



MAJOR REPORT

Proactive Resilience and Opportunities for Gender Equity in Security & Sustainability (PROGRESS) in the Asia-Pacific:
The index for gendered health security amid climate change

Cover image: Cecep Rahmat

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Disclaimer: This report reflects the views and opinions of the authors, as well as those who are directly quoted, and should not be construed as a consensus document. Neither the U.S. Indo-Pacific Command nor the Pacific Forum take an institutional position on the issues discussed herein.

KEY TERMS

Civil-Military Partnership: The coordination and cooperation between civilian and military organizations in operations such as disaster response, humanitarian aid, and security efforts. These partnerships can enhance enforcement, surveillance, and response capabilities, and integrating a gender perspective can further strengthen these efforts.

Civil Society Organization (CSO): Organizations that operate independently of the government and commercial sectors, such as charities, advocacy groups, community organizations, and grassroots movements.

Climate Adaptation: The process of adjusting to current or expected climate change and its effects, to reduce harm and exploit beneficial opportunities.

Climate-Related Disasters: Natural disasters that are directly influenced or exacerbated by climate change, including extreme weather events such as hurricanes, floods, droughts, and wildfires.

Climate Security: The intersection of climate change and security, emphasizing the impacts of climate change on global, national, and human security, including the potential for conflict and displacement.

Community-Based Approaches: Strategies that involve local communities in the planning, decision-making, and implementation of policies and programs to ensure they are contextually relevant and sustainable.

Disaster Risk Reduction (DRR): Strategies and practices aimed at reducing the risks and impacts of natural and human-made disasters through prevention, mitigation, and preparedness.

Economic Empowerment: Providing people, usually disadvantaged women, with the education, training and skills that they need to find a job, earn an income, and become self-supporting.

Food Security: The state of having reliable access to a sufficient quantity of affordable, nutritious food.

Gender-Health-Climate-Security Nexus: The interconnected relationships among gender equality, health outcomes, climate change impacts, and security concerns.

Gender Perspective: An approach that considers the different impacts of policies, programs, and actions on people based on their gender, aiming to promote gender equality and address gender-specific needs and vulnerabilities.

Gender-Transformative: Approaches that seek to address and alter the underlying power structures and social norms that perpetuate gender inequalities, promoting gender equity and the empowerment of all genders, particularly women and girls.

Health Inequality: Avoidable differences in health between different groups of people, including lower life expectancy, high rates of mental ill-health, and difficulty getting healthcare.

Health Security: Proactive and reactive measures intended to minimize the danger and impact of acute public health events that endanger the collective health of populations living across geographical regions and international boundaries.

Humanitarian Assistance and Disaster Relief (HA/DR): Operations conducted by military and/or civilian agencies to provide aid and relief in the aftermath of natural or human-made disasters, aiming to save lives, alleviate suffering, and reduce economic and social impacts. Can include emergency services, medical aid, reconstruction, and more.

Inclusive Approaches: Strategies and practices that ensure the participation and consideration of all groups, especially marginalized and vulnerable populations such as women, in decision-making processes.

Intersectional Gender Perspective: An analytical framework that examines how various social identities (e.g., gender, race, class) intersect and influence experiences of discrimination and privilege, ensuring that diverse needs and vulnerabilities are addressed in policy and practice.

MEAL (Monitoring, Evaluation, Accountability, and Learning): A comprehensive framework used in project and program management to assess performance, ensure accountability, and facilitate learning and improvement through systematic data collection and analysis.

Pacific Rim: The geographic area surrounding the Pacific Ocean, covering the western shores of North America and South America, and the shores of Australia, Eastern Asia, and the islands of the Pacific.

Population Displacement: The forced movement of people from their homes due to factors such as natural disasters, famine, disease, or conflict.

Population Stability: A state where the size of a population remains relatively constant over time, with births and deaths, as well as immigration and emigration, balancing each other out.

Resilience: The ability of individuals, communities, and systems to anticipate, withstand, and recover from adverse events and conditions, such as natural disasters or climate change impacts.


Resource Scarcity: When the availability of essential resources becomes limited relative to demand.

Sexual and Gender-Based Violence (SGBV): Harmful acts perpetrated against a person based on socially ascribed gender differences, including acts of causing physical, sexual, or mental harm or suffering, or threats of such acts, and other deprivations of liberty.

Sustainable Development Goals (SDGs): A collection of 17 global goals set by the United Nations to address various social, economic, and environmental challenges by 2030.

Urbanization: The process of increasing population concentration in urban areas, typically through migration from rural to urban areas.

The Women, Peace and Security (WPS) Agenda (UN Security Council Resolution 1325): An international policy framework that recognizes the critical role of women in conflict prevention, resolution, and peacebuilding, and seeks to promote their participation and protection in these processes.

A woman wearing a colorful, striped shawl is walking through a tea plantation. She is carrying a large, woven basket on her back and holding a wooden staff. The background shows rolling hills and tea bushes under a bright sky.

EXECUTIVE SUMMARY

The "Proactive Resilience and Opportunities for Gender Equity in Security & Sustainability (PROGRESS)" report, prepared by Pacific Forum International for U.S. Indo-Pacific Command's Office of Women, Peace & Security, addresses the critical intersection of gender, health security, and climate change in the Asia-Pacific. The PROGRESS Index and report underscore the vital role gender plays in health security amid climate change, highlighting how women and marginalized groups often face disproportionate vulnerabilities during health crises and climate disasters due to existing inequalities. The integration of gender perspectives is essential to address these disparities and enhance the effectiveness of health security measures. The report calls for increased women's participation in defense and security humanitarian aid and disaster response (HA/DR), as well as improved access to resources and training, and a deeper understanding of international humanitarian and human rights laws to promote gender equity in disaster management.

Image credit: VichienPetchmai

Through virtual and in-person events that formed the *Gender in Health and Climate Security* workshop series conducted in 2024, this Project brought together civil society representatives, defense personnel, and civil servants from seven Indo-Pacific countries. Together with a community survey and participant questionnaires, the group co-created the *PROGRESS Index for Gendered Health Security Amid Climate Change* ('The PROGRESS Index'). The PROGRESS Index encompasses various dimensions such as women's well-being, health care access, economic equality, and climate resilience. The PROGRESS Index revealed significant gender disparities across the participating countries, emphasizing the need for targeted interventions to improve gender equity in health security. The findings highlight that improving women's health and socio-economic status directly enhances community resilience to future climate and health crises.

The report provides strategic recommendations to enhance gender equity in health security. These include increasing women's representation in decision-making roles within defense and security sectors, ensuring gender-sensitive health services, and strengthening infrastructure to support women's needs during disasters. It also recommends implementing gender-responsive budgeting and investing in women's education and training to build a more resilient and equitable society.

The report concludes with a call for continued efforts to integrate gender perspectives into health and climate security policies. It advocates for ongoing collaboration between governments, civil society, and international organizations to implement the recommendations effectively. The report also emphasizes the importance of monitoring and evaluating the impact of these strategies to ensure they contribute to sustainable gender equity and health security in the Asia-Pacific region. By promoting women's participation and integrating gender perspectives into disaster management, the Indo-Pacific region can achieve more effective and equitable outcomes during health crises.

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ABOUT THE GENDER IN HEALTH AND CLIMATE SECURITY PROJECT

This report, along with the accompanying *Gender in Civil-Military Climate Security and Disaster Response: Opportunities for Civilian-Military Co-Creation and Advancement of Gender-Transformative Disaster Management Report*, provide a detailed overview of the *Gender in Health and Climate Security Project* ('the Project') produced by Pacific Forum International, a Honolulu-based U.S. think tank, in partnership with the Office of Women, Peace & Security (WPS) at the U.S. Indo-Pacific Command (USINDOPACOM).

In building on United Nations Security Council Resolution (UNSCR) 1325 and the Women, Peace and Security (WPS) Agenda, and recognizing the critical need to advance gender equality and human security across all domains of health and climate security in the Indo-Pacific – and globally – the Project's objectives were to:

1. Encourage women's meaningful participation within participating country defense and security sectors.
2. Increase women's access / participation in assistance programs, resources, training, and education.
3. Increase participating country defense and security institutional understanding of how to advance women's meaningful participation in defense / security.
4. Strengthen participating country defense and security sectors' understanding and commitment to international humanitarian law and international human rights law.

Image Credit: UN/Milton Grant



The Project centered around holding a series of virtual and in-person / hybrid workshops on the gender-health-climate-security nexus. These workshops brought together civil society organization (CSO) representatives, defense and security force personnel, and civil servants from seven Indo-Pacific countries: Fiji, Indonesia, Papua New Guinea, the Philippines, Thailand, Vanuatu, and Vietnam. The workshops aimed to foster collaborative efforts in developing country-specific Action Plan priorities for inclusive, contextualized, and gender-transformative disaster responses. A core focus thereby was to enhance civil-military (civ-mil) mutual learning, support, engagement and co-creation across the multiple phases of disaster prevention, preparation, and management, as well as in diverse climate crisis contexts.

Two sets of interactive workshops were held in 2024: an introductory two-day virtual workshop involving 45 participants was held on January 30 & 31, followed by a major in-person / hybrid workshop involving 44 participants held in Bali, Indonesia on April 29, 30, May 1 & 2. In total, the two workshops comprised 17 sessions, which covered a mix of presentations and case studies by CSO representatives, defense and security officers, academics, and civil servants from 9 Indo-Pacific countries (including the seven participant countries), small group working sessions on gender-health-climate security nexus indicators, large group working-sessions and discussions, and guided training sessions. A list of all participants / partners / defense agencies is included on page 13.

In the lead-up to the workshops, the Project also comprised a community survey on the gender-climate-health-security nexus, conducted in the seven Indo-Pacific countries included in the Project. The survey sought to assess women's experiences and perspectives on the impact of recent climate and health-related crises. Forty-one survey participants (all women), including local community members and local women's civil society organization members, answered one of two versions of the survey, each of which had 47 or 48 questions. In order to minimize the burden of more unpaid work on women, participants received a small cash gift for their time. Survey responses containing opinions, perspectives, and experiences of community members were analyzed through qualitative methods such as thematic analysis or content analysis to identify recurring themes, patterns, and insights that provide a better understanding of viewpoints on gender in climate and health security in the seven partner countries of the Project. Results of the survey can be viewed in Appendix 1 of the companion *Gender in Civil-Military Climate Security and Disaster Response* Report.

Further, a 3D mapping exercise was conducted. Visuals have the power to convey conditions more effectively than words alone, as they engage readers at a visceral level, enabling them to comprehend complex concepts and emotions instantaneously. With this in mind, members of the Pacific Forum WPS Fellowship Team¹ undertook a 3D mapping project to assess the concrete challenges many women experience before, during, and after climate-related disasters. Working with women in rural communities in the Philippines and Indonesia through a third-party contractor, Pacific Forum collected 3D mapping sample data on the condition of roads, local health clinics, food sources, and other infrastructure - factors which determine the level of climate security local communities commonly experience, and which inform a gender-perspective of human insecurity. The 3D Mapping Project visually depicts (gendered) vulnerabilities exacerbated by climate change. Two parallel surveys were conducted enabling the Mapping Project to showcase the conditions in two anonymized Indigenous, rural, and agricultural sites in ongoing conflict areas in Indonesia and the Philippines. Both sites experience high disaster risks. One local Indigenous woman from each site was taught to use free and open source geospatial tools and smart phones to visualize the experience of roadways, family farms, and local markets, healthcare facilities, and schools. The photos and other data collected by each woman was processed into 3D maps of the sites. These "digital twins" are exact replicas or reconstructions of selected environments. By extracting special data from photos and geospatial data collection, these 3D maps allow for a more true-to-life study of the conditions in local villages that may impact residents before or during a climate disaster. See the companion report for details.

¹ The 3D mapping project was carried out in partnership with Non-Resident WPS Fellow Celina Agaton.

PROJECT PARTNERS AND DEFENSE AGENCIES

ORGANIZING PARTNERS

Pacific Forum International

Pacific Forum’s mission is to promote peace and stability across the Indo-Pacific. Our work therefore dynamically addresses both longstanding and emerging security issues in the region. Currently, we characterize our programs under seven umbrella “Focus Areas.”



While not inclusive of all our activities, these Focus Areas allow us to showcase the exciting initiatives underway at Pacific Forum. From timely publications and research resources to public events and key findings from our dialogues, the Focus Areas offer greater insight into the cross-cutting programs that distinguish us as a leading Indo-Pacific foreign policy research institute.

Current Focus Areas at Pacific Forum include:

- Nonproliferation
- Strategic Relations
- Maritime Security
- Cybersecurity and Critical Technologies
- Women, Peace & Security
- Public Engagement
- The Council for Security Cooperation in the Asia Pacific (CSCAP)

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The U.S. Indo-Pacific Command (USINDOPACOM) Office of WPS advances human security through a whole-of-government, whole-of-society, multinational, and localized approach. This cross-cutting avenue to advance a Free and Open Indo-Pacific forges new alliances building on the architecture of innovative forums for subject matter experts (SME) to address emerging complex global security issues, such as climate security, health security, human security, cybersecurity, trafficking in persons (TIP), and more.



The USINDOPACOM Office of WPS partnership with Pacific Forum brought together local and regional experts, civil society, and the defense and security sector to participate in a series of virtual and hybrid workshops, “Gender in Health and Climate Security.” The findings from the workshop and additional research products highlight the importance of community engagement, regular collaborations, and the pivotal role application of a gender lens provides to meaningful engagement and targeted problem solving. USINDOPACOM is committed to advancing WPS alongside our regional allies and partners through continued support and collaboration on events such as this to achieve mutual objectives and sustainable outcomes.

USINDOPACOM began institutionalizing WPS through a command instruction in 2017, followed by the establishment of an Office of Women, Peace & Security in 2019. This new capability oversees command- wide implementation of WPS that includes gender mainstreaming throughout the command’s policies, plans, programs, exercises, and assessments; tailored education and training; partner nation engagement; research innovation and application; and guiding a growing network of trained Gender Advisors and Gender Focal Points. The Office of WPS employs a Command Gender Advisor, Senior Analyst, Security Cooperation Integrator, Security Cooperation Administrator, Planner, Policy and Partnerships Advisor, and Operations Management. Through institutional authority and wide operational application, WPS provides unique insights expanding security cooperation opportunities and strengthening collaboration with allies and partners to better mitigate the impacts of emerging global threats and complex security challenges.

Mission Statement:

The Office of Women, Peace & Security (WPS) implements the DoD WPS Strategic Framework and Implementation Plan by mainstreaming a gender perspective into theater plans, programs, and policies in order to enable the USINDOPACOM enterprise to develop inclusive security strategies that advance a Free and Open Indo-Pacific.

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IMPLEMENTING PARTNERS

Coral Triangle Center

The Pacific Forum thanks the Coral Triangle Center (CTC) for providing their engaging and inspiring meeting space and for their logistical support. We are also grateful for their partnership in developing topical content and identifying subject matter experts to explore these important topics. The CTC is an independent, non-profit foundation whose goal is to promote the conservation of marine biodiversity and the sustainable management of marine and coastal resources across the Coral Triangle.



Pacific Disaster Center

We also thank the Pacific Disaster Center (PDC) for lending their expertise and providing valuable background material, including country-specific briefs and the use of the DisasterAWARE platform.

Pacific Disaster Center (PDC Global) is an applied research center managed by the University of Hawaii that supports the most demanding governmental and nongovernmental organizations (NGOs) worldwide in helping to create a safer, more disaster resilient world. For more than 25 years, [they]we've helped our partners enhance disaster management capacity, save lives, and reduce disaster losses through the application of our advanced tools and technologies, evidence-based research, and analytical information.



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National Disasters Management Authority of the BNPB (Indonesia)
New Zealand Defence Force
Papua New Guinea Defence Force
Philippine Commission on Women
Disaster Relief Division, Royal Thai Army
Disaster Information Section, Royal Thai Army
Office of the Presidential Advisor on Peace, Reconciliation, and Unity (OPAPRU) (Philippines)
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U.S. Indo-Pacific Command Climate Change Impacts Program
Vietnam Peacekeeping Department
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Center for Environment and Community Research (Vietnam)
Civic Women (Thailand)
Coral Triangle Center (CTC) (Indonesia)
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Ministry of Home Affairs and Immigration (Fiji)
Ministry of Environment and Climate Change (Fiji)
Pacific Disaster Center (USA)
Sulong PEACE (Philippines)
The Pacific Center for Peacebuilding (PCP) (Fiji)
Transcend Oceania (Fiji)
The University of Fiji
Vanuatu Human Rights Coalition
Vanuatu Young Women for Change
Women Working Group, Indonesia
Women's Network of Disaster in the Deep South of Thailand

HEALTH SECURITY & THE DEFENSE AND SECURITY SECTOR



Health security, as defined by the World Health Organization, encompasses proactive and reactive measures intended to minimize the danger and impact of acute public health events across geographical regions and international boundaries.² Health security is an increasingly critical consideration within the defense and security sector as new threats emerge at unprecedented rates with the capacity to disrupt socio-economic systems as well as community health.

Numerous aspects of the progressively globalized world pose potential risks to health security. For instance, each year, billions of airline passengers facilitate the rapid and widespread dispersion of pathogens and their vectors.³ Moreover, the globalization of food production weakens the efficacy of national administrative systems regulating agriculture and food production environments, thereby increasing the risk of contaminated ingredients and foodborne illnesses.⁴ As the world becomes more interconnected, traditional lines of defense at country borders may no longer be sufficient to ward off disease invasion. Consequently, health emergencies and vulnerable health systems pose significant risks to global security and economic stability.

National security, at its core, aims to protect lives and a nation's ability to function effectively. In this context, it becomes paramount to articulate and address all threats, including those related to health, through both policy and practice. Per the Center for Disease Control and Prevention (CDC), "Health security is a national security issue - not only does investment in global security help prevent threats from reaching our shores but it also promotes economic and political stability around the world."⁵ This statement emphasizes that health security is not only a matter of individual well-being, but is also critical to a robust and resilient global socio-economic ecosystem.

Investment in global health security plays a pivotal role in preventing threats from crossing national borders. Bolstering health systems worldwide helps develop protective shields against infectious diseases and other health emergencies. Beyond immediate health implications, health security contributes to broader stability. A robust health infrastructure fosters economic prosperity and political robustness. Proactive and prepared health systems enable nations to manage emergencies efficiently, maintaining stability and essential social services. Prioritizing health security aligns with the fundamental goal of national security: to protect citizens' wellbeing. Acknowledging health risks as a key component of the security agenda leads to a more secure and resilient global community.



² Aldis, William. "Health security as a public health concept: a critical analysis." *Health Policy and Planning* 23.6 (2008): 369-375.

³ Shaban, Ramon Z., et al. "Global commercial passenger airlines and travel health information regarding infection control and the prevention of infectious disease: What's in a website?." *Travel Medicine and Infectious Disease* 33 (2020): 101528.

⁴ Käferstein, Fritz K., Y. Motarjemi, and D. W. Bettcher. "Foodborne disease control: a transnational challenge." *Emerging Infectious Diseases* 3.4 (1997): 503.

⁵ "About Global Health Security," Centers for Disease Control and Prevention, 17 Dec. 2021, <https://www.cdc.gov/globalhealth/healthprotection/ghs/about.html>.

