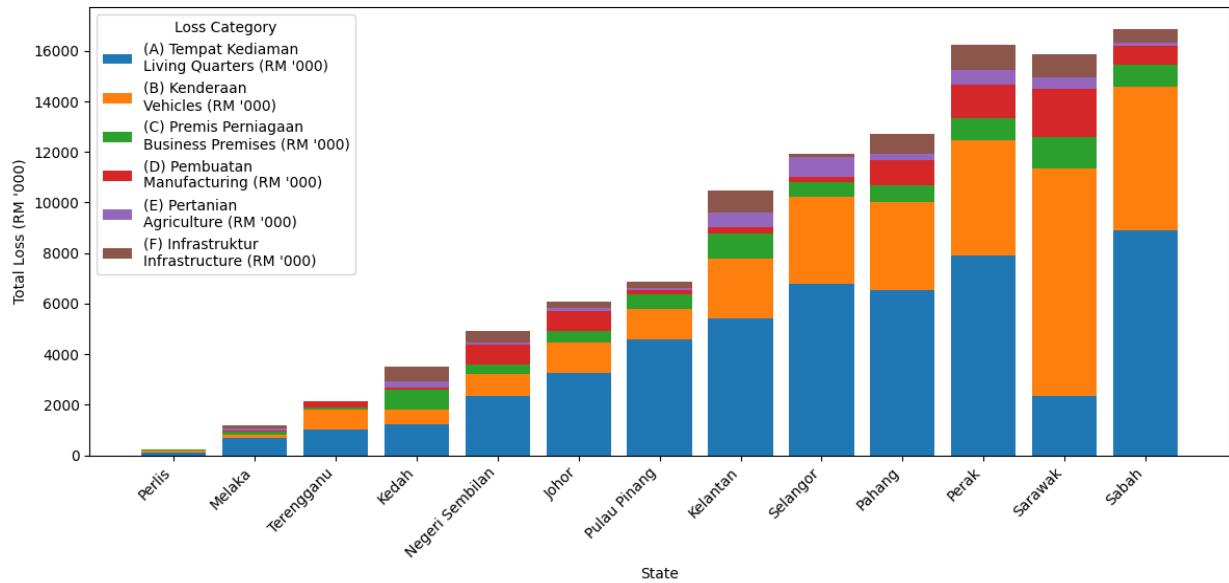


Figure 8: Categorical Composition of Total Flood Losses by Malaysian State. Data Source: Special Report on Impact of Floods in Malaysia by Department of Statistic Malaysia (2023)

Figure 8, Categorical Composition of Total Flood Losses by Malaysian State, from the Department of Statistics Malaysia (2023), illustrates the breadth of these impacts, with Living Quarters consistently representing the largest loss category. This highlights the direct impact on Malaysian citizens homes. Figure 9, Living Quarters Flood Losses by Malaysian State for Year 2022-2023, also from the Department of Statistics Malaysia (2023), further demonstrates the escalating strain, showing increased losses in residential areas across most states, particularly in Sabah. These figures underscore the growing internal displacement and the burden on Malaysian communities acting as hosts to their displaced fellow citizens.

Beyond flooding, Malaysia experiences rising average temperatures and more frequent heatwaves (METMalaysia, 2023). These pose health risks, especially for vulnerable populations with limited access to cooling. The urban heat island effect exacerbates these impacts, straining energy infrastructure and public health (Liu, Couclelis, & Groffman, 2007; IPCC, 2021). Environmental degradation, including deforestation, pollution, and coastal erosion, further contributes to these vulnerabilities, impacting livelihoods and potentially leading to further internal displacement (McGranahan, Balk, & Anderson, 2007).