THREATS TO HEALTH CARE SECURITY

I. Infectious Disease Outbreaks

Approximately 75% of emerging infectious disease threats originate in animals.⁶ This statistic becomes especially significant in an era where deforestation, land use changes, and other factors have forced a growing proportion of the global population into increasingly close proximity to wildlife.⁷ The shrinking divide between humans and animals is largely attributed to urban population growth. The urban population has soared from 30% in 1950 to 54% in 2014, with a projection of 66% by 2050.⁸ Urbanization leads to habitat fragmentation and destruction, reduced biodiversity, and disruptions to established trophic frameworks.⁹ As natural habitats shrink, interactions between humans and animals intensify, creating fertile ground for disease transmission. Diminished biodiversity further disrupts natural checks and balances. Loss of genetic diversity or entire species facilitates the uninhibited proliferation of pests, amplifying the risk of zoonotic diseases such as SARS, Ebola, and Hantavirus.¹⁰ Sustained growth of these populations beyond an ecosystem's natural carrying capacity can further exacerbate habitat destruction and trophic cascades, permanently altering the ecosystem and natural resources in a downward spiral.

Family Ties May Put People in Danger

In the event of a disaster, [even] if you tell people not to go, they go, because they want to check on their families, and this is added pressure on our first responders.

~Litea Buadromo, Ministry of Home Affairs and Immigration

The issue of infectious disease transmission transcends national boundaries. As human mobility surges, so too does the potential for microbes to travel swiftly across regions.¹¹ Disease outbreaks can occur anywhere, affecting both developing and developed nations. The consequences of inaction during infectious disease outbreaks are twofold: human and economic costs. The COVID-19 pandemic serves as a potently grim reminder; one assessment estimated that every week of delay in enacting stringent policy measures resulted in 1.7 more deaths overall.¹² Similarly, the 2013-16 Ebola Epidemic in West Africa claimed over 11,000 lives spanning 10 countries.¹³ In parallel, the West African nations of Guinea, Liberia, and Sierra Leone are clear examples of economic decline as a result of infectious disease outbreaks. As a result of the Ebola Epidemic, Guinea's GDP growth plummeted from 4% to 0.1%, Liberia's from 8.7% to 0.7%, and Sierra Leone experienced a drastic decline from 4.6% growth in 2014 to -21.5% in 2015.¹⁴

⁶ Erkyihun, Gashaw Adane, and Meseret Bekele Alemayehu. "One health approach for the control of zoonotic diseases." *Zoonoses* 2.1 (2022): 963.

⁷ Jones, Bryony A., et al. "Zoonosis emergence linked to agricultural intensification and environmental change." *Proceedings of the National Academy of Sciences* 110.21 (2013): 8399-8404.

⁸ National Academies of Sciences, Engineering, and Medicine. "Infectious Diseases, Pandemic Influenza, and Antimicrobial Resistance: Global Health Security Is National Security." *Global Health and the Future Role of the United States*. National Academies Press (US), 2017.

⁹ Moi, Dieison André, and Franco Teixeira-de-Mello. "Cascading impacts of urbanization on multitrophic richness and biomass stock in neotropical streams." *Science of the Total Environment* 806 (2022): 151398.

¹⁰ Neiderud, Carl-Johan. "How urbanization affects the epidemiology of emerging infectious diseases." *Infection Ecology & Epidemiology* 5.1 (2015): 27060.

¹¹ Kaporiri, Lydia, and Alison Ross. "The politics of disease epidemics: a comparative analysis of the SARS, Zika, and Ebola outbreaks." *Global Social Welfare* 7.1 (2020): 33-45.

¹² Hale, Thomas, et al. "Global assessment of the relationship between government response measures and COVID-19 deaths." *MedRxiv* (2020): 2020-07.

¹³ Ohimain, Elijah Ige, and Daniel Silas-Olu. "The 2013–2016 Ebola virus disease outbreak in West Africa." *Current Opinion in Pharmacology* 60 (2021): 360-365.

¹⁴ Ibid.

Economies have been rattled and millions of lives have been lost worldwide due to a lack of capability and readiness to prevent, detect, and respond to emerging infectious disease threats.¹⁵ Addressing the convergence of human-animal interactions, biodiversity loss, and disease emergence is more critical than ever for global health security. Proactive measures, robust surveillance, and international cooperation are essential to mitigating the devastating impact of infectious diseases.

II. Natural Disasters

Natural disasters pose a significant challenge to health security worldwide. Among the most vulnerable regions is the Pacific Rim, where nearly half of all global natural disasters occur, including more than 80% of the world's largest earthquakes.¹⁶ While the acute and long-term impacts of these disasters span multiple sectors, their toll on public health and health care systems can be particularly devastating.

Natural disasters have both direct and indirect community health impacts. Most visible are the injuries that are clearly attributable to the disaster. No evidence suggests that any particular type of natural disaster generates more injuries than others; however, swift medical attention is crucial to prevent non-life-threatening injuries from escalating. Furthermore, population displacement and disruptions in public services during disasters can lead to overcrowding in certain areas. While there is no direct evidence that new diseases emerge from disasters, existing diseases can spread more rapidly through crowded shelters and compromised sanitation systems.

Post-disaster populations also face a spectrum of health challenges. Respiratory issues, viral infections, and stress-related conditions (such as heart diseases and diabetes) can emerge or worsen. In addition to physical ailments, an expanding field of research also examines the pressure of disasters on mental health.¹⁷ The detriments are variable based on the type, severity, and frequency of disasters, but trauma, loss, and displacement take a significant toll on individuals and collective communities, necessitating targeted interventions by local public health services.¹⁸

Natural disasters can disrupt or stretch resources allocated to medical services, hindering efforts to address the acute public health impacts described earlier. Earthquakes, hurricanes, monsoons, tsunamis, and other calamities render physical health care centers—such as hospitals and clinics—hazardous and difficult to access.¹⁹ The rural-urban divide further limits care availability. In the aftermath of disasters, first responders and health services often have difficulty reaching all affected individuals. This challenge is particularly pronounced in countries like Papua New Guinea, where 86% of the population resides in remote, rural areas.²⁰

¹⁵ Ibid.

¹⁶ Williams, Charles A., et al. "Earthquakes and Multi-Hazards Around the Pacific Rim, Vol. II: Introduction." *Pure and Applied Geophysics* 175 (2018): 525-528.

¹⁷ Saeed, Sy Atezaz, and Steven P. Gargano. "Natural disasters and mental health." *International Review of Psychiatry* 34.1 (2022): 16-25.

¹⁸ Shoaf, Kimberley I., and Steven J. Rotiman. "Public health impact of disasters." *Australian Journal of Emergency Management, The* 15.3 (2000): 58-63.

¹⁹ Hierink, Fleur, et al. "Modelling geographical accessibility to support disaster response and rehabilitation of a healthcare system: an impact analysis of Cyclones Idai and Kenneth in Mozambique." *BMJ Open* 10.11 (2020): e039138.

²⁰ "Rural Population (% of Total Population)." *World Bank Open Data*, data.worldbank.org/indicator/SP.RUR.TOTL.ZS. Accessed 9 Jan. 2024.

Water Must Be Accessible to Women

Women are always the last people to use the water – this presents a serious barrier to personal hygiene and sanitation.

~Tu-Anh Hoang, Center for Creative Initiatives in Health and Population, Vietnam

III. Lack of Clean Air, Food, and Water

The quest for health security is a multifaceted challenge that encompasses the assurance of clean air, food, and water—fundamental human rights integral to sustaining life and promoting well-being. In 2022, the United Nations General Assembly underscored this imperative by adopting a resolution that recognizes access to a stable and secure environment as a universal human right.²¹ Despite this global acknowledgment, the persistent threat of air pollution, malnutrition, and inadequate sanitation services continues to undermine health security worldwide, posing a dire need for comprehensive strategies and international cooperation to safeguard these essential determinants of health.

Air pollution, a byproduct of industrialization, terrorism, and natural disasters like wildfires, has precipitated a decline in air quality with dire health consequences such as heart disease, lung cancer, and asthma.²² These conditions are not just chronic or acute; they can be fatal. According to the World Health Organization, air pollution is responsible for an estimated 4.2 million deaths each year, with the regions of Southeast Asia and the Western Pacific accounting for the largest share of these fatalities.²³

The fluid nature of fine particulate matter means that pollutants are not confined to urban sources. In fact, research indicates that air quality is just as hazardous in rural areas.²⁴ Air pollution from natural or anthropogenic sources can cross geographical boundaries, damaging forests and natural resources and further threatening health security via famine.²⁵ Early childhood exposure to famine-induced malnutrition can increase adult risk of asthma, chronic obstructive pulmonary disease, and type 2 diabetes, rendering victims even more susceptible to the fatal hazards of poor air quality.^{26 27}

The Asia-Pacific has the highest growing rates of obesity and contains nearly half of the world's population suffering from the double burden of malnutrition: under- and overnutrition.²⁸ Insufficient dietary intake and gastrointestinal infection often form a perpetual cycle, particularly in early childhood when immune and cognitive functions are established. The Asia-Pacific region accounts for approximately 70% of

²¹ August, CCAC secretariat - 2, et al. "UN Declares Healthy Environment – Including Clean Air – a Human Right." *Climate & Clean Air Coalition*, <http://tinyurl.com/3b8wuu54>. Accessed 9 Jan. 2024.

²² Hormati, Maryam, et al. "Consequences and health effects of toxic air pollutants emission by industries." *Journal of Air Pollution and Health* 7.1 (2022): 95-108.

²³ Luan, Guijie, Peng Yin, and Maigeng Zhou. "Associations between ambient air pollution and years of life lost in Beijing." *Atmospheric Pollution Research* 12.2 (2021): 200-205.

²⁴ Ravishankara, A. R., et al. "Outdoor air pollution in India is not only an urban problem." *Proceedings of the National Academy of Sciences* 117.46 (2020): 28640-28644.

²⁵ Boyle, Alan. "Transboundary air pollution: a tale of two paradigms." *Transboundary Pollution*. Edward Elgar Publishing, 2015. 233-260.

²⁶ Jin, Changbo, et al. "Early-Life Exposure to Malnutrition From the Chinese Famine on Risk of Asthma and Chronic Obstructive Pulmonary Disease in Adulthood." *Frontiers in Nutrition* 9 (2022): 848108.

²⁷ Huo, Wenqian, et al. "Combined effects of air pollution in adulthood and famine exposure in early life on type 2 diabetes." *Environmental Science and Pollution Research* 29.25 (2022): 37700-37711.

²⁸ Rachmi, Cut Novianti, Mu Li, and Louise Alison Baur. "The double burden of malnutrition in Association of Southeast Asian Nations (ASEAN) countries: a comprehensive review of the literature." *Asia Pacific Journal of Clinical Nutrition* 27.4 (2018): 736-755.

the world's malnourished youth, foreshadowing an adult population at significantly higher risk for obesity and non-communicable diseases.²⁹

Nutrition is largely impacted by the overall environment in which individuals live and learn behavior. Household food security and proper nutrition is a direct result of physical and economic access to adequate nutrients as well as health-oriented social environments and support systems. Similarly, overexposure to inexpensive, high-calorie food and social promotion of larger body sizes can fuel unhealthy consumption behaviors and obesity.³⁰ Poor nutrition can escalate from a series of learned behaviors to lifelong medical plights when social and health care systems are unequipped to proactively address ailing young patients and the root causes of under- and overnutrition.

Addressing food insecurity and nutrition issues requires sustained reporting of accurate data critical to establishing baselines, benchmarks, and constructive strategies. National nutrition plans with measurable targets are essential. Food policies can leverage a double-pronged approach: promoting the availability and affordability of diverse healthy food sources while simultaneously leveraging nutrition labels and advertising restrictions to reduce the allure of calorie-dense offerings. Given food's strong ties to culture, place, and wellbeing, sustainable shifts will require cross-functional collaboration from diverse stakeholder groups to help control food-oriented risk factors before they become hazardous to community health. Ensuring equity matters—no group should face disadvantages due to gender, ethnicity, religion, or geographic background. Robust data informs policies and ongoing progress in promoting equitable access to nutritious food.

Sanitation services play a pivotal role in ensuring access to clean water and preventing infectious diseases. Commendable efforts to enhance sanitation infrastructure include Indonesia's internationally-recognized Penyediaan Air Minum dan Sanitasi Berbasis Masyarakat (PAMSIMAS) program. The PAMSIMAS initiative provides financial grants, training, and technical support to local communities, guiding them step-by-step in the construction of their own sanitation facilities. The impact has been overwhelming: PAMSIMAS has extended its reach to 23,000 villages across Indonesia, benefiting 17.2 million people with improved water supply and granting 15.4 million people access to better sanitation facilities.³¹

The pursuit of safe, dependable, and secure access to clean water remains a shared goal across the seven countries represented in this report. Ensuring equitable water services requires addressing disparities between urban and rural areas; robust infrastructure must reach both bustling cities and remote villages. Efforts must also prioritize inclusivity, enabling equal access for vulnerable groups including women, who often eat last and least, as well as the disabled. Finally, international collaboration is crucial to share resources, conduct joint research, and exchange knowledge to drive collective progress.

The interconnection between environmental stability and health security cannot be overstated. As the world grapples with the repercussions of air pollution, malnutrition, and water scarcity, it is imperative to adopt a holistic approach that addresses these issues at their core. The integration of robust data-driven policies, cross-sectoral partnerships, and global solidarity is essential to advance the right to a clean, healthy, and sustainable environment. Only through concerted efforts can the United Nations' vision of health security become a reality for all.

²⁹ Black, Robert E., et al. "Maternal and child undernutrition and overweight in low-income and middle-income countries." *The Lancet* 382.9890 (2013): 427-451.

³⁰ Rachmi, Cut Novianti, Mu Li, and Louise Alison Baur. "The double burden of malnutrition in Association of Southeast Asian Nations (ASEAN) countries: a comprehensive review of the literature." *Asia Pacific Journal of Clinical Nutrition* 27.4 (2018): 736-755.

³¹ Wray, E. "Indonesia: Expanding Access to Clean Water for the Rural Poor." *World Bank*, World Bank Group, 12 Aug. 2019, <http://tinyurl.com/yc78bbyz>

**COVID's Impact on
Access to Reproductive
Care**
When women were in
isolation during Covid,
there were no
contraceptive methods,
leading to an increase
in unwanted
pregnancies.

~Tu-Anh Hoang, Center for
Creative Initiatives in Health and
Population, Vietnam

IV. Loss of Utilities and Communication Services

The provision of high-quality health care is critically dependent on consistent and effective energy and communication services. The absence of stable electricity compromises access to vital diagnostic and medical treatment equipment, hindering health professionals' ability to provide care. Grid instability poses a significant risk, as power outages can precipitate a cascade of failures: compromised heating and cooling systems endanger the well-being of vulnerable individuals, and health facilities are strained under increased demand. Empirical evidence further highlights the detrimental effects of power disruptions on health outcomes. For instance, an analysis of three significant power outages in New York City indicated a marked increase in hospital admissions for renal diseases following summer outages, and a rise in cardiovascular-related hospitalizations during winter outages.³²

While telehealth communications hold the potential to revolutionize health care accessibility, an overdependence on these systems introduces risks to privacy, care quality, and service continuity.³³ Miscommunication can result in diagnostic errors as telehealth providers often rely upon untrained patients or family members to assess vital signs and symptoms. Further difficulties can arise when vulnerable populations lack private space for personal conversations or are reluctant to disclose sensitive information remotely. Without detection and treatment, undiagnosed or asymptomatic ailments can escalate into public health crises.

A proactive and cautious strategy is crucial to prevent the misuse of communication systems and to mitigate the repercussions of data breaches and the dissemination of misinformation. Digital health resources must be a bastion of accurate and reliable information, as both medical professionals and patients depend on credible data for informed decision-making. Misinformation can have dire consequences on patient care and outcomes. Moreover, to fulfill the health-centric goals of communication services—bridging the gap in telehealth interactions—it is imperative to provide widespread and equitable access, particularly to underserved communities.

Communication systems should not only facilitate interactions but also serve as a foundation for improved community health. Ensuring patient privacy through robust encryption, secure data transmission, and stringent access controls is essential. Confidentiality in

health-related discussions is paramount to safeguard sensitive information and to maintain the trust between patients and health care providers. Furthermore, adherence to ethical industry standards, including informed consent, transparency, and respect for patient autonomy, is vital for the responsible utilization of these services.

³² Casey, Joan A., et al. "Power outages and community health: a narrative review." *Current Environmental Health Reports* 7 (2020): 371-383.

³³ Houser, Shannon H., Cathy A. Flite, and Susan L. Foster. "Privacy and Security Risk Factors Related to Telehealth Services—A Systematic Review." *Perspectives in Health Information Management* 20.1 (2023).

V. Lack of Access to Reproductive and Sexual Health Services

Natural disasters pose a significant challenge to health security worldwide. Among the most vulnerable regions is the Pacific Rim, where nearly half of all global natural disasters occur, including more than 80% of the world's largest earthquakes.³⁴ While the acute and long-term impacts of these disasters span multiple sectors, their toll on public health and health care systems can be particularly devastating.

Natural disasters have both direct and indirect community health impacts. Most visible are the injuries that are clearly attributable to the disaster. No evidence suggests that any particular type of natural disaster generates more injuries than others; however, swift medical attention is crucial to prevent non-life-threatening injuries from escalating. Furthermore, population displacement and disruptions in public services during disasters can lead to overcrowding in certain areas. While there is no direct evidence that new diseases emerge from disasters, existing diseases can spread more rapidly through crowded shelters and compromised sanitation systems.

Post-disaster populations also face a spectrum of health challenges. Respiratory issues, viral infections, and stress-related conditions (such as heart diseases and diabetes) can emerge or worsen. In addition to physical ailments, an expanding field of research also examines the pressure of disasters on mental health.³⁵ The detriments are variable based on the type, severity, and frequency of disasters, but trauma, loss, and displacement take a significant toll on individuals and collective communities, necessitating targeted interventions by local public health services.³⁶

Natural disasters can disrupt or stretch resources allocated to medical services, hindering efforts to address the acute public health impacts described earlier. Earthquakes, hurricanes, monsoons, tsunamis, and other calamities render physical health care centers—such as hospitals and clinics—hazardous and difficult to access.³⁷ The rural-urban divide further limits care availability. In the aftermath of disasters, first responders and health services often have difficulty reaching all affected individuals. This challenge is particularly pronounced in countries like Papua New Guinea, where 86% of the population resides in remote, rural areas.³⁸

VI. Conflict and Violence

As regional conflicts escalate, health security faces significant challenges. Despite the Geneva Conventions protecting the welfare of civilian, humanitarian, and military personnel, healthcare facilities are a tactical focus during periods of armed conflict.³⁹ Attacks are intended to target both recuperating military personnel but also front-line medical professionals capable of restoring injured troops in the future. Medical centers become even greater targets when used as military outposts and weapon storage facilities. Indeed, attacks on healthcare facilities reached a record number of 1,989 attacks during 2022, underscoring the urgency of this issue.⁴⁰ As expected, violent conflict results in direct injuries and deaths to both combatants and civilians; however, the immediate and long-term impact extends far beyond these casualties.

Violent conflict and environmental damage creates conditions that allow diseases to proliferate, further straining health systems.⁴¹ Contaminated water sources and disrupted sanitation systems can contribute to the spread of communicable and water-borne diseases, and interrupted access to basic services can exacerbate non-life-threatening medical matters.⁴² Temporary relocation sites can similarly become hotspots for communicable diseases as the rising population

³⁴ Williams, Charles A., et al. "Earthquakes and Multi-Hazards Around the Pacific Rim, Vol. II: Introduction." *Pure and Applied Geophysics* 175 (2018): 525-528.

³⁵ Saeed, Sy Ateaz, and Steven P. Gargano. "Natural disasters and mental health." *International Review of Psychiatry* 34.1 (2022): 16-25.

³⁶ Shoaf, Kimberley I., and Steven J. Rotiman. "Public health impact of disasters." *Australian Journal of Emergency Management, The* 15.3 (2000): 58-63.