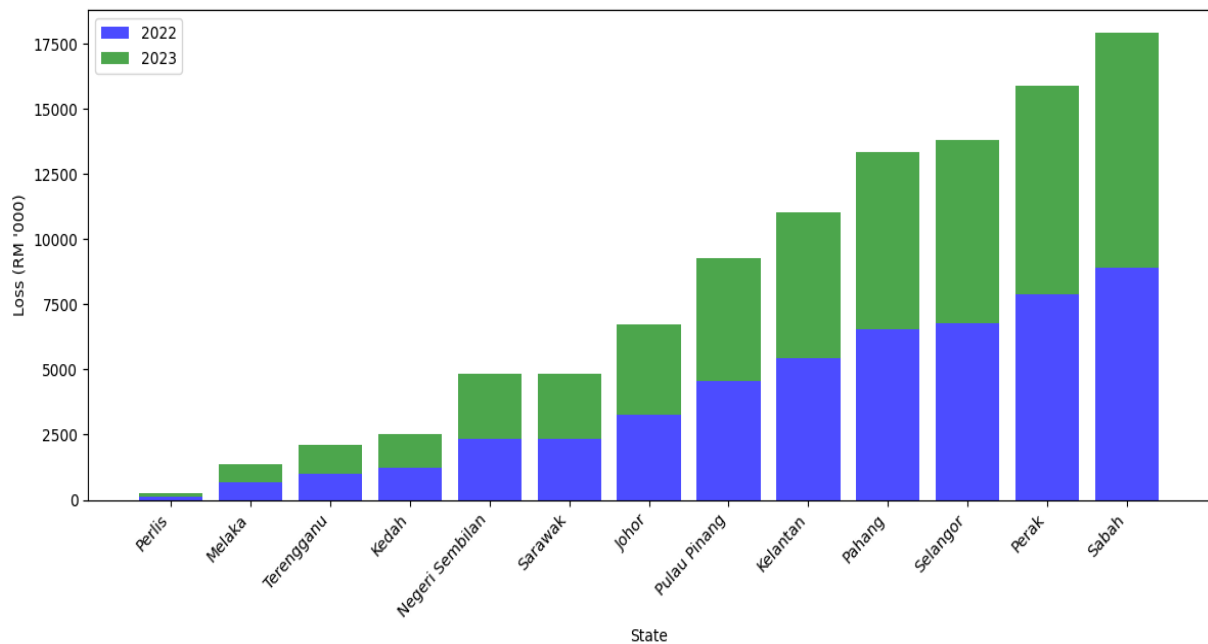


Figure 9: Living Quarters Flood Losses by Malaysian State for Year 2022-2023. Data Source: Special Report on Impact of Floods in Malaysia by Department of Statistic Malaysia (2023)

While climate change impacts disproportionately affect vulnerable communities, including refugees, it's crucial to acknowledge that Malaysian citizens are the primary victims of internal displacement due to these events. The vulnerabilities faced by refugees, such as insecure housing and limited access to resources, are also experienced by internally displaced Malaysians. These intersecting vulnerabilities, compounded by factors like poverty and discrimination, necessitate comprehensive strategies that address the needs of all affected populations.

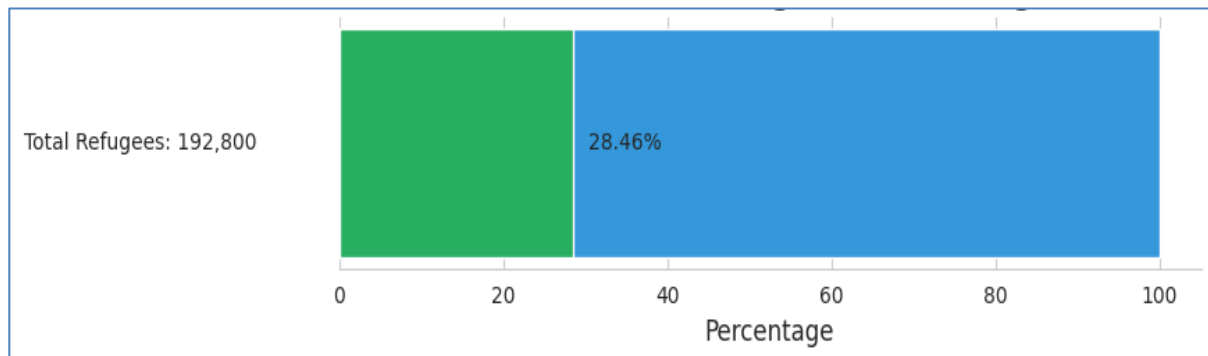


Figure 10: Total Refugee in Malaysia and its Children Percentage. Data Source: UNCHR Malaysia. <https://www.unhcr.org/my/what-we-do/figures-glance-malaysia>

Malaysia, as a significant host nation, accommodates a substantial refugee population, placing notable strain on its existing resources. According to UNHCR data, as of the latest reporting year, approximately 192,800 refugees and asylum seekers were registered within the country (Figure 10). The demographic profile of this population presents key areas of concern. A significant proportion, 28.46%, are children, which adds pressure to educational and social service systems (Figure 10). The gender distribution reveals a higher count of male refugees (125,320) compared to female refugees (67,480), potentially exacerbating existing social tensions (Figure 11).