³⁷ Hierink, Fleur, et al. "Modelling geographical accessibility to support disaster response and rehabilitation of a healthcare system: an impact analysis of Cyclones Idai and Kenneth in Mozambique." *BMJ Open* 10.11 (2020): e039138.

³⁸ "Rural Population (% of Total Population)." *World Bank Open Data*, data.worldbank.org/indicator/SP.RUR.TOTL.ZS. Accessed 9 Jan. 2024.

³⁹ Henckaerts, Jean-Marie, and Carolin Alvermann. *Customary International Humanitarian Law*. Vol. 1. Cambridge University Press, 2005.

⁴⁰ *Ibid.*

⁴¹ Iqbal, Zaryab. "Health and human security: The public health impact of violent conflict." *International Studies Quarterly* 50.3 (2006): 631-649.

⁴² Omar, Abdulaziz. "Understanding and preventing attacks on health facilities during armed conflict in Syria." *Risk Management and Healthcare Policy* (2020): 191-203.

density can overwhelm regional food and water supply, resulting in poor sanitation. Hospital and emergency care facilities can also become vulnerable to outbreaks when resources and personnel in these facilities are already limited due to conflict-related casualties.

Environmental destruction such as that of agricultural systems leaves the surrounding community at risk of famine. Those who do not starve may be saddled with weakened immune systems and greater susceptibility to disease and existing health conditions.⁴³ Women who are pregnant or breastfeeding are preferentially and negatively impacted by famine-related undernourishment.⁴⁴ Malnourished expecting mothers may experience complications during pregnancy or delivery, and malnourishment may impact the quantity and nutritional value of breast milk produced by lactating mothers.

In the event of conflict—whether war or a terrorist act—hospitals and health centers play a critical role in maintaining the vitality of troops and the broader community. Proper procedures must be in place to handle an influx of patients. These procedures should include robust emergency protocols to efficiently manage casualties by detailing triage, resource allocation, and surge capacity. Medical facilities must also be a model of infrastructure resilience with the ability to maintain functionality while under siege. As such, reinforced structures, backup power, and secure communication systems are essential. Equipping the healthcare workforce with adequate staffing, training, and mental health support is equally critical to ensuring resilience during crises. Finally, coordination across hospitals, public health agencies, and humanitarian organizations provides an opportunity to enhance preparedness by sharing information and pooling resources.

Image Credit: Flickr/Allison Joyce



⁴³ Sarma, Deesha. "Famine." *Ciottono's Disaster Medicine*. Elsevier, 2024. 637-639.

⁴⁴ Ibid.

THE IMPORTANCE OF GENDER IN HEALTH SECURITY



Short-term and Long-term Impacts of Disasters

In the wake of disasters, there are immediate threats like deaths and injuries, but there are also long term threats like trauma and disease outbreak.

~Maj. Anna Matthew, Papua New Guinea Defense Force, PNG

A gender perspective is crucial to global health security. Fundamentally, men and women typically face different health risks and vulnerabilities due to biological, social, and economic factors. For example, women may have specific reproductive health needs, while men may be more prone to certain non-communicable diseases. Understanding these differences is essential for developing targeted interventions and responses that address the diverse health needs of populations.

Gender inequalities can affect access to healthcare services, including preventive measures, diagnostics, and treatment. Women may face barriers such as limited mobility, financial constraints, and cultural norms that restrict their healthcare-seeking behavior. Ensuring equitable access to healthcare for all genders is essential for effective disease prevention, detection, and control.

During epidemics and pandemics, gender dynamics can influence disease transmission patterns, healthcare utilization, and outcomes. For example, women may be disproportionately affected by caregiving responsibilities, increasing their exposure to infectious diseases. Understanding these gendered impacts is critical for designing response strategies that address the specific needs and challenges faced by different groups within communities.

Gender-based violence has also been known to escalate during public health crises, exacerbating the health risks faced by affected individuals. Women and girls are particularly vulnerable to gender-based violence, which can have long-term physical and psychological consequences. Integrating a gender perspective into health security efforts involves addressing the root causes of gender-based violence and providing support services for survivors.

Promoting gender equality and women's empowerment is not only a matter of rights but also a key determinant of health security. When women have access to education, economic opportunities, and decision-making power, they can better protect themselves and their families from health risks. Additionally, involving women in leadership and decision-making roles enhances the effectiveness and inclusivity of health security initiatives.

Finally, collecting and analyzing sex-disaggregated data is essential for understanding the gender-specific dimensions of health security threats and outcomes. This data can inform evidence-based policies and interventions that address the diverse needs of populations. Moreover, it helps identify disparities and monitor progress towards achieving gender equality in health security. Thus, integrating a gender perspective into global health security efforts is essential for promoting equity, improving health outcomes, and building resilient health systems that can effectively respond to emerging threats and crises in their entirety.

CONVERGING THREATS TO GENDER-SPECIFIC HEALTH AND CLIMATE SECURITY IN THE ASIA-PACIFIC REGION



In the Asia-Pacific region, a nexus of challenges poses significant threats to women's experience of health and climate security. This section addresses four critical areas of concern: gender inequality, population movement and change, vulnerable health systems, and climate vulnerabilities. Each of these subsections not only stands as a significant issue on its own but also intersects with the others, creating a complex web of risks that disproportionately affect women and girls.

Persistent gender disparities undermine the health and well-being of women and girls, limiting their access to education, resources, and decision-making power. This inequality exacerbates their vulnerability in times of environmental and social upheaval. In a similar way, migration, whether voluntary or forced, due to economic, social, or environmental factors, can disrupt traditional support systems and expose individuals, particularly women, to new health risks and gender-based violence.

In many parts of the Asia-Pacific, health systems are under-resourced and ill-prepared to handle the increasing burden of disease and medical needs, especially for marginalized genders during crises such as pandemics or natural disasters. The compounding adverse effects of climate change, including extreme weather events and resource scarcity, have profound implications for public health, particularly on strained health care systems. Women, often the primary caregivers and managers of household resources, face unique challenges in adapting to these changes.

The following sections reveal an interconnected set of threats that require a multifaceted and gender-sensitive approach to policy and intervention. Understanding the interplay between these factors is crucial for developing strategies that promote health equity and climate resilience, ensuring that no one is left behind in the Asia-Pacific's path towards sustainable development.



Image source: Asian Development Bank/Flickr

GENDER INEQUALITY

Gender inequality refers to the disparity in socio-economic status and access to education, employment, and political representation on the basis of gender. The Asia-Pacific Region ranks highest in the world on a scale assessing son bias: for every 100 girls born in the Pacific/East Asian and South Asian regions, approximately 109.1 and 106.7 boys are born, respectively.⁴⁵ Preference for male children is further evidenced by disproportionate male-to-female birth ratios exceeding 1.11 in China and Vietnam, suggesting that girls' societal undervaluation begins with sex-selective abortions and infanticide.^{46 47} These practices are not only rooted in but serve to perpetuate gender inequity in education and employment opportunities. Boys are perceived to be more profitable additions to the family unit, and as such are

granted opportunities for education and development to improve their earning potential.⁴⁸ Meanwhile, girls are considered burdensome until they leave the household, and are subsequently relegated to performing caretaking duties in preparation for inevitable wifehood.⁴⁹

Inequality of Disasters

Disasters are not gender neutral – they tend to affect women and girls more than men and boys due to societal and cultural norms.

~Nukila Evanty, Women Working Group (WWG), Indonesia

Son preference is particularly associated with a disproportionate distribution of household chores. For example, compared to Indian girls in families with strong daughter preference, those in families with significant son preference perform 2.5 hours more housework per week and nearly 4 hours more than their brothers.⁵⁰ When accounting for types of labor, it becomes clear that family structures favoring sons consider boys' time to be more valuably spent building human capital. This gender gap is observed regardless of familial socio-economic status and becomes more pronounced as children age.⁵¹

South Asian women typically receive an average of 6 years of schooling and Pacific/East Asian women receive 7.6 years; Sub-Saharan Africa is the only region in the world where women receive fewer years of formal education (5 years on average).⁵² In general, the education gender gap in the Asia-Pacific starts out slim in pre-primary, primary, and lower secondary school attendance, but widens throughout adolescence.⁵³ Inequitable distribution of household labor is likely both a cause and effect of this phenomenon. Knowledge acquisition may be considered incongruous with wifely duties in regions where women are primarily expected to care for a home, husband, and children.⁵⁴

⁴⁵ Georgetown Institute for Women, Peace and Security and Peace Research Institute Oslo. *Women, Peace, and Security Index 2023/24: Tracking Sustainable Peace through Inclusion, Justice, and Security for Women*. Summary, GIWPS and PRIO, 2023.

⁴⁶ Ibid.

⁴⁷ Kennedy, Elissa, et al. "Gender inequalities in health and wellbeing across the first two decades of life: an analysis of 40 low-income and middle-income countries in the Asia-Pacific region." *The Lancet Global Health* 8.12 (2020): e1473-e1488.

⁴⁸ Pande, Rohini, and Anju Malhotra. "Son preference and daughter neglect in India." (2006).

⁴⁹ Hannum, Emily, Peggy Kong, and Yuping Zhang. "Family sources of educational gender inequality in rural China: A critical assessment." *International Journal of Educational Development* 29.5 (2009): 474-486.

⁵⁰ Lin, Tin-chi, and Alicia Adserà. "Son preference and children's housework: The case of India." *Population Research and Policy Review* 32 (2013): 553-584.

⁵¹ Ibid.

⁵² Georgetown Institute for Women, Peace and Security and Peace Research Institute Oslo. *Women, Peace, and Security Index 2023/24: Tracking Sustainable Peace through Inclusion, Justice, and Security for Women*. Summary, GIWPS and PRIO, 2023.

⁵³ Kågesten, Anna, et al. "Understanding factors that shape gender attitudes in early adolescence globally: A mixed-methods systematic review." *PloS one* 11.6 (2016): e0157805.

⁵⁴ Hannum, Emily, Peggy Kong, and Yuping Zhang. "Family sources of educational gender inequality in rural China: A critical assessment." *International Journal of Educational Development* 29.5 (2009): 474-486.

Insufficient hygienic resources and facilities also pose barriers to gender equity in the Asia-Pacific. While the majority of menstruating women have access to period products, 50.6% and 31.7% of secondary schools in the respective South Asian and Pacific/East Asian regions have limited or no access to hygienic facilities.⁵⁵ Adequate quantities and quality of sanitation facilities are positively correlated with the average number of years that young women stay in school. Adolescent girls have been shown to be significantly more likely than boys to drop out or repeat grades in schools with inadequate water and sanitation facilities.⁵⁶ Spikes in dropout rates tend to occur between grades 6 and 8, corresponding with the average age at menarche of 12 to 13 years.^{57 58 59} In contrast, no significant gender differences in dropout rates are observed in schools with improved water sources and fewer than 20 students per toilet.⁶⁰

As a result of insufficient access to clean private facilities at school, girls can miss up to 4 consecutive instructional days per month (the equivalent of 10-20% of class time) due to discomfort, anxiety, and shame associated with their menstrual cycles.^{61 62} Moreover, lack of proper hygiene during menses can have adverse health outcomes impacting the reproductive and urinary tracts.^{63 64} With such far-reaching implications on the wellbeing and comfort of vulnerable young women, until sanitary facilities are prioritized and menstrual taboos are abolished, menstruation will likely continue to be the leading cause of girls' absenteeism.^{65 66 67}

Unaccommodating educational opportunities for girls is a critical factor contributing to gender inequality, with far-reaching consequences that extend beyond the realm of academics. Girls who are denied an education are at a heightened risk of becoming child brides, a practice that not only truncates their childhood but also exposes them to the dangers of early pregnancy. Young brides often face increased pregnancy complications, such as obstetric fistulas, which can result from prolonged, obstructed labor without access to timely and adequate medical care. Moreover, these young girls are typically not emotionally prepared to cope with the trauma associated with such experiences, which can lead to long-term psychological distress, including Post-Traumatic Stress Disorder (PTSD). The intersection of these issues underscores the urgent need to address educational disparities as a means to empower girls and mitigate the risks associated with early marriage and childbearing.

Without course correction, the indirect impacts of culturally normalized gender disparity will likely continue to compound, particularly under the unprecedented environmental and economic stressors of global climate change. One such instance of these amplified "ripple effects" is exhibited in the unanticipated ramifications of artificially imbalanced gender ratios. Prevalence of sex determination and selective practices beginning in the mid-1980s generated surplus populations of men who are unable to marry. In many Asia-Pacific countries, social status and acceptance are largely predicated upon marriage and fatherhood.⁶⁸ Unpartnered men in these regions are characterized by low self-esteem,

⁵⁵ Joint Monitoring Programme for Water Supply, Sanitation and Hygiene. School WASH Data. World Health Organization and UNICEF, 2020, washdata.org/data/school#1/table?geo0=region&geo1=sdg. Accessed 20 Jan. 2024.

⁵⁶ Agol, Dorice, and Peter Harvey. "Gender differences related to WASH in schools and educational efficiency." *Water Alternatives* 11.2 (2018): 284.

⁵⁷ Patavegar, Bilkish Nabilal, et al. "Menstrual hygiene among adolescent school girls: an in-depth cross-sectional study in an urban community." *International Journal of Health Sciences and Research* 4.11 (2014): 15-21.

⁵⁸ Kumar, Dinesh, et al. "Menstrual pattern among unmarried women from Northern India." *Journal of Clinical and Diagnostic Research* 7.9 (2013): 1926.

⁵⁹ Thakre, Subhash B., et al. "Menstrual hygiene: knowledge and practice among adolescent school girls of Saoner, Nagpur district." *Journal of Clinical and Diagnostic Research* 5.5 (2011): 1027-33.

⁶⁰ Agol, Dorice, and Peter Harvey. "Gender differences related to WASH in schools and educational efficiency." *Water Alternatives* 11.2 (2018): 284.

⁶¹ Adams, John, et al. *Water, sanitation and hygiene standards for schools in low-cost settings*. World Health Organization, 2009.

⁶² Vashisht, Aditi, et al. "School absenteeism during menstruation amongst adolescent girls in Delhi, India." *Journal of Family & Community Medicine* 25.3 (2018): 163.

⁶³ Bobhate, Prateek Sudhakar, and Saurabh R. Shrivastava. "A cross sectional study of knowledge and practices about reproductive health among female adolescents in an urban slum of Mumbai." *Journal of Family and Reproductive Health* 5.4 (2011): 119-126.

⁶⁴ Dasgupta, Aparajita, and Madhutandra Sarkar. "Menstrual hygiene: how hygienic is the adolescent girl?." *Indian Journal of Community Medicine* 33.2 (2008): 77-80.

⁶⁵ Tegegne, Teketo Kassaw, and Mitike Molla Sisay. "Menstrual hygiene management and school absenteeism among female adolescent students in Northeast Ethiopia." *BMC Public Health* 14.1 (2014): 1-14.

⁶⁶ Bodat, Suman, Mrunalini M. Ghate, and Jyoti R. Majumdar. "School absenteeism during menstruation among rural adolescent girls in Pune." *National Journal of Community Medicine* 4.02 (2013): 212-216.

⁶⁷ Lee, Lai Kah, et al. "Menstruation among adolescent girls in Malaysia: a cross-sectional school survey." *Singapore Medical Journal* 47.10 (2006): 869.

⁶⁸ Buss, David M., and David P. Schmitt. "Sexual strategies theory: An evolutionary perspective on human mating." *Interpersonal Development*. Routledge, 2017. 297-325.

depression, and withdrawnness—factors that are significant predictors of aggression.^{69 70} Sure enough, crime increased in China and India when large cohorts of unmated men came of age, and similar themes of violence have been observed in the polygynous societies of rural Africa where young single men outnumber available brides.^{71 72 73} Hence, societal norms glorifying male children have and will continue to yield “excess men” at risk of the psychological vulnerabilities associated with societal alienation.⁷⁴ These instabilities, coupled with low self-worth and sexual frustration, create dangerous catalysts for violence.⁷⁵

Despite women’s relative scarcity, it appears that their status and societal valuation does not tend to increase in male-dominated community structures. On the contrary, female subordination is correlated with less prosperous, fragile states that are rife with conflict.⁷⁶ An overly masculine society inhibits female empowerment, often perpetuating a downward spiral of gender discrimination and sexual violence.⁷⁷

Violence against women and girls has been shown to increase in conflict and postdisaster zones—each of which are likely to become more frequent and severe as a result of global climate change.⁷⁸ A study published in the *British Medical Journal* identified three pathways through which disasters from natural hazards can lead to increased violence against women and girls.⁷⁹ The first pathway suggests that natural disasters can heighten tension and community conflict as a result of economic hardship, displacement, and resource scarcity. These individual- and community-level stressors can exacerbate domestic tensions and potentially lead to violence against women and girls. The second pathway theorizes that disasters enable violence by disrupting social and protective networks. Deterioration of community structures and support services, along with inadequate shelter conditions, create unsafe environments for women and girls. The final pathway recognizes that disasters can augment existing equity gaps and discrimination. Gender inequality and financial dependence generally increases during crises, which in turn lead to a more pronounced pattern of violence. These pathways elucidate how the intersection of gender, health, and climate insecurity can result in an increased risk of violence against women and girls in the context of natural disasters.

VULNERABLE HEALTH SYSTEMS

Vulnerable health systems are those that are unable to provide quality, affordable, and accessible health care and services to the population, especially during public health crises. These systems are often characterized and plagued by insufficient financing and governance, weak supply chains and workforces, and low availability of robust digital health information. The quality of health systems varies immensely across the Asia-Pacific region, ranging from highly advanced and resilient health infrastructure in some countries to fragile and underdeveloped frameworks in others. This disparity is further burdened by the emergence and resurgence of infectious diseases such as COVID-19, tuberculosis, malaria, dengue fever, and HIV/AIDS. Notably, all of these illnesses are either caused or exacerbated by dense populations, human-animal interactions, or limited sexual and reproductive health services—each of which were previously discussed as significant threats to health security.

⁶⁹ Hesketh, Therese, Li Lu, and Zhu Wei Xing. "The consequences of son preference and sex-selective abortion in China and other Asian countries." *Canadian Medical Association Journal* 183.12 (2011): 1374-1377.

⁷⁰ Yavuzer, Yasemin, Güldener Albayrak, and Suat Kılıçarslan. "Relationships amongst aggression, self-theory, loneliness, and depression in emerging adults." *Psychological Reports* 122.4 (2019): 1235-1258.

⁷¹ Edlund, Lena, et al. "Sex ratios and crime: Evidence from China." *Review of Economics and Statistics* 95.5 (2013): 1520-1534.

⁷² Edlund, Lena, et al. "More men, more crime: Evidence from China's one-child policy." (2008).

⁷³ Koos, Carlo, and Clara Neupert-Wentz. "Polygynous neighbors, excess men, and intergroup conflict in rural Africa." *Journal of Conflict Resolution* 64.2-3 (2020): 402-431.

⁷⁴ Hudson, Valerie M., and Andrea Den Boer. "A surplus of men, a deficit of peace: Security and sex ratios in Asia's largest states." *International Security* 26.4 (2002): 5-38.

⁷⁵ Barber, Nigel. "The sex ratio as a predictor of cross-national variation in violent crime." *Cross-Cultural Research* 34.3 (2000): 264-282.

⁷⁶ Hudson, Valerie M., Donna Lee Bowen, and Perpetua Lynne Nielsen. "Clan governance and state stability: The relationship between female subordination and political order." *American Political Science Review* 109.3 (2015): 535-555.

⁷⁷ *Ibid.*

⁷⁸ Thurston, Alyssa Mari, Heidi Stöckl, and Meghna Ranganathan. "Natural hazards, disasters and violence against women and girls: a global mixed-methods systematic review." *BMJ Global Health* 6.4 (2021): e004377.

⁷⁹ *Ibid.*

The COVID-19 pandemic alone exposed and widened the cavernous vulnerabilities in the region's health system, with women and girls bearing disproportionate impact. The vast majority of healthcare workers in Pacific countries are women, and women are twice as likely to develop long COVID than men, thus lengthening their absence from medical duties during the public health emergency.^{80 81} The greater instance of exposure by female health workers is particularly problematic when coupled with a systemic propensity for women to be diagnosed with chronic conditions later than men, and the risk of dismissal of long COVID symptoms due to the similarity of those observed in Lyme disease.^{82 83}

Many nurses and midwives were redeployed for COVID preparedness and response activities, limiting the availability of sexual and reproductive health services.⁸⁴ Reduced access to these essential services have been shown to prevent women from obtaining family planning support, resulting in unwanted pregnancies, unsafe abortion, and maternal mortality, particularly within communities that already lack adequate financial and educational resources.⁸⁵ Scarcity in sexual and reproductive health services combined with school closures and household financial constraints increased rates of adolescent pregnancy and child marriage in many Asia-Pacific countries, which will have longstanding impacts on girls' education and economic opportunity, physical and mental health, and the community's social environment.⁸⁶

As population shifts and climate change converge with increasing pressures on social and health-related services, it is increasingly important to consider the disproportionate gendered ramifications of large-scale public crises. With natural disasters and health emergencies inevitably increasing in scale and impact, regional health systems must be prepared and equipped to avoid disruption of essential services, particularly those relating to maternal and child wellbeing, immunization, and chronic disease prevention and treatment. Responsive frameworks should also be developed to handle spikes in morbidity and mortality (both which are directly and indirectly related to the crises at hand), and widening health and socio-economic inequities which will primarily and preferentially impact marginalized groups.

CLIMATE VULNERABILITIES

Climate vulnerabilities refer to the exposure of people and ecosystems to the hazards of climate change including increasing global atmospheric temperatures, rising sea levels, altered precipitation patterns, and extreme weather events. These vulnerabilities are determined not only by a community's likelihood of exposure to severe adverse impacts, but also by the interaction of physical, social, economic, and environmental factors affecting its ability to cope with short-term stressors and adapt to long-term changes.

The Asia-Pacific region is considered to be one of the most vulnerable to the negative effects of climate change primarily due to its significant exposure to environmental hazards, dependence on natural resources, population density, and poverty rates. Conventional climate change models predict that dry regions will experience more drought, and wetter regions will receive increased precipitation. Given the existing microclimate diversity within small geographic footprints, the Asia-Pacific region must be doubly prepared for the entire spectrum of environmental stressors and disasters. For example, South and Southeast Asia are projected to experience increased heat stress and drought as well as floods and

⁸⁰ Dawson, Angela, et al. "The COVID-19 pandemic and sexual and reproductive health and rights in the pacific." *Asia Pacific Journal of Public Health* 33.6-7 (2021): 777-779.

⁸¹ Bucciarelli, Valentina, et al. "Depression pandemic and cardiovascular risk in the COVID-19 era and long COVID syndrome: gender makes a difference." *Trends in Cardiovascular Medicine* 32.1 (2022): 12-17.

⁸² Westergaard, David, et al. "Population-wide analysis of differences in disease progression patterns in men and women." *Nature Communications* 10.1 (2019): 666.

⁸³ Wormser, Gary P., and Eugene D. Shapiro. "Implications of gender in chronic Lyme disease." *Journal of Women's Health* 18.6 (2009): 831-834.

⁸⁴ Dawson, Angela, et al. "The COVID-19 pandemic and sexual and reproductive health and rights in the pacific." *Asia Pacific Journal of Public Health* 33.6-7 (2021): 777-779.

⁸⁵ Nagashima-Hayashi, Michiko, et al. "Gender-based violence in the Asia-Pacific region during COVID-19: a hidden pandemic behind closed doors." *International Journal of Environmental Research and Public Health* 19.4 (2022): 2239.

⁸⁶ Marzouk, Manar, et al. "Effects of COVID-19 on sexual and reproductive health services access in the Asia-Pacific region: a qualitative study of expert and policymaker perspectives." *Sexual and Reproductive Health Matters* 31.1 (2023): 2247237.

landslides. In addition, low-lying islands and deltas should anticipate coastal erosion and salinity intrusion associated with rising sea levels, and the Pacific is expected to receive more frequent and severe tropical storms and cyclones.

These impacts threaten natural resources, community stability, and the health and security of the people within these regions. Heat-related illnesses and vector- and water-borne diseases are expected to increase morbidity and mortality, particularly in vulnerable populations such as pregnant women, children, and the elderly. Scarcity of clean water disproportionately impacts women and girls who must devote more time seeking water for household chores, and may be subjected to domestic violence as a result.⁸⁷ Furthermore, reduced crop yields, fishstock declines and migrations, and livestock losses are expected to increase food insecurity, which also corresponds to increased gender-based violence.⁸⁸ Female farmers are also less likely to utilize efficient water collection and distribution methods, drought-resistant crop strains, and fertilizers and insecticides to ease the impact of low rainfall.⁸⁹ Finally, coastal inundation, erosion, and conflict force communities to be displaced, the stress and trauma of which typically results in increased violence against women and girls.⁹⁰



Image Credit: Pedro Portal

⁸⁷ Sigenu, Kholisa, and André Pelsler. "Rural women and water scarcity: challenges and strategies in the Eastern Cape, South Africa." *Journal for Development Support* 1 (2009): 69-86.

⁸⁸ Agrawal, Pooja, et al. "The interrelationship between food security, climate change, and gender-based violence: A scoping review with system dynamics modeling." *PLOS Global Public Health* 3.2 (2023): e0000300.

⁸⁹ Gender, Global, and Climate Alliance. "Gender and climate change: A closer look at existing evidence." (2016).

⁹⁰ Tower, Amali. "The Gendered Impacts of Climate Displacement." *Climate Refugees, Climate Refugees*, 2 Nov. 2020, www.climate-refugees.org/perspectives/genderedimpactsclimatechange.

THE PROGRESS INDEX FOR GENDERED
HEALTH SECURITY AMID CLIMATE CHANGE



Image source: Nick Riley / WWF Madagascar

We developed the PROGRESS *Index for Gendered Health Security Amid Climate Change* as a tool to facilitate discussion during both Project workshops. To this end, the tool was designed to meet the needs of country-specific working groups, including nonprofit, government, and military stakeholders, and serves as a platform for dialogue and decision-making. While it does not offer an exhaustive evaluation of all gender, health, and climate risks, it stands as a focused instrument for assessing key areas of concern.

Throughout this section, we will reference *dimensions, indices, and indicators* (Figure 1). Dimensions are broad categories that represent different aspects of the study subject. They are generally intended to provide an organizational framework; in the context of the PROGRESS *Index for Gendered Health Security Amid Climate Change*, the dimensions encompass both gender-specific and community/environmental factors, highlighting the diverse influences on women’s welfare. Indicators, on the other hand, are specific, measurable elements within each dimension that provide concrete data points. These offer quantifiable evidence of the status or progress of the dimension they represent. By using existing global indices composed of relevant indicators, we can assess and compare different aspects of health and climate security across the Asia-Pacific region.

We constructed the PROGRESS Index in response to feedback from our intended audience following an initial

proof-of-concept at the first project workshop; as a tool crafted to cater to the nuanced needs of country-specific working groups, it was critical to ensure that the dimensions and indicators resonated with their priorities. The dimensions were chosen to balance gender-specific issues with broader community and environmental factors that affect women’s welfare. Data sources for these dimensions were selected based on relevance, source credibility, and the availability of complete data sets. This deliberate selection process resulted in eight comprehensive dimensions, half of which were dedicated to gender-specific aspects, while the other half addressed the broader community and environmental determinants of health and climate security.

To quantify these dimensions, we identified existing global indices that serve as proxies for the specific aspects we aimed to measure. These indices provide a robust foundation of data, which we used as indicator values. Recognizing the need to

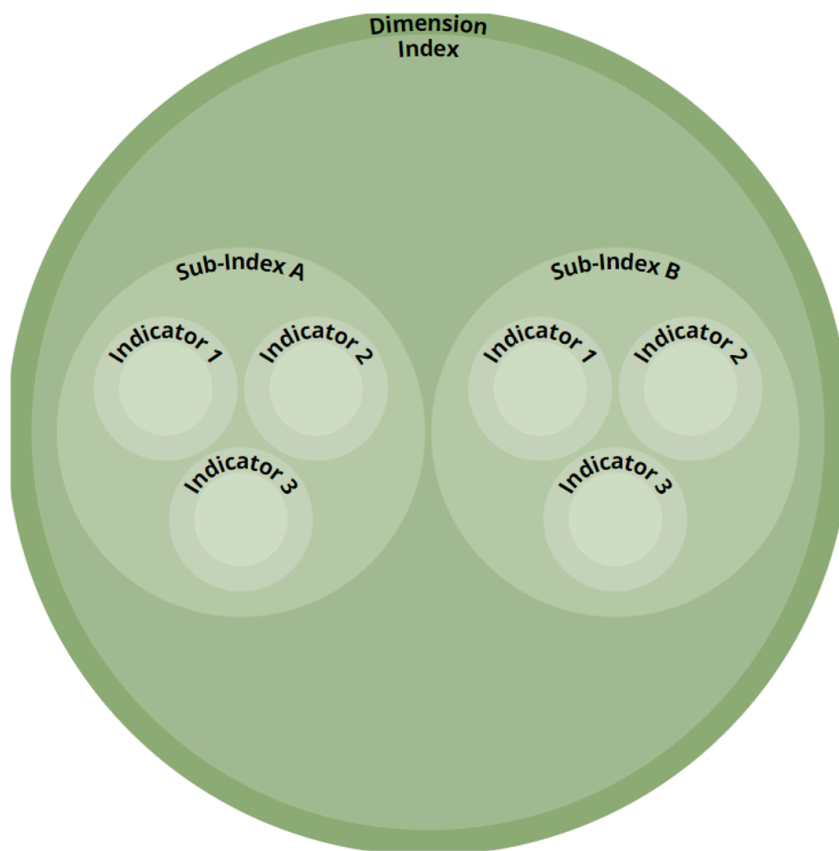


Figure 1. Hierarchy of dimensions, indices, and indicators used in the PROGRESS *Index for Gendered Health Security Amid Climate Change*.

tailor these indicators to the Asia-Pacific context, we implemented a rescaling process, which involved transforming the original index scores to a new scale where the minimum and maximum scores were set at 0 and 100, respectively. We also inverted existing indices as needed to align with our index’s orientation, ensuring consistency across all dimensions, with 100 representing the most favorable condition. This methodology adjusted the original scores to a uniform scale,

facilitating comparison across different indices and enabling a more nuanced analysis of the dimensions within the specific regional context.

To account for economic disparities, we employed the median and median absolute deviation (MAD) for scaling purposes. We identified outliers using modified z-scores, which are deviations from the median expressed in units of MAD. We considered any data point with a modified z-score greater than ± 3.5 to be an outlier, as such scores indicate a deviation from the median that is over 3.5 times the MAD, suggesting a significant difference from typical values within the dataset. We then rescaled modified z-scores to a 0-100 range across the 39 Asia-Pacific countries, with higher scores indicating better health and security outcomes. Analysis was conducted on a country-level and grouped into United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP)-designated subregions for regional-level comparison. To contextualize the rescaled index scores, we included values from the original globally-scaled indices in Tableau dashboard views of each dimension (Appendices 1-8). These original values were also displayed as box plots (Appendix 9) and the rescaled index values were also listed in table form for quick reference (Appendix 10).

In an effort to offer a nuanced and comprehensive understanding of the disparities and progress in critical areas of gender-specific health and climate security, we gathered robust datasets to represent these multifaceted dimensions of women's welfare. Each dimension is represented by a selected index (or composite index with constituent subindices) and/or a series of indicators (Table 1). With appropriate use, this analysis is intended to shed light on the conditions affecting women's lives and also serve as a foundation for future research and policy recommendations.

Dimension #1: Women's Wellbeing & Security

To gauge the prevalence and severity of conflict and gender-based violence, we utilized the Pacific Disaster Center (PDC)'s composite *Personal Security Inequality Index*.⁹¹ In this index, the PDC merges data from the *Gender-Based Violence Security Index*—measuring violence against women and social acceptance of LGBTQ individuals—and the *Reproductive Autonomy Security Index*, which assesses adolescent fertility rates, child marriage, and family planning needs. The most recent available data was from 2021.

Dimension #2: Women's Health Care Access

We selected the Pacific Disaster Center's *Health Care Access Empowerment Index* to illustrate the degree to which women's healthcare is available and readily accessible, as well as how empowered women are to seek gender-specific care.⁹² In this index, the PDC combines indicator data on contraceptive use, skilled birth attendance, and prenatal care. The most recent available data was from 2021.

Dimension #3: Economic Equality

To reflect women's economic opportunities, we incorporated the PDC's *Economic Participation Inequality Index*, which includes workforce participation ratios, vulnerable employment, and unemployment rates, highlighting the potential for women's self-reliance.⁹³ The most recent available data was from 2021.

⁹¹ "WPS Personal Security Inequality Index." Global Hazards Information Network (GHIN), Pacific Disaster Center, 20 Apr. 2021, ghin.pdc.org/ghin/catalog/search/resource/details.page?uuid=%7B9d9dd978-868b-47d6-9c82-13fc08c5f13d%7D.

⁹² "WPS Health Care Access Empowerment Index." Global Hazards Information Network (GHIN), Pacific Disaster Center, 20 Apr. 2021, ghin.pdc.org/ghin/catalog/search/resource/details.page?uuid=%7B3abfb3c4-6f5b-42ce-bea1-7da5f1e96a7c%7D.

⁹³ "WPS Economic Participation Inequality Index." Global Hazards Information Network (GHIN), Pacific Disaster Center, 20 Apr. 2021, ghin.pdc.org/ghin/catalog/search/resource/details.page?uuid=%7B4b87437b-3c3b-4b8e-b9b0-f0fe748d4c1c%7D.

DIMENSIONS, INDICATORS, AND DATA SOURCES

Table 1: Index for Gendered Health Security Amid Climate Change dimensions & data source summary

Dimension	Intended to Measure...	Representative Index	Sub-Index	Indicator
Women's Wellbeing & Security	Prevalence and Severity of Conflict and Gender-Based Violence	Personal Security Inequality Index (PDC)	Gender-Based Violence Security Index	Intimate Partner Violence Against Women Ever
				Intimate Partner Violence Against Women in the Previous 12 Months
				Social Acceptance of LGBTQ People
			Reproductive Autonomy Security Index	Adolescent Fertility Rate
				Women in Marriage Before Age 18
				Unmet Need for Family Planning
Women's Health Care Access	Availability and Utilization of Women's Health Care	Health Care Access Empowerment Index (PDC)		Births Attended by Skilled Health Staff
				Contraceptive Prevalence
				Pregnant Women Receiving Prenatal Care
Economic Equality	Women's Economic Opportunity and Stability	Economic Participation Inequality Index (PDC)		Female to Male Labor Force Participation
				Female to Male Vulnerable Employment
				Female to Male Unemployment
Systemic Gender Equality	Systemic Support and Progress in the Advancement of the WPS Agenda	Women, Business, and the Law Index (WorldBank)		Mobility
				Workplace
				Pay
				Marriage
				Parenthood
				Entrepreneurship
				Assets
				Pension

Climate Resilience	Climate and Environmental Quality and Stability	Climate Risk Index (PDC)		Relative Likelihood of a Natural Hazard Occurring
				Relative Likelihood of a Natural Hazard Causing Significant Disruption
Infrastructure Capacity	Adequate Infrastructure to Facilitate Communication and Disaster Response	Infrastructure Capacity Index (PDC)	Communication Index	Fixed Phone Access
				Mobile Phone Access
				Secure Internet Server Access
			Transportation Index	Airport Density
				Road/Railroad Density
			Healthcare Index	Hospital Bed Density
				Number of Nurses and Midwives
				Number of Physicians
			Population Stability	Urbanization and Fertility Trends
Average Annual Urban Population Change				
Food Security	Food Insecurity and Undernutrition	World Food Security Outlook (WorldBank)		3-year Average of the Prevalence of Severe Food Insecurity as a Percentage of the Population

Dimension #4: Systemic Gender Equality

We selected the World Bank’s *Women, Business, and the Law Index* to illustrate systemic support and progress in the Women, Peace, and Security (WPS) agenda.⁹⁴ The World Bank publishes this index’s aggregate indicators in mobility, workplace, pay, marriage, parenthood, entrepreneurship, assets, and pensions; the PDC downloads and reprojects this data into the DisasterAware database. The most recent available data was from 2021.

Dimension #5: Climate Resilience

We used the PDC’s *Climate Risk Index* to highlight climate resilience relative to neighboring Asia-Pacific nations.⁹⁵ Addressing climate and environmental quality and stability, the PDC designs this composite index to measure both hazard exposure and resilience, considering the influences of vulnerable populations, infrastructure, and socio-economic, environmental, and institutional factors. The most recent available data was from 2022.

⁹⁴ “WPS Women, Business and the Law” Global Hazards Information Network (GHIN), Pacific Disaster Center, 23 Apr. 2021, ghin.pdc.org/ghin/catalog/search/resource/details.page?uuid=%7Be1f7847d-924a-4a08-85d4-b67a933a123a%7D.

⁹⁵ “Climate Risk Index (2050)” Global Hazards Information Network (GHIN), Pacific Disaster Center, 13 Dec. 2022, ghin.pdc.org/ghin/catalog/search/resource/details.page?uuid={87c83a7f-dc64-4e73-a4f0-46d98fc7739e}.

Dimension #6: Infrastructure Capacity

For this dimension, we chose the PDC's *Infrastructure Capacity Index* as a robust dataset representing coping capacity.⁹⁶ Combining subindices on communication, transportation, and healthcare, this index assesses the quality, stability, and access to infrastructure, indicating a country's capacity to handle natural hazards. The most recent available data was from 2021.

Dimension #7: Population Stability

We opted for the PDC's *Population Changes Index* as a measure of demographic and geographical population shifts.⁹⁷ Capturing urbanization and fertility trends, this index includes average annual population and urban population changes, forming part of the *Population Pressures Index* to evaluate vulnerabilities related to demographic shifts. The most recent available data was from 2022.

Dimension #8: Food Security

For this dimension, we utilized the *World Food Security Outlook from the World Bank*.⁹⁸ Highlighting food insecurity, this dataset summarizes the percentage of a country's population facing food scarcity. This is critical given the heightened risk of malnourishment for women and girls during periods of shortage. The most recent available data was from 2021. We decided against imputing missing data to maintain the integrity of our findings and highlight areas in the Asia-Pacific requiring further research. Missing values were excluded from calculations to prevent drawing unrepresentative conclusions.



Image Credit: AFP/Madaree Tohlala

⁹⁶ "Infrastructure Capacity Index" Global Hazards Information Network (GHIN), Pacific Disaster Center, 09 Dec. 2021, ghin.pdc.org/ghin/catalog/search/resource/details.page?uuid=%7BC35B6B5A-57AB-4B91-87E7-E03224B7AC84%7D.

⁹⁷ "Population Changes Index" Global Hazards Information Network (GHIN), Pacific Disaster Center, 12 Dec. 2022, ghin.pdc.org/ghin/catalog/search/resource/details.page?uuid=%7Bd6fa6c27-aa95-47bf-8261-c6d85d305425%7D.

⁹⁸ Andree, Bo Pieter Johannes. "World Food Security Outlook." World Bank, 11 Nov. 2023, microdata.worldbank.org/index.php/catalog/6103/get-microdata.