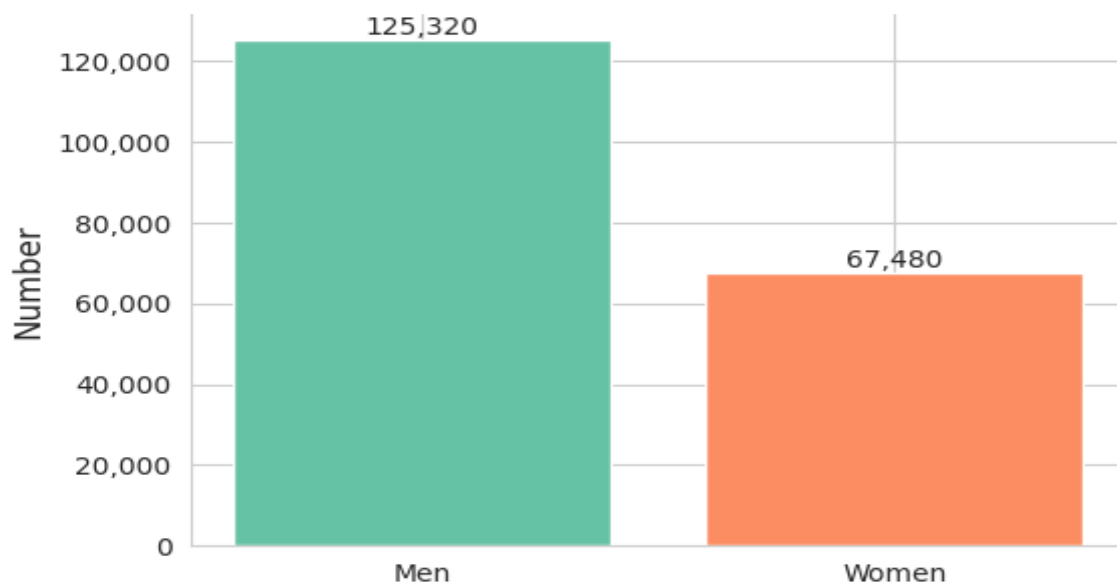


Figure 11: Refugee Gender Distribution. Data Source: UNCHR Malaysia. <https://www.unhcr.org/my/what-we-do/figures-glance-malaysia>

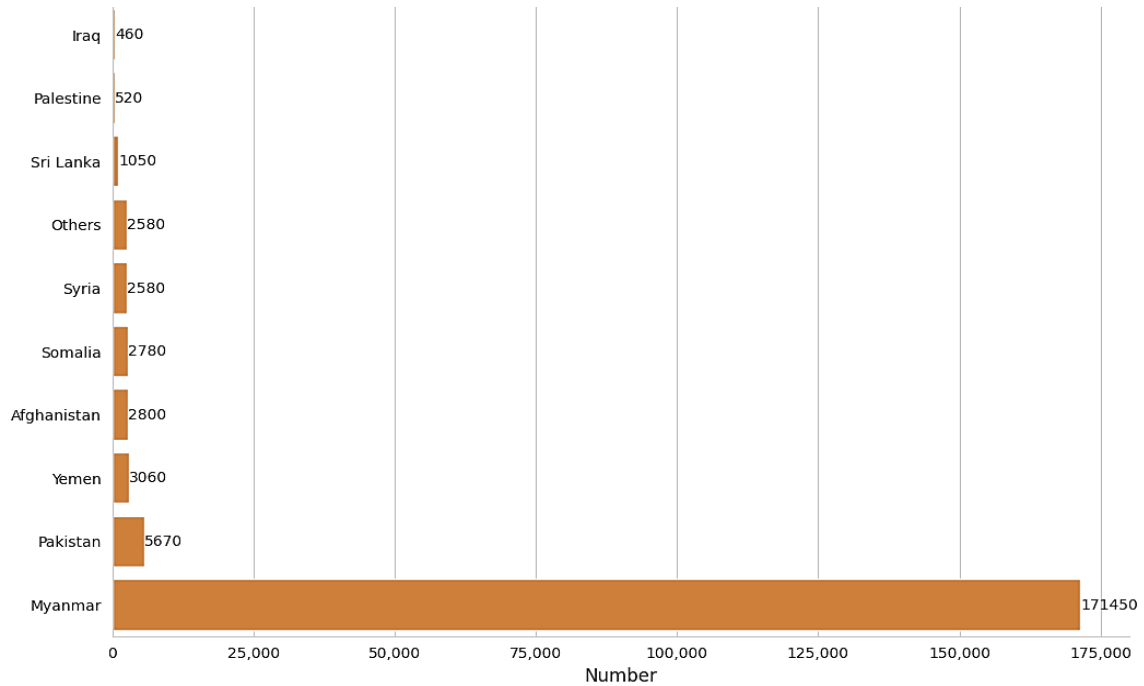


Figure 12: Refugee Origin in Malaysia. Data Source: UNCHR Malaysia. <https://www.unhcr.org/my/what-we-do/figures-glance-malaysia>

The primary source of this refugee influx is Myanmar, contributing a staggering 171,450 individuals, which places a concentrated demand for resources and potentially leads to cultural friction (Figure 12). Within the Myanmar refugee community, the Rohingya ethnicity represents the largest segment, with 112,320 individuals, requiring substantial resources (Figure 13). Malaysia, while not a signatory to the 1951 Refugee Convention, plays a crucial role in regional displacement management, which presents unique policy and security challenges.

The geographical distribution of refugees within Malaysia presents a clear pattern of urban concentration. A significant 38% reside in Selangor, followed by 19% in Kuala Lumpur, indicating a notable strain on urban infrastructure and service provision (Figure 14). This concentration necessitates focused resource allocation in these areas, potentially diverting funds from other critical sectors. The disparity in distribution, with several states reporting minimal or no refugee presence, highlights the potential for localized crises and security concerns (Figure 14).