DIMENSIONS, INDICATORS, AND DATA SOURCES

I. WOMEN'S WELLBEING AND SECURITY

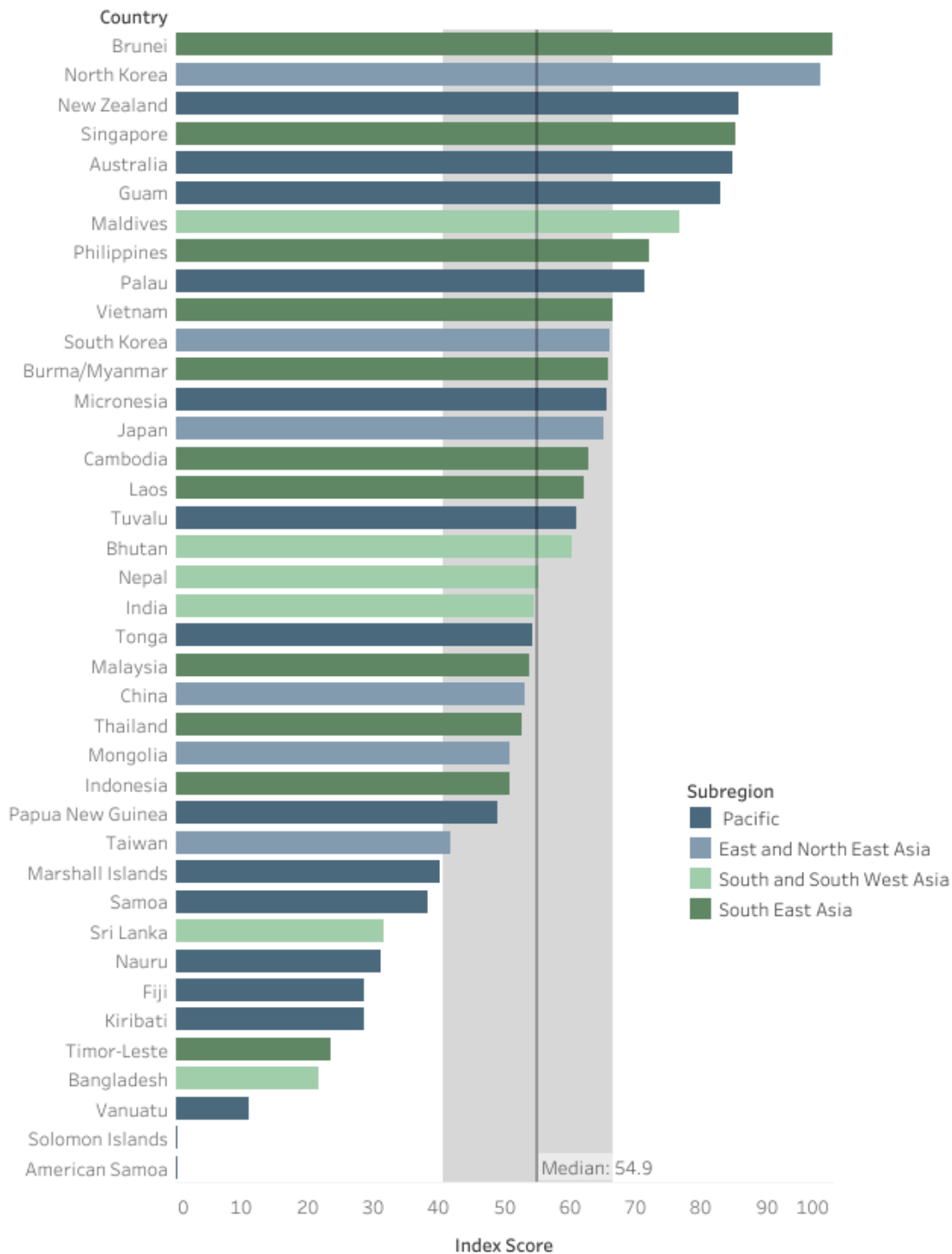


Figure 2. *Women's Wellbeing & Security Index* scaled from 0-100 based on score distribution across countries in the Asia-Pacific region. Index scores represent gender-based and intimate partner violence, social acceptance of LGBTQ people, adolescent fertility rate, child marriage rate, and unmet need for family planning.

In general, the Asia-Pacific region scores below the global average for gender-based security and reproductive autonomy (Appendix 1). Women living in small Pacific nations such as the Solomon Islands and Vanuatu experience disproportionately more gender-based violence than those in other subregions of the Asia-Pacific (Figure 2). In contrast, according to the data presented from these sources, Brunei and North Korea score among the highest in the world for women's security and reproductive autonomy.

Excluding New Zealand (86/100), Australia (85/100), and Guam (83/100), the Pacific is characterized by moderate degrees of women's wellbeing and security. With the marked exceptions of the Solomon Islands (0/100) and Vanuatu (11/100), the Pacific islands' scores range from 29/100 (Kiribati and Fiji) to Palau (71/100). South and Southwest Asian countries rank slightly higher with a subregional median of 55/100 consistent with the collective regional median for the entire Asia-Pacific dataset. Southeast Asia ranks highest of the subregions with a median of 63/100, but exhibits a wide range of values: Timor-Leste scores 24/100 while Brunei scores 100/100. Finally, East and Northeast Asian countries score around the middle (subregional median: 59/100) with North Korea (98/100) reportedly leading the subregion in the PDC's *Personal Security Inequality Index*.⁹⁹

In the context of this and other indices, it is essential to delve into the details behind the scores, particularly when anomalies arise. For instance, while East and Northeast Asian countries have a subregional median score of 59/100, North Korea stands out with a score of 98/100, suggesting it leads the subregion in terms of women's wellbeing and security. However, this score is derived from the PDC's global *Personal Security Inequality Index*—a composite index, which in North Korea's case, lacks data for one of its two subindices: the *Gender-Based Violence Security Sub-Index* (Table 1).

The absence of data for such a critical component raises questions about the reliability and completeness of the composite score. It is important to note that the missing data did not affect North Korea's overall score negatively, which could lead to misconceptions about the country's actual conditions regarding personal security and gender-based violence. This situation highlights the importance of transparency in data reporting and the need for a clear indication when components of a composite score are missing.

Low scores indicate significant challenges in the pursuit and achievement of gender equality and the guarantee of women's wellbeing and security relative to other countries within the Asia-Pacific region. For instance, low scores suggest a disproportionately high prevalence of gender-based and intimate partner violence, which not only has immediate physical and psychological impacts but also long-term health consequences. Exposure to these forms of abuse can lead to chronic health conditions and increased susceptibility to disease, and can hinder women's ability to respond quickly and effectively to climate-related disasters due to injury or psychological trauma. Low social acceptance of LGBTQ people also indicates that individuals may be excluded from adequate healthcare and social support, particularly in times of health- and disaster-induced stress. This exclusion can fragment social networks, exacerbating health disparities and limiting the resilience and coping capacity of entire community groups.

High adolescent fertility rates can be downstream impacts of insufficient or incomprehensive sexual education and reproductive health services. Lack of adequate and appropriate services can result in higher maternal and infant mortality rates and often pose barriers to girls' access to education and economic opportunity, all of which further etch gender disparities into social norms. Similarly, child marriage often results in adolescent pregnancy which can disrupt or terminate a young woman's education, thereby limiting her options for independence and financial stability. Young mothers are also more likely to experience difficulties during childbirth and may not be emotionally equipped to handle post-traumatic stress or the demands of new motherhood. As such, child brides may be less capable of coping with health risks posed by disasters and environmental crises. Finally, an unmet need for family planning suggests lack of access to contraceptives and reproductive health services which translate to unplanned pregnancies and family sizes that exceed household capacity. This can put added pressure on finances, family members, and natural resources, hindering women's capacity to adapt to challenges posed by health and climate-related crises.

⁹⁹ "WPS Personal Security Inequality Index." Global Hazards Information Network (GHIN), Pacific Disaster Center, 20 Apr. 2021, ghin.pdc.org/ghin/catalog/search/resource/details.page?uuid=%7B9d9dd978-868b-47d6-9c82-13fc08c5f13d%7D.

The cumulative effect of a low score on this scale is symptomatic of social environments where women and LGBTQ individuals face systemic barriers to health, safety, and autonomy. As diversity is paramount in developing innovative approaches for climate change adaptation, these barriers not only affect individual wellbeing but also reduce the overall capacity of communities to adapt to and mitigate the impacts of climate change. Women are often primary caregivers with resource management responsibilities within the household, and as such play a critical role in community strength and stability. Therefore, improving index scores in this dimension is not only a matter of achieving gender equality but also a critical component of enhancing health security and climate resilience. Investing in gender-specific health services, education, and inclusive policies can help raise these scores, ultimately contributing to a more equitable and sustainable future.



Image Credit: US Navy Medicine

II. WOMEN'S HEALTH CARE ACCESS

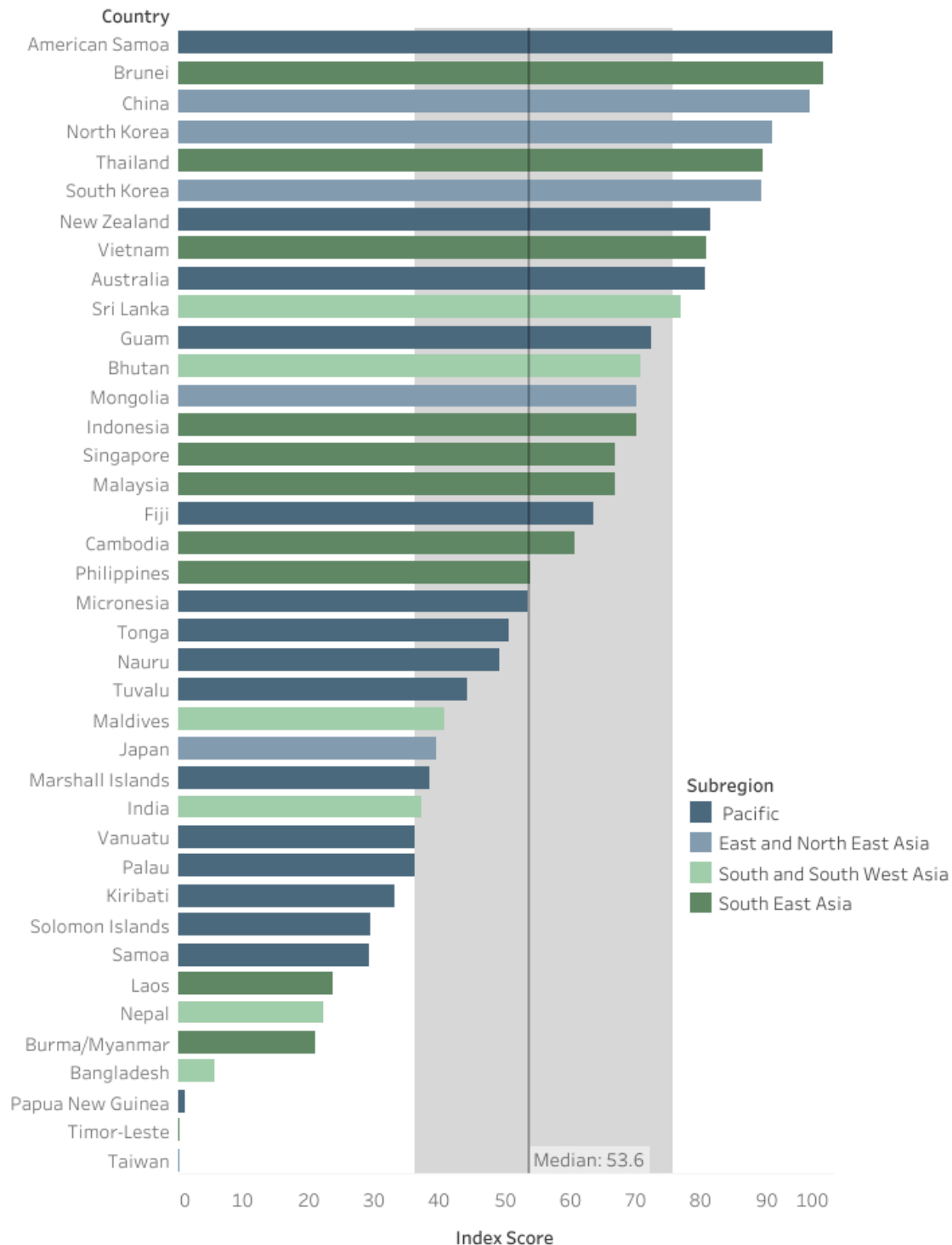


Figure 3. *Women's Health Care Access Index* scaled from 0-100 based on score distribution across countries in the Asia-Pacific region. Index scores represent births attended by skilled health staff, contraceptive prevalence, and pregnant women receiving prenatal care.

Women in the Asia-Pacific have above-average access to necessary sexual and reproductive health care. Even the lowest ranking countries (Timor-Leste, Papua New Guinea, and Bangladesh) score above the midpoint on a global scale (Appendix 2). American Samoa, Brunei, and China topped the global and regional charts with respect to women’s health care access (Figure 3).

Of the 4 subregions, the South and Southwest Asian subregion has the lowest median score (39/100). Bangladesh (5/100) scores among the lowest of all Asia-Pacific countries included, while Sri Lanka (77/100) and Bhutan (71/100) score above the collective regional median value of 54/100. Pacific island nations have a subregional median score of 47/100, with notable outliers including American Samoa (100/100) and Papua New Guinea (1/100). Southeast Asian scores are broadly distributed despite a subregional median score of 67/100, with Brunei (99/100) and Timor-Leste (0/100) on opposite sides of the spectrum. East and Northeast Asia is characterized by relatively high health care access scores (subregional median: 89/100), with exceptions of Japan (39/100) and Taiwan—the only country lacking representation in this dataset.

Low scores in this dimension reflect critical shortcomings and have profound implications for health security and climate change resilience. For instance, fewer births attended by skilled health professionals typically leads to higher risks of maternal and neonatal mortality. The ability to provide skilled birth assistance may be further compromised during health crises, natural disasters or resource scarcity, thus exacerbating these existing risks. Similarly, when fewer pregnant women receive prenatal care, as indicated by low scores in this dimension, likelihood of complications and adverse health outcomes increase for both mother and child. Climate change can intensify these health risks, as extreme weather events and environmental degradation can disrupt access to routine and lifesaving health services. Finally, low contraceptive prevalence can result in unplanned pregnancies, increasing population growth and pressure on natural resources which are already threatened by climate change.

In general, a low score in this dimension suggests that women face systemic barriers to accessing essential health services, which contributes to a cascading impact on health security. These barriers loom even larger in the face of climate change, which can further burden health service delivery and expand established health inequalities. Improving women’s health care access and empowerment is therefore essential for building sustainable and resilient communities capable of withstanding external threats like climate change. Investing in health infrastructure, comprehensive education, and inclusive policies will be key to raising low *Health Care Access Index* scores and ensuring a stronger, more equitable future.



Image Credit: Ted Eytan

III. ECONOMIC EQUALITY

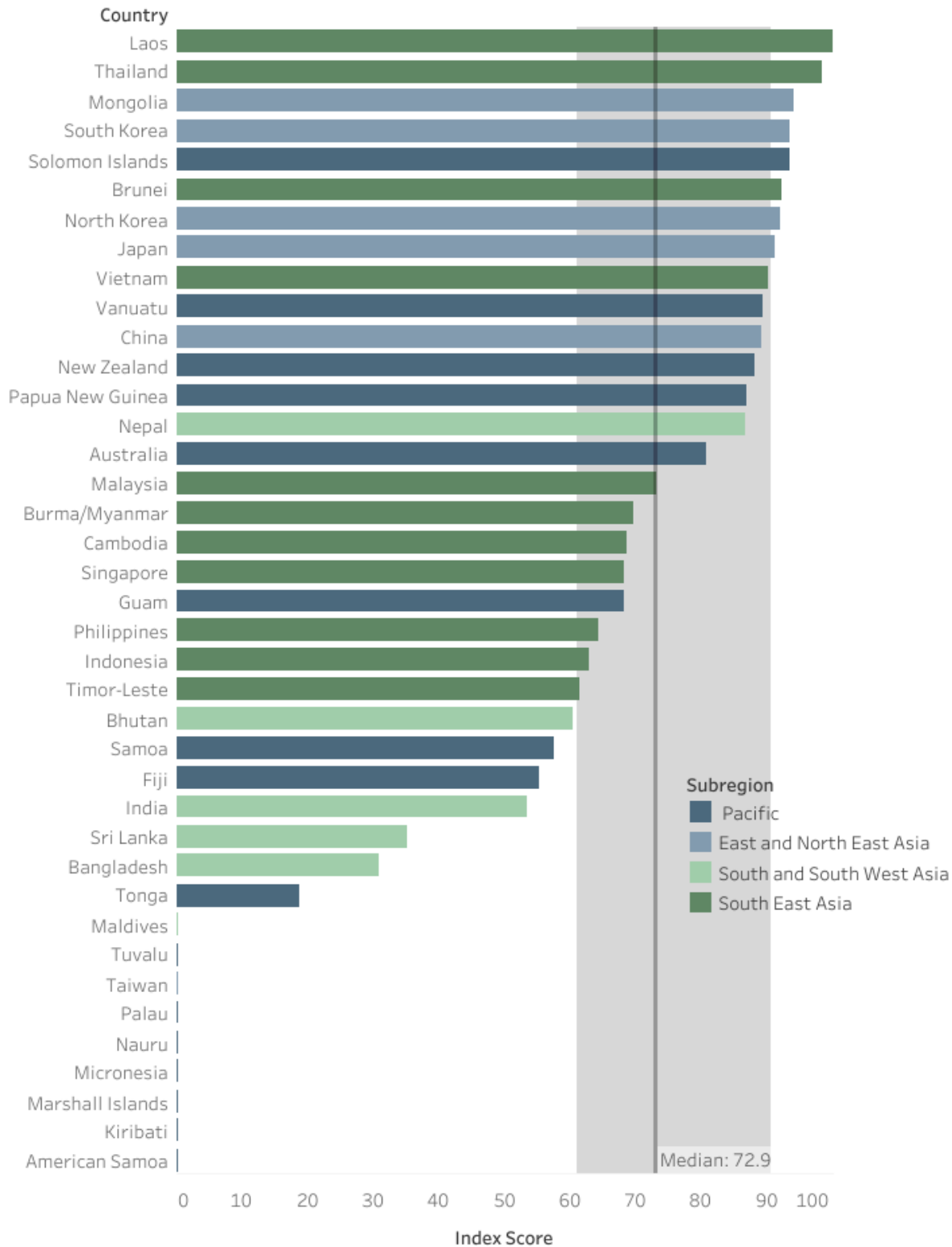


Figure 4. *Economic Equality Index* scaled from 0-100 based on score distribution across countries in the Asia-Pacific region. Index scores represent gendered labor force participation, and gendered rates of vulnerable employment and unemployment.

When compared to global figures, women in the Asia-Pacific comprise a respectable portion of the workforce (Appendix 3). However, there is considerable intra-regional disparity. For example, South and Southwest Asia has a subregional median score of 44/100 (compared to the collective regional median of 73/100), with marked differences

between Nepal (87/100) and the Maldives (0/100) (Figure 4). Southeast Asia’s median of 69/100 is representative of its constituent countries; most values are clustered around 60-70/100, with Laos and Thailand topping the list at 100/100 and 98/100, respectively. Seven of the Pacific island countries are missing data in this dataset, however the data that was included illustrates a wide range of women’s workforce participation: the subregional median value is 81, with scores ranging from 93/100 (Solomon Islands) to Tonga (19/100). Finally, East and Northeast Asia scores the highest with a subregional median of 92/100 and values ranging from 89/100 (China) to 94/100 (Mongolia).