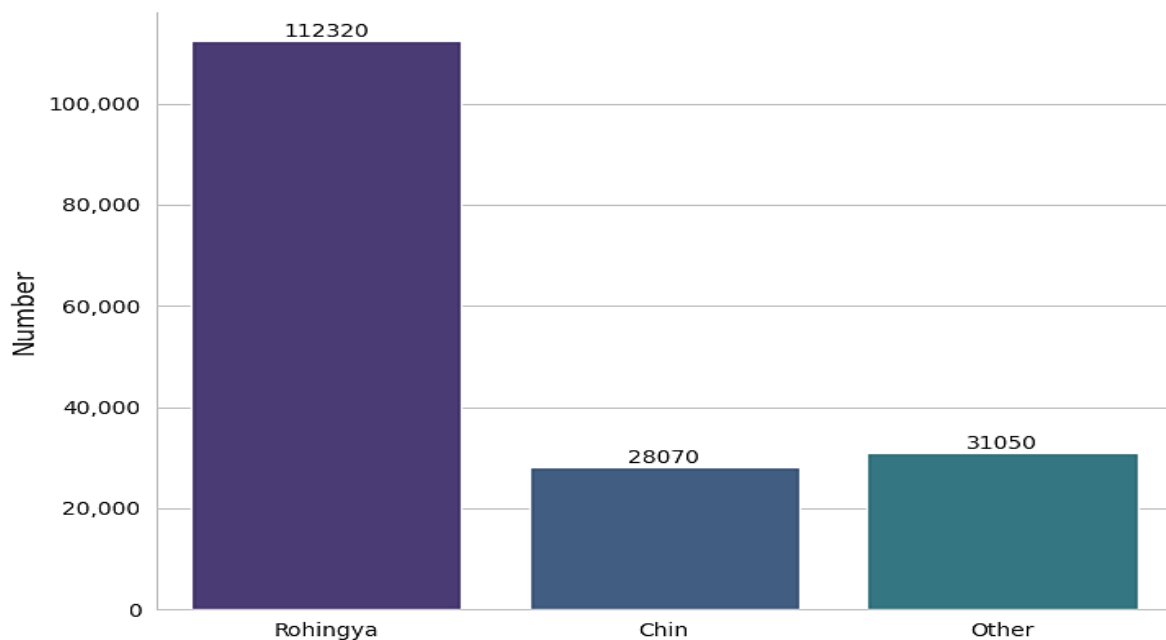


Figure 13: Breakdown of Ethnic of Major Myanmar Refugee in Malaysia. Data Source: UNCHR Malaysia. <https://www.unhcr.org/my/what-we-do/figures-glance-malaysia>

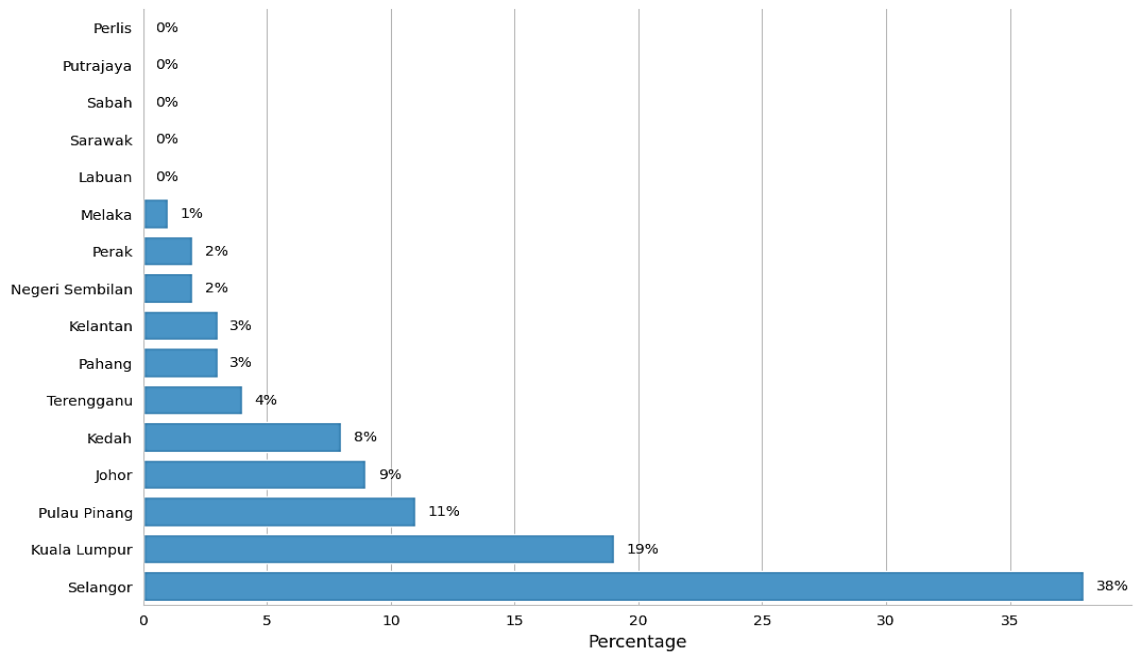


Figure 14: Refugee distribution by Malaysian State. Data Source: UNCHR Malaysia.
<https://www.unhcr.org/my/what-we-do/figures-glance-malaysia>

The presence of a large refugee population places significant demands on Malaysia's healthcare system. Refugees often face barriers to accessing healthcare, leading to increased pressure on existing medical services and potential public health risks. Housing is another critical area, with many refugees residing in overcrowded conditions, impacting urban planning and potentially leading to social unrest. The need for adequate housing solutions may strain existing infrastructure and resources.

Furthermore, the limited legal right to work leads to refugees engaging in informal employment, potentially disrupting the labor market and contributing to economic instability. This situation poses challenges for law enforcement and economic management. The data presented in Figures 10-14 collectively underscores the potential for the refugee population to strain Malaysia's resources and create security challenges if not rigorously managed.

6.2 ASEAN Comparisons

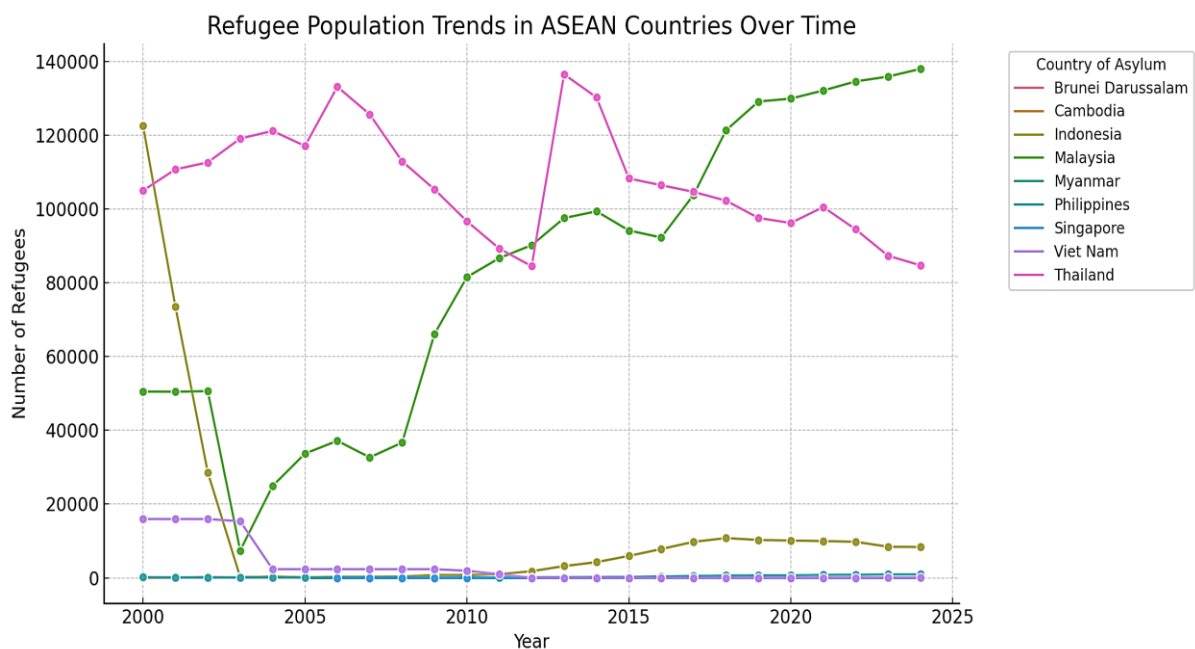


Figure 15: Refugee population in ASEAN countries Year 2000-2024. Adapted from UNHCR Refugee Data Finder.
<https://www.unhcr.org/refugee-statistics>