Low scores in economic participation equality have strong implications for gendered health security. Women with less representation in safe, stable, and paid employment are likely to have lower income and no health insurance, and are therefore limited in their access to necessary health care services. Low economic equality can also impact the health of female breadwinners and their families, as low-quality calorie-dense foods are often more inexpensive than nutrient-rich, balanced diets. The ongoing stress and insecurity of vulnerable employment can further exacerbate anxiety and mental health issues with the potential to develop into physical and emotional manifestations of harm.

Low economic equality can also leave disadvantaged women and their families more susceptible and less resilient to the impacts of climate change. For example, women in unstable or unpaid jobs may lack the financial resources to invest in climate-resilient infrastructure or to rebound from climate-induced disasters. In addition, women with manual jobs may be more vulnerable to the immediate and cascading effects of climate shocks, as droughts and floods traditionally have greater and more severe impact on informal and agricultural work. Furthermore, with less representation in the economy, women’s perspectives are often marginalized or overlooked in policymaking processes, particularly those relating to climate change adaptation and mitigation strategies.

Low scores in particular highlight intersectional gendered disadvantages which compound the impacts of health challenges and climate vulnerabilities. This shared lens further underscores the need for targeted policies addressing women’s economic empowerment as a cornerstone for boosting health security and shoring up climate resilience. Ultimately, persistent economic inequality can have long-term, widespread consequences ranging from the expansion of existing health disparities to a stymied community coping capacity.

In general, low scores in this dimension indicate that women are disproportionately affected by health and climate insecurities. Addressing these issues requires a multifaceted approach that includes improving women’s access to stable and safe employment, ensuring their inclusion in health and climate policies, and recognizing the interconnected nature of these challenges.



Image Credit: Shutterstock

IV. SYSTEMIC GENDER EQUALITY

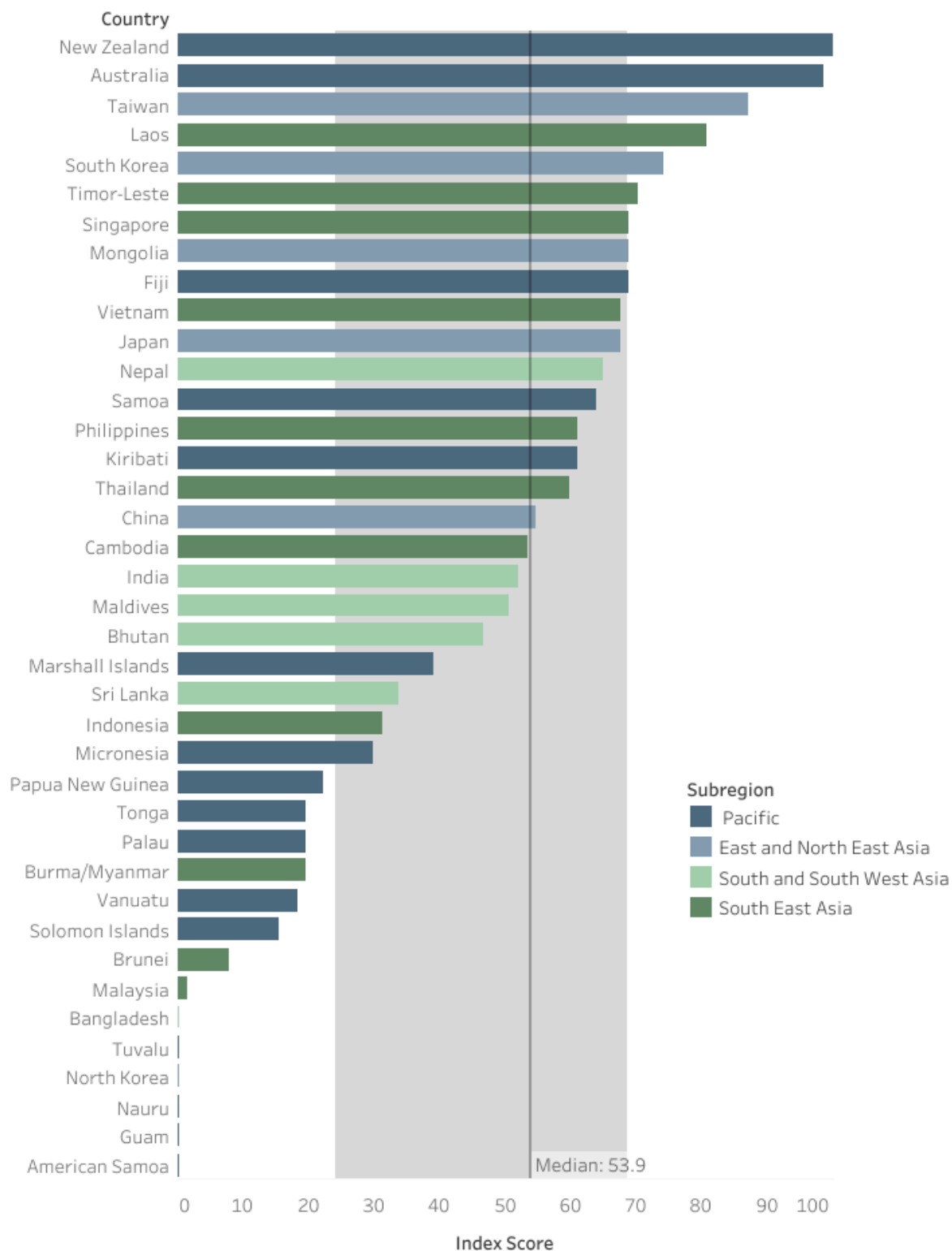


Figure 5. *Systemic Gender Equality Index* scaled from 0-100 based on score distribution across countries in the Asia-Pacific region. Index scores represent gendered dimensions of mobility, workplace, pay, marriage, parenthood, entrepreneurship, assets, and pension.

On a global scale, countries in the Asia-Pacific score at or above the median on the *Women, Business, and Law Index*, indicating that the region as a whole already possesses more gender-responsive legislation than other countries (Appendix 4). Within the Asia-Pacific, however, the Pacific subregion scores well below others with a subregional

median of 34/100 compared to the collective regional median of 54/100 (Figure 5). There is a notable absence of mid-range scores in the Pacific—countries either score exceedingly well (e.g., New Zealand and Australia) or quite poorly (e.g., a sub-20/100 cluster consisting of the Solomon Islands, Vanuatu, Palau, and Tonga). In contrast, South and Southwest Asia have a greater number of mid-level scores (subregional median: 49/100) with the exception of Bangladesh anchoring the PROGRESS Index at 0/100. Southeast Asia exhibits a bimodal distribution similar to that of the Pacific countries with a greater percentage of constituents scoring between 61-80 and Malaysia (1/100) and Brunei (8/100) at the bottom of the rankings. East and Northeast Asia score the highest of the 4 subregions (subregional median: 69/100) with the notable exclusion of North Korea for which data was not available.

Low scores in this dimension suggest significant gender disparities in legal rights, which have far-reaching implications for health security. For example, women in low-scoring countries may face legal barriers that limit their access to healthcare and essential services, exacerbating health vulnerabilities. Without adequate legal frameworks and protection, women may also encounter workplace discrimination and harassment, which can cause acute or chronic mental and physical health issues and impact their ability to work effectively. Furthermore, restrictions on assets and pensions can force women into economic dependency, inhibiting their ability to seek care or make health-related decisions in their own best interests.

Low scores indicating legal limitations can also hinder women’s capacity to respond and recover from climate-induced disasters. Legal mobility restrictions and inequities in property rights can hinder women’s ability to relocate, seek refuge, or invest in climate-resilient land or housing. Further barriers in financing and entrepreneurship due to gender-biased laws can prevent women from engaging meaningfully in sustainable practices and contributing to climate resilience.

Fundamentally, low scores in this dimension reflect intersectional barriers that amplify women’s risks with respect to health and climate challenges. Societal wellbeing is compromised when women face legal restrictions and systemic barriers, which ultimately impair collective health security and climate change mitigation efforts. Therefore, there is a clear need for inclusive legislation that not only empowers women, but also ensures their full participation in all aspects of society. Addressing existing disparities requires comprehensive legal reforms that prioritize gender equality, thereby enhancing the overall health and environmental stability of Asia-Pacific societies.



Image Credit: Naizul Islam

V. CLIMATE RESILIENCE

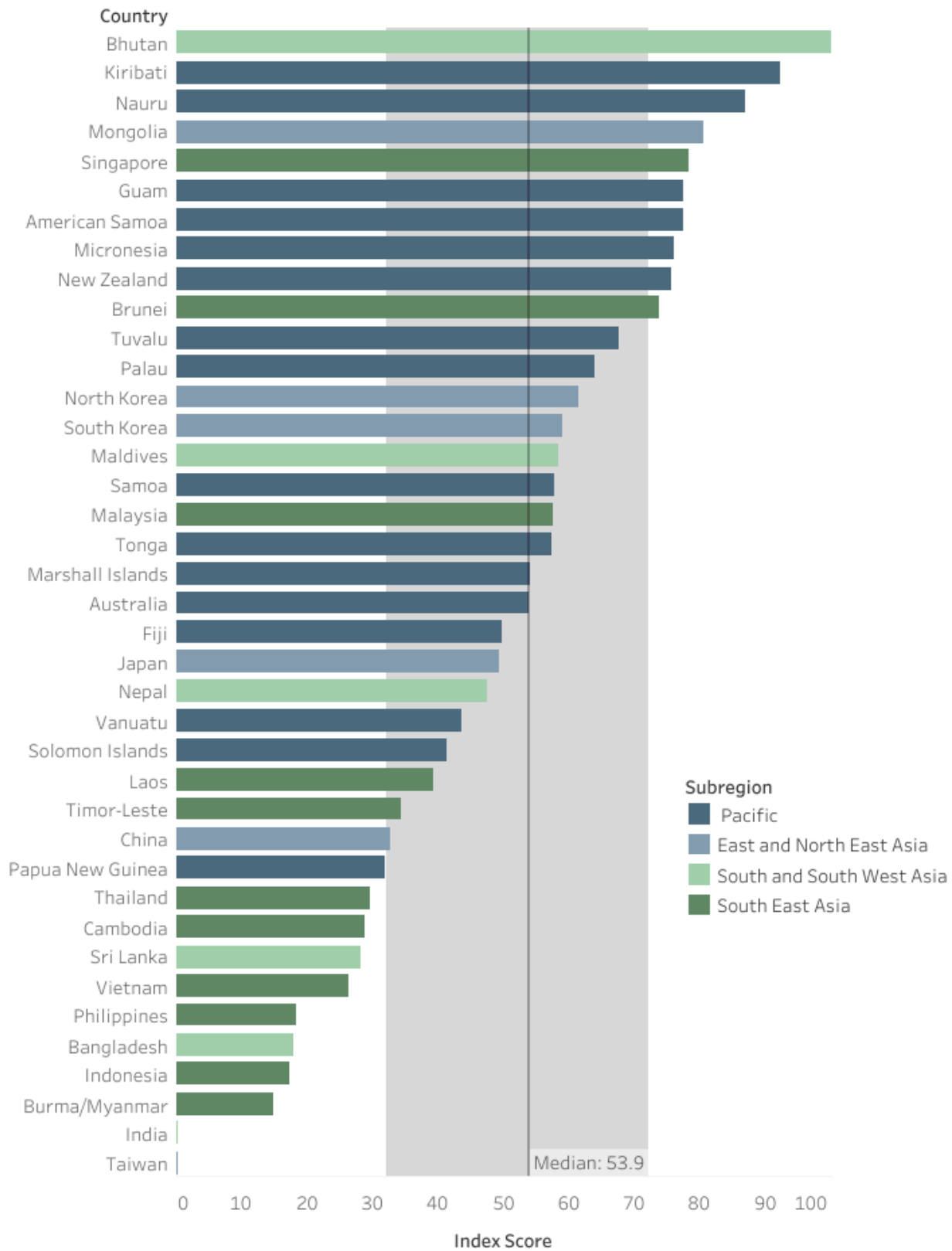


Figure 6. *Climate Resilience Index* scaled from 0-100 based on score distribution across countries in the Asia-Pacific region. Index scores represent the relative likelihood of a natural hazard occurring and causing significant disruption.

As a whole, the Asia-Pacific region ranks moderately, albeit with a wide range, on the global climate risk index (Appendix 5). Southeast Asia and South/Southwest Asia have subregional medians below the collective regional median of 54/100 (Figure 6). Southeast Asia has a subregional median of 30/100 with Myanmar, Indonesia, and the Philippines scoring below 20/100 and Singapore (78/100) and Brunei (74/100) raising the subregional median. South and Southwest Asia is characterized by primarily mid-range to low scores (subregional median: 38/100) with the marked exception of Bhutan (100/100). East and Northeast Asia is characterized by moderate scores (subregional median: 59/100) ranging from 33/100 (China) to 80/100 (Mongolia), with the exclusion of Taiwan for which no data was available. The Pacific subregion ranks highest overall (subregional median: 61/100) with 75% of these countries scoring at or above the Asia-Pacific region's collective median. Notably, the highest-scoring countries in this subregion are the small islands of Kiribati (92/100) and Nauru (87/100), indicating climate change resilience on par with that of Bhutan.

Low scores in this dimension reflect a high likelihood of natural hazards causing significant disruption, with profound implications for health security. Aside from direct and indirect health risks, frequent or severe natural hazards can overwhelm healthcare infrastructure, reducing the capacity to provide essential services, especially to vulnerable populations. Furthermore, natural disasters can disrupt the delivery of health services, impeding access to care and medication, which is critical for populations with ongoing health needs.

In addition, a low score also suggests that a country's socio-economic and environmental factors are not robust enough to withstand the impacts of climate change. Indeed, a lack of adequately resilient infrastructure can lead to more significant damage and longer recovery times following natural hazards. The aftermath of natural hazards can have a cascading impact on the economy, affecting livelihoods and exacerbating poverty, which in turn can adversely affect health outcomes.

Women and marginalized groups often bear a disproportionate burden during and after natural disasters due to existing socio-economic inequalities and institutional barriers. Effectively addressing the root causes of low index scores requires integrated approaches that consider health, gender, and climate resilience in policy-making and disaster management. Without swift and decisive action, the long-term consequences of low *Climate Resilience Index* scores may include a cycle of poverty, poor health outcomes, and reduced capacity to cope with future climate-related hazards.

Above all, low scores in this dimension signify an imminent need for targeted interventions to bolster health and climate security, with particular attention to addressing the gendered impacts of natural hazards. Enhancing climate resilience is not only about reducing the risk of hazards, but also about building stronger, more equitable systems that protect and empower all segments of the population, particularly the most vulnerable.



Image Credit: Biswaranjan Rout

VI. INFRASTRUCTURE CAPACITY

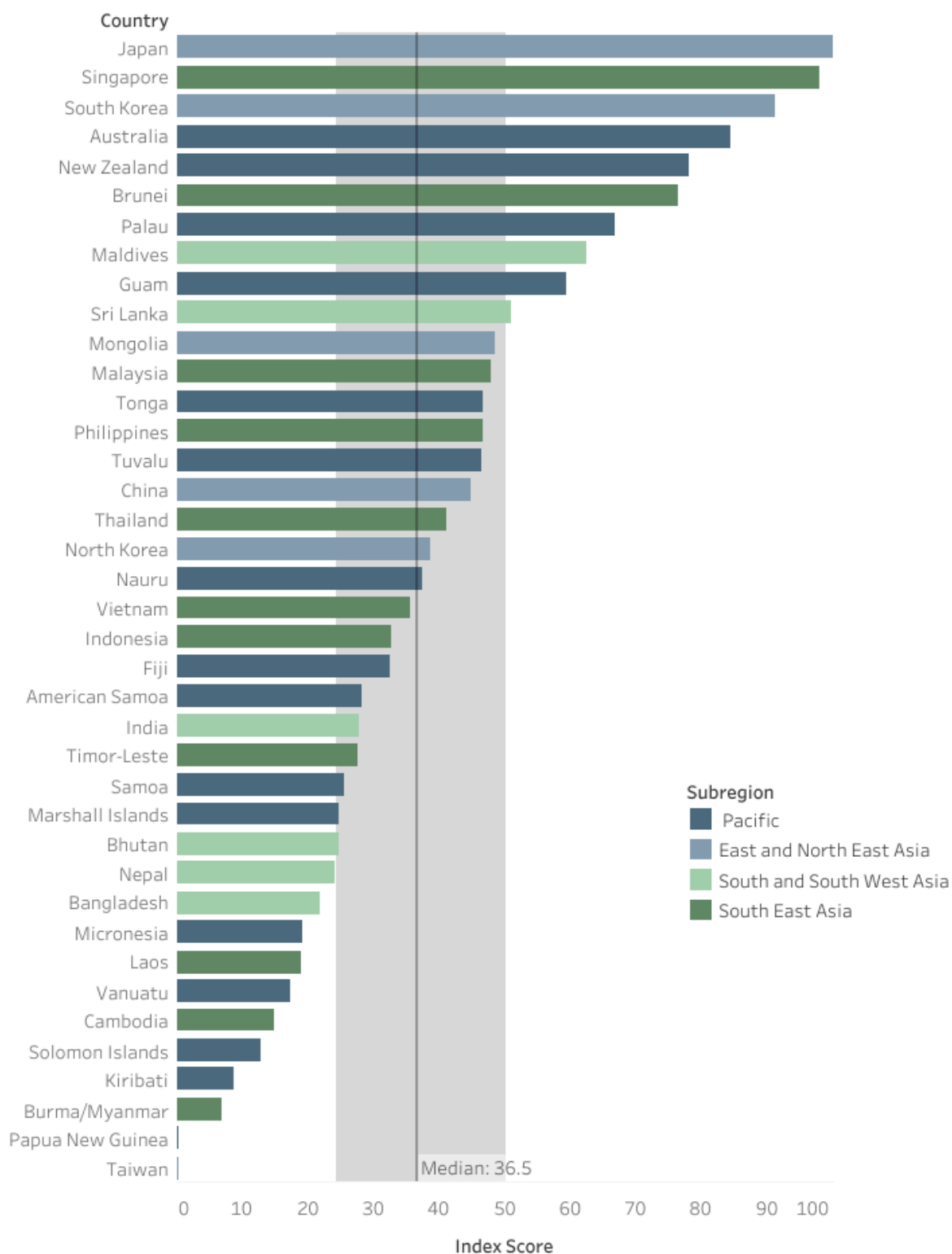


Figure 7. *Infrastructure Capacity Index* scaled from 0-100 based on score distribution across countries in the Asia-Pacific region. Index scores represent fixed phone and/or mobile phone access, secure internet server access, airport and road/railroad density, hospital bed density, and number of nurses, midwives, and physicians.

Countries in the Asia-Pacific region score moderately, albeit across a wide range, when their infrastructure capacity is assessed in a global context (Appendix 6). However, when country scores are scaled within the region, low scores dominate the distribution curve (Figure 7). In fact, three of the four subregions had median values at or below the

collective regional median of 36/100. More specifically, the majority of countries in the South/Southwest Asia and Pacific subregions score below 30/100. South and Southwest Asia (median: 26/100) have the highest subregional concentration of low scores: Bangladesh (22/100), Nepal (24/100), Bhutan (25/100), and India (28/100). The Pacific is characterized by a similar cluster of low scores, but with more representation in moderate to higher ranges as well (e.g., Australia: 84/100). In Southeast Asia, 82% of countries score below 50/100, with Brunei (76/100) and Singapore (98/100) raising the subregion's median score to be on par with the collective regional median: 36/100. East and Northeast Asia (subregional median: 49/100) is the only subregion to score above the collective regional median; however, this is primarily due to Japan (100/100) and South Korea (91/100) offsetting North Korea, China, and Mongolia's sub-50 scores. As with the *Climate Resilience Index*, insufficient data was available to include Taiwan in this analysis.