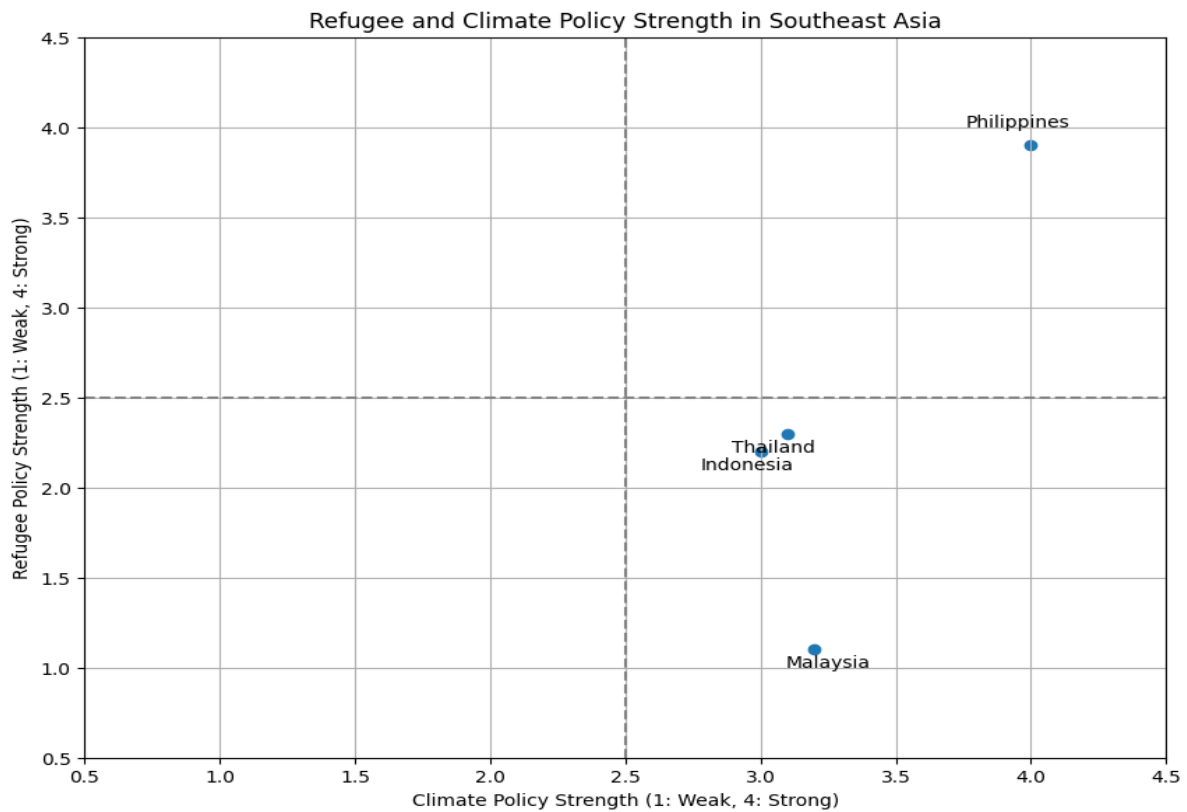


Figure 16: Scatter plot Qualitative revision comparing Refugee Policy Strength and Climate Policy Strength in four Southeast Asian countries. Adapted from UNHCR Refugee Data Finder. <https://www.unhcr.org/refugee-statistics>

Southeast Asian nations demonstrate a spectrum of approaches to refugee and climate policies, reflecting their unique political, economic, and geographical contexts. A comparative analysis, as visualized in Figure 16, reveals distinct strengths and areas for development that shape the region's response to these critical challenges. The Philippines leads with its robust legal framework for refugee protection, grounded in its signatory status to the 1951 Refugee Convention and bolstered by comprehensive national refugee laws, positioning its refugee policy strength at a commendable 3.9. This commitment is further exemplified by its well-developed disaster response mechanisms and a strong climate policy framework, achieving a 4.0. Given its high vulnerability to natural disasters, the Philippines has invested significantly in early warning systems, evacuation procedures, and community-based disaster risk reduction, emphasizing local participation and empowerment. The Philippines continues to enhance its strategies for addressing internal displacement, particularly in regions prone to recurrent disasters and armed conflict, striving for even more effective and sustainable solutions.

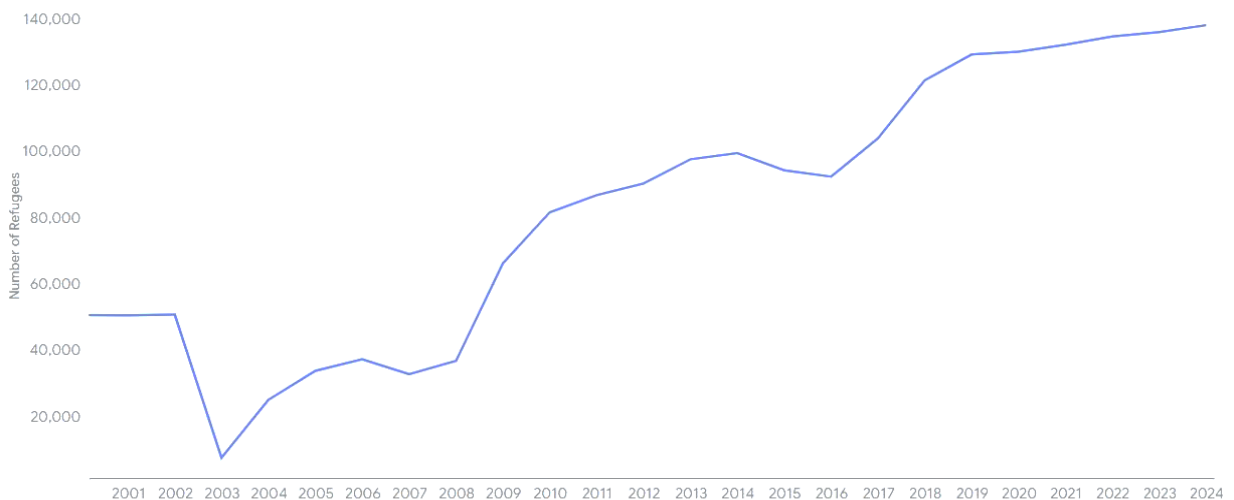


Figure 17: Refugee population in Malaysia Year 2000-2024. Adapted from UNHCR Refugee Data Finder.

<https://www.unhcr.org/refugee-statistics>

Malaysia, Indonesia, and Thailand are actively developing their approaches to refugee management, each with its own set of complexities and opportunities for progress. Malaysia's approach, characterized by ad hoc measures, presents an opportunity to enhance its framework for refugee support. As evidenced in Figure 15, which illustrates refugee population trends in ASEAN countries from 2000 to 2024, Malaysia exhibits a distinct upward trend in its refugee population when compared to other ASEAN nations. Specifically, while countries like Brunei Darussalam, Cambodia, the Philippines, Singapore, and Viet Nam maintain consistently low and relatively stable refugee populations near zero, Malaysia's numbers show a notable increase. From 2000 to 2010, Malaysia's refugee population gradually rises, but after 2010, the trend becomes more pronounced, showing a clear and steady upward trajectory. This pattern contrasts sharply with the stable low numbers in several other ASEAN countries, and even differs from Thailand's volatile trend, which features significant fluctuations. This consistent growth in Malaysia indicates a sustained and increasing role as a host country for refugees, highlighting the urgent need for Malaysia to transition from ad hoc measures to a more formalized framework that can effectively address the needs of its expanding refugee population. While Malaysia has established national climate policies and plans for adaptation and mitigation, achieving a moderate climate policy strength of 3.2 (Figure 16), there's potential to further strengthen implementation and enforcement. Indonesia and Thailand, while offering some level of temporary protection, are working towards more comprehensive legal frameworks for refugee status determination, currently at 2.2 and 2.3, respectively (Figure 16). Both nations are actively balancing national priorities with their humanitarian responsibilities. Indonesia, with its vast archipelago and population, is focused on enhancing its resilience to sea-level rise and extreme weather events, while Thailand is making strides in disaster preparedness, particularly in urban areas, and is committed to integrating climate considerations across all sectors. As shown in Figure 15, Thailand has experienced significant fluctuations in its refugee population, particularly around 2015, where a sharp increase is followed by a gradual decline, highlighting the need for flexible and responsive refugee management strategies.

A shared opportunity for growth across these nations, including Malaysia, lies in the enhanced integration of refugees and migrants into climate change adaptation planning, which would positively impact their resilience to climate-related risks. This integration can be facilitated by increased recognition of these populations as valuable stakeholders and improved data collection on their specific needs. The Philippines' emphasis on community participation and local government responsibility in disaster management, as evidenced by its comprehensive legal framework and disaster risk reduction initiatives, offers a valuable model for Malaysia's more centralized approach. Conversely, the Philippines could benefit from exploring Malaysia's strategies for urban resilience and managing diverse refugee populations in urban settings, particularly in contexts where formal legal frameworks are evolving. These exchanges of best practices can lead to more effective and inclusive policies.

7. Policy Recommendations

Malaysia faces a multifaceted challenge at the nexus of climate change and displacement, necessitating a collaborative approach involving international actors, ASEAN member states, organizations (e.g., philanthropic foundations, NGOs), and crucially, global climate action (McAdam, 2016). This complex interplay of factors requires a holistic strategy that addresses both the immediate humanitarian needs and the long-term drivers of displacement. International actors must prioritize global climate action alongside direct support for Malaysia. This involves adhering to and strengthening international agreements like the Paris Agreement, committing to ambitious emissions reduction targets, and supporting the transition to renewable energy sources globally (IPCC, 2022). As Warner (2010) highlights, climate change acts as a “threat multiplier,” exacerbating existing vulnerabilities and leading to increased displacement.

In addition to global efforts, international actors should prioritize providing substantial financial assistance to Malaysia. This support should be directed toward enhancing its climate adaptation infrastructure, including flood control systems, resilient housing, and early warning systems, with specific allocations for addressing internal displacement (DID, 2023; METMalaysia, 2023). Initiatives focused on building community-level resilience, particularly in areas with high concentrations of refugees and internally displaced persons (IDPs), should be supported. As Tacoli (2011) argues, urban areas, where many displaced persons reside, require targeted investments in infrastructure and services to enhance resilience. Furthermore, funding programs that promote sustainable land use and environmental conservation are essential to mitigate the drivers of both external and internal displacement (World Bank, 2024). McLeman (2020) emphasizes the importance of addressing the root causes of displacement through sustainable development and environmental management. Technical expertise and capacity building are also critical. International actors should offer technical assistance in developing and implementing comprehensive disaster risk management plans, climate adaptation strategies, and specific internal displacement policies. Capacity-building programs should be supported for Malaysian government officials, NGOs, and community leaders in areas such as climate modeling, disaster preparedness, internal displacement management, and refugee management (UNHCR, Various years). Facilitating knowledge sharing and technology transfer related to climate-resilient infrastructure, sustainable development, and best practices in internal displacement response is also crucial. As Kälin (2013) notes, effective displacement responses require strong institutional capacity and coordination.