**Poor Infrastructure Can
Impede Evacuation
If the disaster doesn't
kill you, the traffic [in
Manila] will.**

~Rene Gandeza Jr., Office of the
Presidential Adviser on the Peace
Process

Low scores in this dimension have implications that existing healthcare infrastructure is inadequate to meet current demand, which would likely increase during climate-induced and health crises. Furthermore, insufficient access to phones and secure internet can hinder emergency response and health information dissemination, which is crucial during natural disasters or pandemics. Transportation challenges such as sparse airport, road, and railroad density may impede the timely delivery of medical aid and the evacuation of affected populations in the event of a climate disaster.

On a broader scale, infrastructure deficits can result in economic losses, as damaged roads or communication systems require costly repairs and hinder trade and mobility. Low infrastructure capacity can exacerbate the unique challenges that women face during climate and health disasters, such as increased domestic burdens or exposure to health risks. For effective and holistic planning that meets community needs, climate and health security strategies must incorporate gender-sensitive infrastructure development to ensure equitable access and resilience.

Low scores in this dimension highlight the need for investments in infrastructure that supports both health security and climate resilience. A gender perspective is particularly important, as equitable infrastructure can mitigate the disproportionate impacts of climate change on women and other vulnerable groups. Strengthening infrastructure capacity is thus a critical step towards building resilient communities that can withstand and rebound from the health challenges posed by climate-related stressors.

VII. POPULATION STABILITY

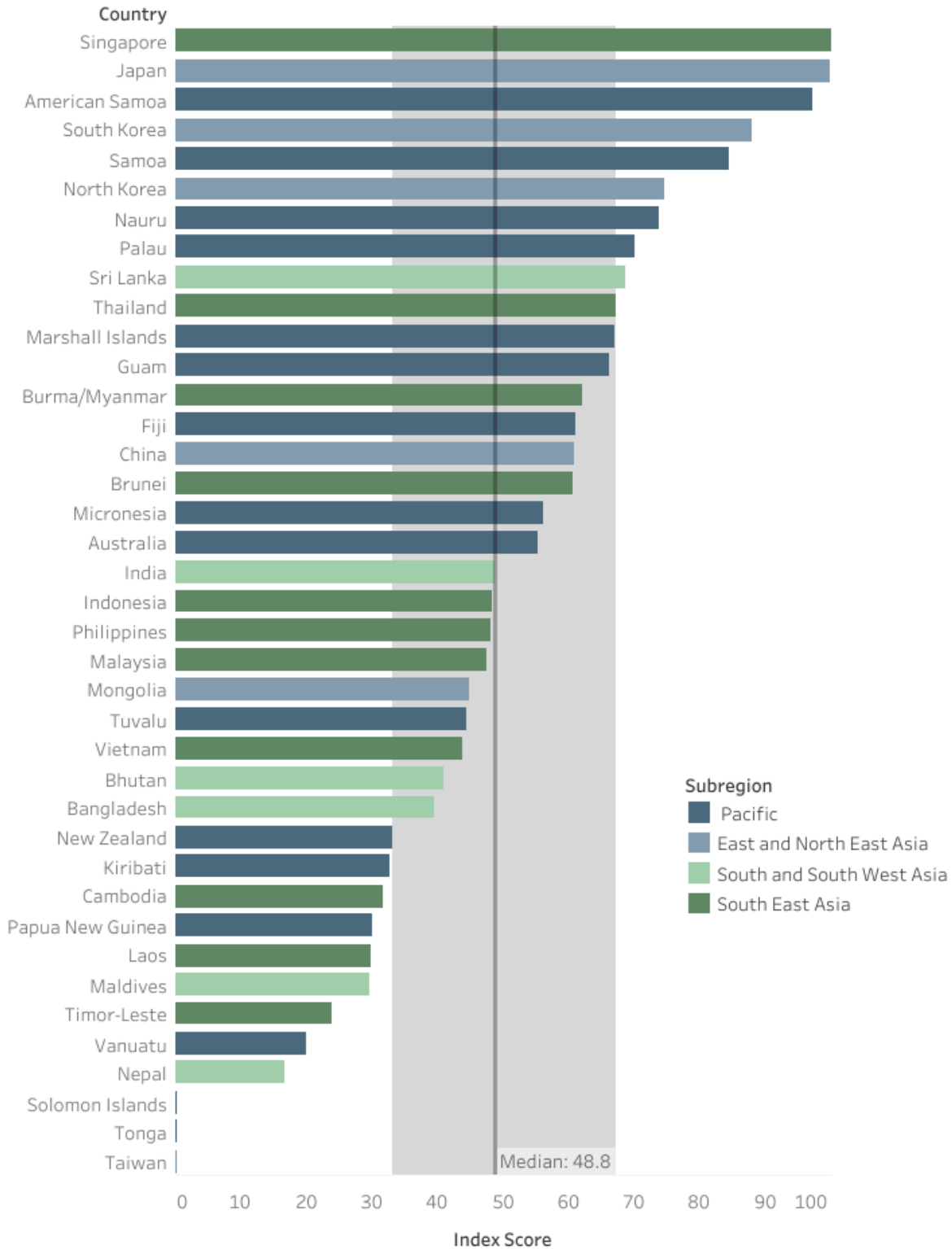


Figure 8. *Population Stability Index* scaled from 0-100 based on score distribution across countries in the Asia-Pacific region. Index scores represent average urban and overall population changes.

Similar to the *Climate Resilience and Infrastructure Capacity Indices*, population stability scores in the Asia-Pacific region rank moderately when examined in a global context (Appendix 7). This extends to intraregional analysis; approximately 70% of countries score between 30 and 70/100 with a collective regional median of 54/100 (Figure 8). South and Southwest Asia can be considered the least stable with low scores such as Nepal (17/100), the Maldives (30/100), Bangladesh (40/100), and Bhutan (41/100) dominating this subregion's score distribution (subregional median: 40/100). Southeast Asia has a subregional median of 48/100 with scores spanning a range from 24 (Timor-Leste) to Singapore (100/100). However, the vast majority of Southeast Asian countries's scores are consistent with the Asia-Pacific region's overarching pattern: between 30 and 70/100. Similarly, the majority of scores within the Pacific subregion are distributed in the mid to moderately high range (subregional median: 56/100); the Solomon Islands (0/100) and American Samoa (97/100) constitute the low and high ends of the range, respectively. Tonga was excluded due to lack of available data. East and Northeast Asian countries' scores indicate relatively more stable populations than those in other subregions, but still exhibited a considerable range of 45/100 (Mongolia) to 100/100 (Japan).

Low population stability scores are often reflective of high urbanization rates and rapid population growth, both of which can strain healthcare systems and increase vulnerability to health crises. These rapid population changes can also result in uneven resource distribution, with women and children potentially receiving less access to social support and healthcare services. In addition, high population density in urban areas can facilitate the spread of diseases, disproportionately affecting women who are often caregivers or health care providers.

Through an environmental lens, population pressures can exacerbate environmental degradation, undermining the land's ability to support its inhabitants and subsequently leading to health issues related to poor water and air quality. Changes in population can further impact agricultural productivity and food distribution, affecting nutritional health, which is particularly vital for pregnant and breastfeeding women. Long-term changes in climate and land characteristics can also drive displacement, with low population stability indicating a higher risk of migration due to environmental factors. As mentioned earlier, women face unique challenges during displacement, including an increased risk of gender-based violence.

When health and climate impacts of population instability are assessed in parallel, gendered health disadvantages become clearer: women may experience greater health disparities in regions with low population stability during events like heat waves or floods. As such, policymakers must consider the gendered impacts of population instability when designing health security and climate resilience strategies. Persistent population instability can lead to long-term health consequences for women and children, who are often the most affected by inadequate healthcare and climate disasters.

In general, low scores in the *Population Stability Index* signal potential challenges in maintaining health security and climate resilience. These challenges are often magnified for women due to their social roles and biological needs. Addressing population stability through a gendered lens is essential for creating inclusive policies that enhance the health and well-being of all community members in the face of climate change.



Image Credit: Jonathan McIntosh

VIII. FOOD SECURITY

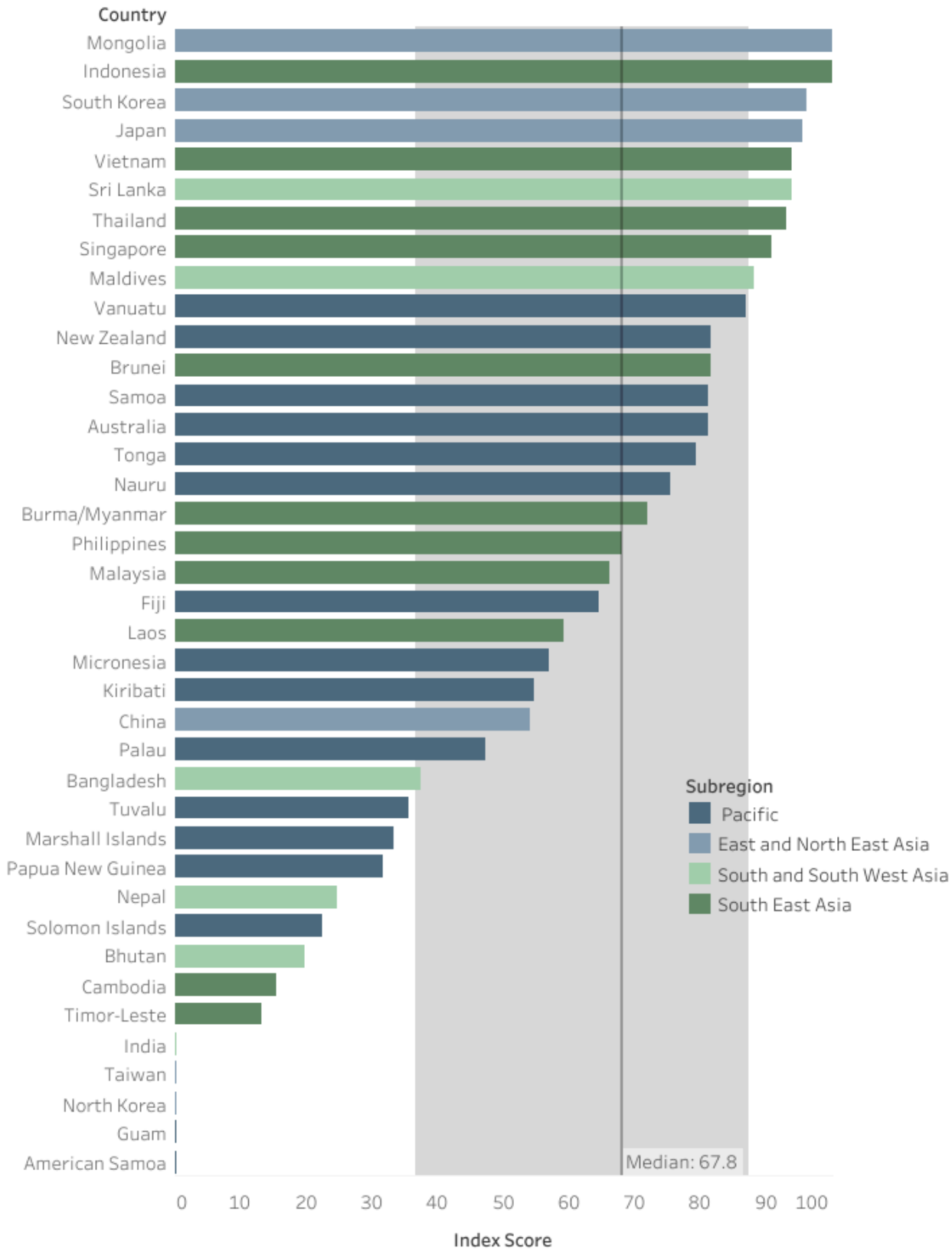


Figure 9. *Food Security Index* scaled from 0-100 based on score distribution across countries in the Asia-Pacific region. Index scores represent the percentage of the population experiencing severe food insecurity averaged over the prior three years.

As a whole, less than 30% of represented Asia-Pacific countries have scores indicating that more than 10% of the total population experienced severe food insecurity. The median for all countries in the region is 68/100 (Appendix 8). South and Southwest Asia is the only subregion with a median score well below the collective regional median: 31/100 (Figure 9). India (0/100) appears to have the lowest food security in the Asia-Pacific, scoring far below the next-ranked country (Bhutan, 20/100). There is also a distinct absence of scores between 40 and 60. All Pacific countries score at least above

20/100 (subregional median: 61/100); less than 15% of the population experience food insecurity, although American Samoa and Guam were missing from the dataset. More than one third of Southeast Asian countries have scores above 90 and a subregional median of 72/100, despite Timor-Leste and Cambodia at the low end of the spectrum with scores of 13/100 and 16/100, respectively. Finally, East and Northeast Asia exhibit the least prevalence of food insecurity (subregional median: 96/100). However, the data suggests inequity and understudy in this subregion; despite the high scores of neighboring countries, China scored 54/100 and no data was available for North Korea and Taiwan.

Low food security scores have implications for nutritional deficiencies which can disproportionately affect women and children with more stringent nutritional needs. The stress of food insecurity can have psychological effects, leading to increased rates of anxiety and depression, particularly among women who bear the responsibility of feeding their families. As women often play a key role in agriculture and household resource allocation, they are often forced to make difficult decisions, often at the expense of their own nutritional needs.

In the aftermath of climate-related disasters, food-insecure populations struggle to recover. Women, in particular, may face challenges in accessing aid and rebuilding their livelihoods due to systemic barriers discussed earlier. As a result, women in food-insecure regions may be forced to engage in riskier livelihood strategies, which can have negative implications for their health and safety. Chronic food insecurity can lead to long-term health problems, such as stunted growth in children and increased susceptibility to diseases, with women and girls often being the most affected. Therefore, policymakers must integrate gender considerations into food security and climate change adaptation strategies.

Bridging Science and Tradition for Food Security
We need to bring in scientists to bridge the gap between scientific and traditional practices to empower women to protect their food security during disasters.

~Flora Vano, ActionAid, Vanuatu



CONSIDERATIONS

While we intended to encapsulate the multifaceted realities of the Asia-Pacific region, we encountered inherent limitations that must be acknowledged. The rescaled index aimed to be a straightforward tool, yet the availability and quality of data imposed significant constraints. Many high-quality data sources omit information for some relevant countries, often prioritizing larger, economically significant, or geographically accessible nations, while smaller or more remote nations, such as those in the Pacific, are overlooked.

This underrepresentation of certain countries introduces potential biases and inequities into the overall index, which could skew regional insights. Despite our best efforts to select comprehensive data sources, the issue persisted. To preserve the integrity of the data for objective analysis, we refrained from imputing missing values. Instead, we identified countries with incomplete data during discussions and excluded them from dispersion calculations to prevent atypical outcomes.

Moreover, some unexpected results highlight the complexities of interpreting such indices. One notable example is the case of North Korea's extremely high regional ranking in the women's wellbeing and security dimension (Figure 2). The data for this dimension is a global composite index derived from two subindices: the *Gender-Based Violence Security Index* and the *Reproductive Autonomy Security Index*. Upon closer examination of the source datasets, it becomes clear that North Korea is missing data for the *Gender-Based Violence Security Index*, which is composed of intimate partner violence prevalence and social acceptance of LGBTQ people. This absence is a critical caveat to North Korea's supposedly high index score; without the gender-based violence data, the composite index may not fully capture the true state of women's wellbeing and security in North Korea. While the high ranking suggests favorable conditions, the incomplete data necessitates a cautious interpretation. In future studies, scores and rankings may be systematically reduced based upon missing data in subindices or constituent indicators; however, clear methodology must be established to ensure consistency.

The caveats discussed underscore the importance of a nuanced approach to regional analyses. Recognizing and proactively addressing data gaps allows for a more accurate and equitable assessment of the complexities within the Asia-Pacific region. Vigilance is imperative to ensure that conclusions are informed by a comprehensive understanding of the data—including the implications of missing components. The example of North Korea serves as a strong reminder of the intricacies involved in repurposing, rescaling, and interpreting indices that purport to reflect social and economic wellbeing.



RECOMMENDATIONS FOR FUTURE WORK

Future studies are needed to foster a more inclusive approach to data collection in the Asia-Pacific. Collaboration with local institutions and grassroots initiatives can enhance access to existing information that may not be published or readily available. While integrating data from sources with different levels of thoroughness presents a risk of inconsistency, it is crucial to recognize the value of incorporating diverse, localized insights. Excluding these sources due to their varying rigor could lead to an incomplete understanding of regional nuances. Therefore, it is important to balance the need for rigorous data with the richness of local knowledge to provide a more comprehensive and equitable analysis.

A robust scaling methodology allows for the PROGRESS Index to be replicated and expanded for future projects. Robust scaling is a critical component of constructing composite indices which aggregate diverse indicators with varying scales and units; this methodology minimizes the risk of a single outlier dominating the overall score. As the PROGRESS Index is further developed, maintaining this model will provide a more balanced view of the region by accounting for the nuances that impact the Women, Peace and Security agenda from one country to another.

Dimensions were intentionally unweighted for this project. This ensured that no single dimension disproportionately dominated the *PROGRESS Index for Gendered Health Security Amid Climate Change*, and allowed for a holistic view of each dimension's contribution to a country's overall health and climate security position. Given the PROGRESS Index's primary purpose as a conversation-starter for working groups, simplicity and transparency were paramount in its design. By excluding weights entirely, the *PROGRESS Index for Gendered Health Security Amid Climate Change* is an objective tool around which productive discussions could be held.

However, weighting may be justified in future iterations of this project. In some contexts, certain indicators may be more critical than others, warranting emphasis on specific dimensions. When at all possible, data-driven methods such as regression analysis and factor analysis are encouraged to determine optimal weights. Subject matter experts and knowledgeable stakeholders should also be encouraged to express judgment on the value of specific indicators to validate the PROGRESS Index's alignment with real-world priorities.