Moreover, humanitarian aid and emergency response should be a priority. International actors should provide rapid and flexible humanitarian aid to support Malaysia in responding to climate-related disasters and emergencies that cause both

refugee influx and internal displacement (IDMC, 2023). This includes supporting the prepositioning of emergency supplies and the development of early warning systems to enhance disaster preparedness, with specific attention to the needs of IDPs. As Wisner, Blaikie, Cannon, & Davis (2004) argue, disaster preparedness must consider the vulnerabilities of marginalized populations, including IDPs. Funding and support for the development of a National level IDP register, in order to make aid more efficient, is also needed. ASEAN member states should strengthen regional cooperation on climate action and displacement. This can be achieved through initiatives like the ASEAN Agreement on Disaster Management and Emergency Response. Establishing a regional fund to support climate adaptation, disaster resilience, and internal displacement projects in vulnerable member states, including Malaysia, is vital. Sharing best practices and lessons learned on climate change adaptation, refugee management, and internal displacement response is also essential. As Biermann & Boas (2010) highlight, regional cooperation is crucial for addressing transboundary challenges like climate change and displacement.

A joint displacement management framework should be developed. This includes creating a regional framework for addressing all forms of displacement, including refugees and IDPs, promoting burden-sharing and cooperation among ASEAN member states. Establishing a regional platform for information sharing and coordination on displacement issues is also necessary. ASEAN member states should support Malaysia in developing and implementing comprehensive national frameworks for both refugee protection and internal displacement management. As Achiume (2019) argues, regional frameworks can enhance protection and promote equitable burden-sharing. Furthermore, cross-border and internal disaster response coordination needs to be enhanced. Joint disaster response plans and protocols should be developed to ensure rapid and effective assistance to all affected populations, including refugees and IDPs.

Organizations should provide flexible funding for community-based initiatives addressing all displacement. This includes supporting initiatives that address the needs of both refugees and IDPs in climate-vulnerable areas. Projects that promote climate resilience, livelihood diversification, social integration, and specific programs for IDP support and integration should be prioritized. As Bebbington (1999) argues, community-based approaches are essential for addressing complex development challenges. Advocacy and awareness raising on all displacement issues are also critical. Organizations should support advocacy efforts to raise awareness about the challenges faced by both refugees and IDPs in Malaysia and the need for greater international and regional support. Funding research and data collection to improve understanding of the climate-displacement nexus, including internal displacement, and inform policy development is essential.

Finally, partnerships and collaboration for comprehensive displacement solutions should be facilitated. This involves creating partnerships and collaboration between government agencies, NGOs, community-based organizations, and academic institutions to enhance climate resilience and develop comprehensive displacement solutions, including IDP-specific strategies. Support for the development of innovative solutions and best practices for addressing the complex challenges faced by Malaysia, encompassing all forms of displacement, is also necessary. As Young et al. (2006) argue, effective governance requires collaboration across multiple stakeholders.

8. Conclusion

This research has illuminated the precarious position of Malaysia, burdened by the converging pressures of climate change-induced displacement and a substantial refugee population. The data starkly reveals the significant internal displacement triggered by intensifying climate disasters, most notably the devastating 2021-2022 floods, which placed immense strain on national resources and exposed the vulnerability of communities across the nation. This crisis underscores the immediate and tangible impact of climate change on Malaysia's own citizens, highlighting the need for robust disaster preparedness and mitigation strategies. Simultaneously, Malaysia's role as a major refugee host, with a significant concentration of refugees in urban centers like Selangor and Kuala Lumpur, further exacerbates these pressures, challenging existing infrastructure, healthcare systems, and social services. The demographic analysis, highlighting the substantial proportion of children and the predominantly male refugee population, underscores the complex socio-economic implications. Comparative analysis within ASEAN underscores the urgent need for Malaysia to evolve beyond ad hoc measures and establish a robust, formalized framework for both refugee protection and climate resilience, as other nations in the region are actively adapting their approaches. The implications of these findings are profound, extending beyond immediate humanitarian concerns. Without immediate, coordinated action, Malaysia risks escalating social instability, depleting critical resources, and undermining its long-term development goals. This report, therefore, advocates for a multi-faceted strategy encompassing robust global climate action, fortified ASEAN cooperation through initiatives like the ASEAN Agreement on Disaster Management and Emergency Response, and targeted community-based initiatives that empower vulnerable populations. Moreover, the creation of a national IDP register, along with increased funding for climate adaptation infrastructure, is critical. Ultimately, addressing this complex nexus of climate change and displacement requires a collaborative and holistic approach. International actors must prioritize climate mitigation and provide substantial financial and technical assistance. ASEAN member states need to strengthen regional frameworks and foster cooperation. Local organizations and community-based initiatives play a crucial role in building resilience and promoting social integration. Only through such a comprehensive and collaborative effort, involving all stakeholders, can Malaysia effectively navigate these complex challenges, build resilience, and secure a sustainable and equitable future for all its inhabitants, refugees and citizens alike.

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