ASIA-PACIFIC HEALTH AND CLIMATE SECURITY PREPAREDNESS AND RESPONSE

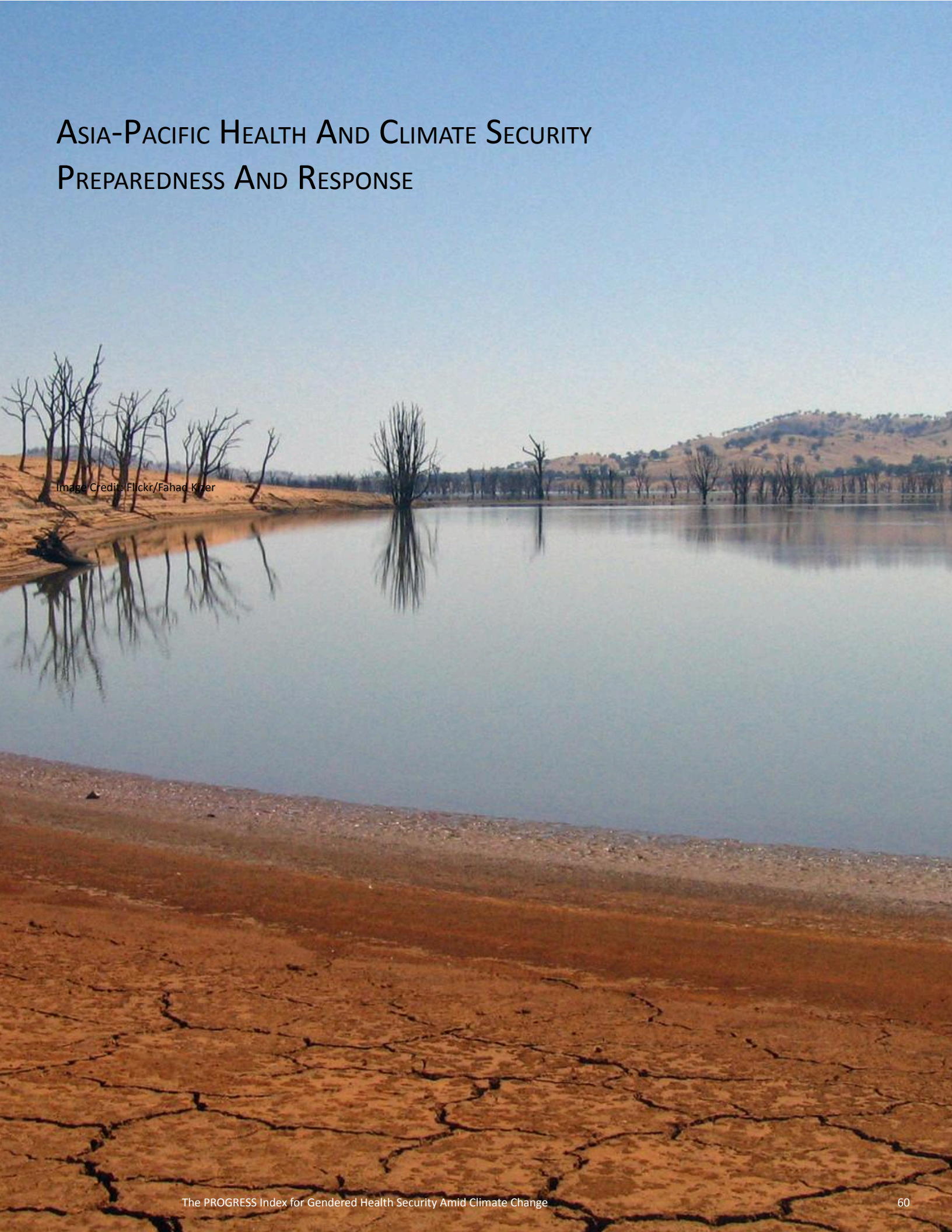
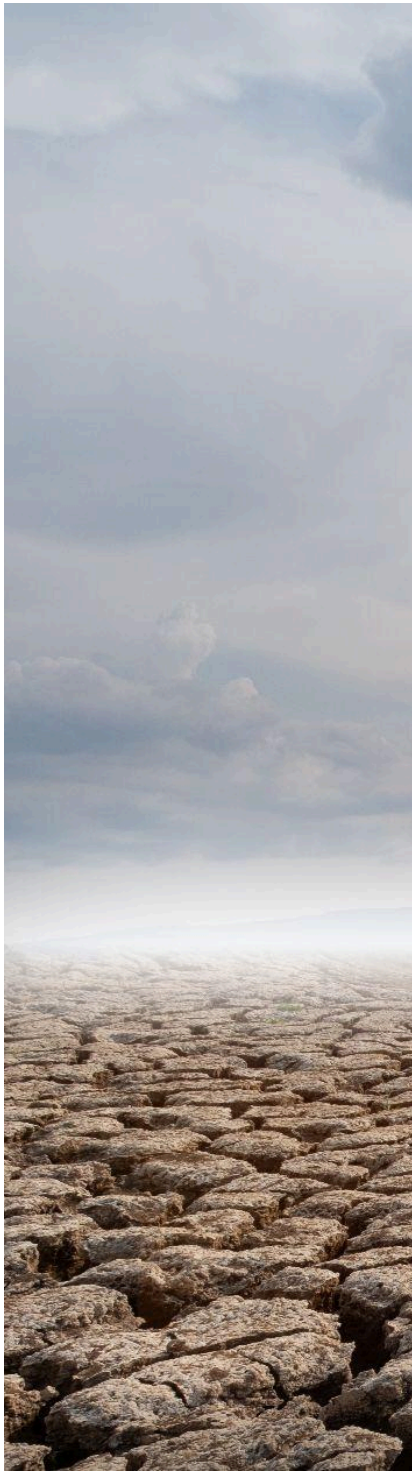


Image Credit: Flickr/Fahad Kher



The Asia-Pacific region stands as one of the most susceptible areas to the adverse effects of climate change, a reality that poses significant risks to its diverse ecosystems, human settlements, and overall security. Recognizing this, nations within the region have taken commendable steps by incorporating key components such as agricultural and food security, public health, water resource management, and ecosystem protection into their national climate action plans. Notably, countries like Fiji, Thailand, and Vanuatu have underscored the critical role of public health in their strategies, acknowledging it as a pivotal aspect of climate resilience.

However, despite these proactive measures, there remains a substantial gap between current efforts and the ideal robust response needed to combat climate change effectively. A glaring issue is the outdated nature of some national plans, with the last revisions dating back to 2011. This outdated information hinders the ability to address contemporary challenges. Furthermore, the practical implementation of these plans faces hurdles such as insufficient data, limited resources, inadequate technical capacity, and suboptimal community engagement.

Despite these hurdles, military and security sectors in the Asia-Pacific region are increasingly recognizing climate change as a critical national security issue. This acknowledgment is driving nations to reassess and strengthen their strategies to address the multifaceted threats posed by climate change.

Fiji is among the most progressive in the region, with the Fijian Defence Ministry declaring climate change as the most significant threat to the Pacific, even surpassing traditional military conflict.¹⁰⁰ The existential threat posed by climate change has led Fiji to emphasize the need for comprehensive action to combat its effects, which include severe cyclones and flooding that have displaced thousands and caused economic devastation.¹⁰¹

Thailand's military leadership also acknowledges the impact of climate change on security and geopolitical stability. Senior military delegates from Thailand and other Indo-Pacific countries have participated in seminars to discuss the effects of climate change on security, emphasizing the need for improved disaster-response capabilities.¹⁰² These talks have highlighted the need for improved disaster-response capabilities and the recognition of climate change as a factor that reshapes security challenges across the region. Additionally, Thailand's chairmanship of ASEAN in 2019 yielded a commitment to address non-traditional and transnational security threats, including those posed by climate change.¹⁰³

¹⁰⁰ "Climate Change a Bigger Threat than War, Fiji Tells Security Summit." *BBC News*, BBC, 12 June 2022, www.bbc.com/news/world-asia-61774473.

¹⁰¹ *Ibid.*

¹⁰² Leadingham, Jacob. "Military Leaders Discuss Climate Change's Impact on Security." *U.S. Army*, 2 Mar. 2024, www.army.mil/article/274195/military_leaders_discuss_climate_changes_impact_on_security.

¹⁰³ Chen, Christopher. *IP21009: Greening Security: The Military as a Climate Game Changer*, Nanyang Technological University - Singapore, S. Rajaratnam School of International Studies, 27 Oct. 2021, www.rsis.edu.sg/rsis-publication/idss/ip21009-greening-security-the-military-as-a-climate-game-changer/.

The Philippines views climate change as a strategic adversary, with the military's humanitarian assistance and disaster response (HADR) capabilities being crucial in addressing climate-related disasters. The country's military modernization programs consider the security issues around migration and displacement due to climate change, reflecting its impact on national security strategy and doctrine.^{104 105} The nation has incorporated extensive gender considerations into its national climate action plan, recognizing the disproportionate impact of climate change on women and girls.

Vanuatu's Prime Minister has identified climate change as the single greatest threat to regional security with calls for comprehensive strategies to address environmental security challenges.¹⁰⁶ In pursuit of this, the nation has become a leader in geohazard monitoring and disaster risk reduction, with the support of the World Bank, to enhance resilience against the increasing frequency of cyclones and other climate-related disasters.¹⁰⁷

Vietnam's Ministry of National Defence has expressed concerns over climate change, natural disasters, and epidemics as contributing factors to conflicts, particularly in Southeast Asia. The country is framing its defense concerns around the broader security implications of climate change, indicating its significance in national security considerations.¹⁰⁸

Indonesia's Ministry of Defence has recognized climate change as a pressing national security concern. The country's national security strategy and doctrine are adapting to include climate change as a factor in joint, military-military, and military-civilian operations.¹⁰⁹

Papua New Guinea Papua New Guinea (PNG) faces internal security and stability challenges exacerbated by climate change, such as environmental degradation, biodiversity loss, and gender-based violence. The U.S. Strategy to Prevent Conflict and Promote Stability in PNG highlights the deleterious effects of climate change on the country's stability and the importance of addressing these challenges.¹¹⁰

The conclusion drawn from these developments is clear: the Asia-Pacific region's response to climate change is pivotal for its security. There is an urgent need for updates to national plans, improved implementation mechanisms, and the integration of gender perspectives to enhance resilience and response capabilities. The future of the region's climate response hinges on its ability to adapt, innovate, and collaborate toward a sustainable and equitable future for all its inhabitants. The collective efforts of these countries will be crucial in shaping a resilient Asia-Pacific region in the face of climate change.

¹⁰⁴ Payumo, Mark. "Climate Change as a Strategic Adversary: The Philippine Military's Peaceful Rise." *Diplomatic Courier*, 23 Jan. 2019, <https://www.diplomaticcourier.com/posts/climate-change-as-a-strategic-adversary-the-philippine-militarys-peaceful-rise>.

¹⁰⁵ Bollettino, Vincenzo, and Lea Ivy Manzanero. "Climate Change and Civil-Military Coordination in the Philippines: How climate change disasters will impact aid delivery in areas affected by conflict." *Climate, Disaster and Development Journal* 5.1 (2022).

¹⁰⁶ Bule, Hilaire. "Vanuatu PM: Climate Change is Greatest Threat to Regional Security." *Radio New Zealand*, 7 June 2023, <https://www.rnz.co.nz/international/pacific-news/491498/vanuatu-pm-climate-change-is-greatest-threat-to-regional-security>.

¹⁰⁷ "Inside Vanuatu's Resilience Revolution: A Blueprint for Small Island States." *World Bank*, World Bank Group, 23 May 2024, www.worldbank.org/en/news/feature/2024/05/22/inside-vanuatu-s-resilience-revolution-a-blueprint-for-small-island-states.

¹⁰⁸ Chi, Vo Dao. "The Climate-Security Nexus in Vietnam: Effect on the Pathway to Sustainable Development." *Climate Security in the Anthropocene: Exploring the Approaches of United Nations Security Council Member-States*. Cham: Springer International Publishing, 2023. 347-366.

¹⁰⁹ Fetzek, Shiloh. "Building Partnerships for Climate Security - US Strategy in the Indo-Pacific." *International Institute for Strategic Studies*, 11 Aug. 2021, <https://www.iiss.org/online-analysis/online-analysis/2021/08/climate-security-us-indo-pacific/>.

¹¹⁰ "The U.S. Strategy to Prevent Conflict and Promote Stability 10-Year Plan for Papua New Guinea - 2022-2032." *U.S. Department of State*, 22 Mar. 2024, <https://www.state.gov/wp-content/uploads/2024/03/The-U.S.-Strategy-to-Prevent-Conflict-and-Promote-Stability-10-Year-Plan-for-Papua-New-Guinea-Accessible-3.22.2024.pdf>.

In the context of these challenges, women and girls emerge as particularly vulnerable groups, bearing the brunt of climate change impacts, including food insecurity, violence, and limited access to health and communication services. The Philippines has made significant strides by integrating gender considerations extensively into its national climate action plan. Other nations need to similarly prioritize gender-sensitive approaches.

In general, while the Asia-Pacific region has made notable progress in formulating climate action strategies, there is an urgent need for updates, improved implementation mechanisms, and the integration of gender perspectives. By addressing these areas, the region can strengthen its resilience and position itself more effectively in the global fight against climate change. The future of the Asia-Pacific's climate response hinges on its ability to adapt, innovate, and collaborate toward a sustainable and equitable future for all its inhabitants.



Image Credit: Bryan Denton

CONCLUSIONS AND RECOMMENDATIONS

Image Credit: NASA Goddard

CONCLUSIONS

Research indicates that health and climate change impacts are not gender-neutral. Women, particularly in the Asia-Pacific region, face unique challenges due to their social roles, economic status, and lack of access to resources. Moreover, women's vulnerability to climate change is often exacerbated by their responsibilities in food production and water collection. However, their local knowledge and leadership can contribute significantly to resilience and adaptation strategies. The intersection of gender with other social determinants such as age, ethnicity, and socioeconomic status further complicates the impacts of health and climate change, necessitating nuanced policy responses.

The Asia-Pacific region exhibits significant gender disparities in the context of health security and climate change. Women are disproportionately affected due to societal norms that dictate their roles, economic dependencies, and limited access to resources and decision-making platforms. These disparities hinder women's ability to respond to and recover from climate-related events and health crises, underscoring the need for targeted interventions that address these gender-specific challenges.

Women's roles in food production and water collection, critical for household and community sustenance, make them particularly vulnerable to the effects of climate change. However, this close interaction with their environment also positions women as invaluable sources of knowledge and leadership in resilience and adaptation efforts. Recognizing and harnessing this potential is crucial for developing effective climate change responses that are both inclusive and sustainable.

The concept of intersectionality reveals that the impacts of health security and climate change are not uniform across all women. Factors such as age, ethnicity, and socio-economic status intersect with gender to create complex layers of discrimination and disadvantage. Policies must, therefore, be designed with an understanding of these intersecting identities to ensure that no group is left behind in the pursuit of health and climate security.

POLICY RECOMMENDATIONS

To tailor gender-responsive approaches effectively, it is crucial to collect and analyze disaggregated data that reflects the different ways in which health and climate change affect diverse genders. This data should inform the design and implementation of policies and programs, ensuring they are grounded in the realities of those most impacted. It is imperative to create inclusive policy frameworks that acknowledge and address the unique needs and contributions of women in health and climate change initiatives. Such policies should aim to dismantle barriers to women's participation and leadership, ensuring that their voices and experiences inform the development and implementation of health and climate strategies. Engaging women in the planning and implementation of community-based health and climate change projects is critical for leveraging their unique perspectives and experiences. Women's involvement ensures that interventions are relevant, culturally appropriate, and more likely to be successful and sustainable.

Strengthening women's capacity through education and training is also essential to empowering them with the necessary skills to engage in climate change adaptation, disaster risk reduction, and health security. Capacity building initiatives should focus on both technical and leadership skills, enabling women to become active agents of change in their communities. Strengthening legal frameworks is also essential to protect women from the health and socio-economic impacts of climate change. This extends to safeguarding women against increased violence and exploitation during times of crisis. Social protection measures should also be established to support women's recovery and resilience in the aftermath of climate-related events and health emergencies.

Ensuring equitable access to healthcare services, especially reproductive health services, is vital for women's health security. Climate-related emergencies often exacerbate existing inequalities in healthcare access, making it essential to integrate gender considerations into emergency response and recovery plans. Finally, economic empowerment is a key driver of ongoing gender equality. Providing women with access to credit, land rights, and opportunities to participate in decision-making processes related to climate change and health can significantly enhance their economic independence and ability to contribute to and benefit from climate and health interventions.

IMPLEMENTATION STRATEGIES

The establishment of partnerships is a cornerstone for the successful implementation of gender-responsive health and climate security initiatives. By fostering collaborative relationships between governments, non-governmental organizations, and local communities, a multi-stakeholder approach can be developed that leverages the strengths and resources of each partner. These partnerships are instrumental in sharing knowledge, pooling resources, and exchanging best practices, which can significantly enhance the effectiveness and reach of health and climate security efforts. Moreover, such collaborations can help to ensure that initiatives are well-coordinated, culturally sensitive, and aligned with the needs and priorities of the communities they serve.

Implementing robust monitoring and evaluation mechanisms is essential for measuring the impact and effectiveness of gender-responsive approaches. Monitoring and evaluation frameworks should be designed to collect both quantitative and qualitative data that reflect the multifaceted nature of gender issues in health and climate security. This data collection should be systematic and ongoing, providing valuable insights that can inform policy adjustments and program improvements. Effective monitoring and evaluation practices enable stakeholders to identify successes, learn from challenges, and make evidence-based decisions that enhance the sustainability and scalability of gender-responsive interventions.

Advocacy and awareness-raising activities play a pivotal role in garnering public support and creating a conducive environment for gender-responsive policies and practices. These efforts should aim to educate a broad spectrum of stakeholders, including policymakers, community leaders, and the general public, about the gendered dimensions of health and climate change. Through targeted campaigns, workshops, and community dialogues, advocacy can shift perceptions, influence policy agendas, and mobilize resources towards gender equality in health and climate security. Raising awareness not only fosters a deeper understanding of the issues at hand but also empowers individuals and communities to advocate for their own health and well-being in the face of climate challenges.

In conclusion, a comprehensive and integrated approach that incorporates gender considerations into all aspects of policy and program development is essential to address the gendered impacts of health security and climate change effectively. By implementing gender-responsive strategies, the Asia-Pacific region can improve health outcomes, enhance community resilience, and contribute to sustainable development. These efforts are not only crucial for the immediate well-being of populations but also for the long-term prosperity and stability of the region.

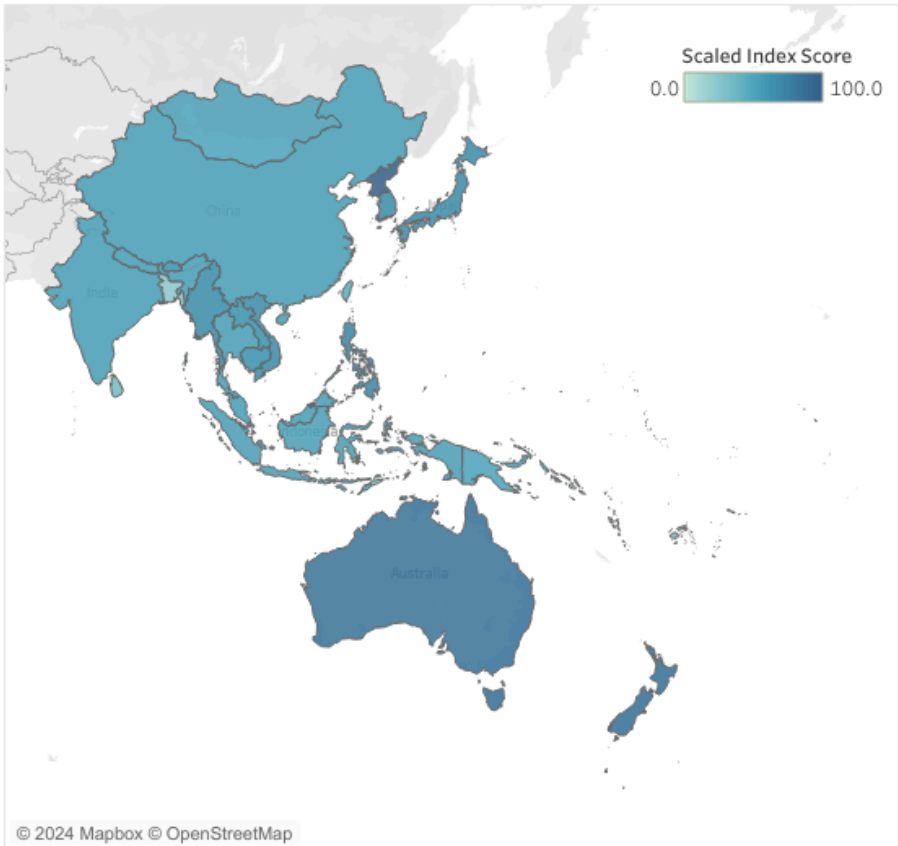
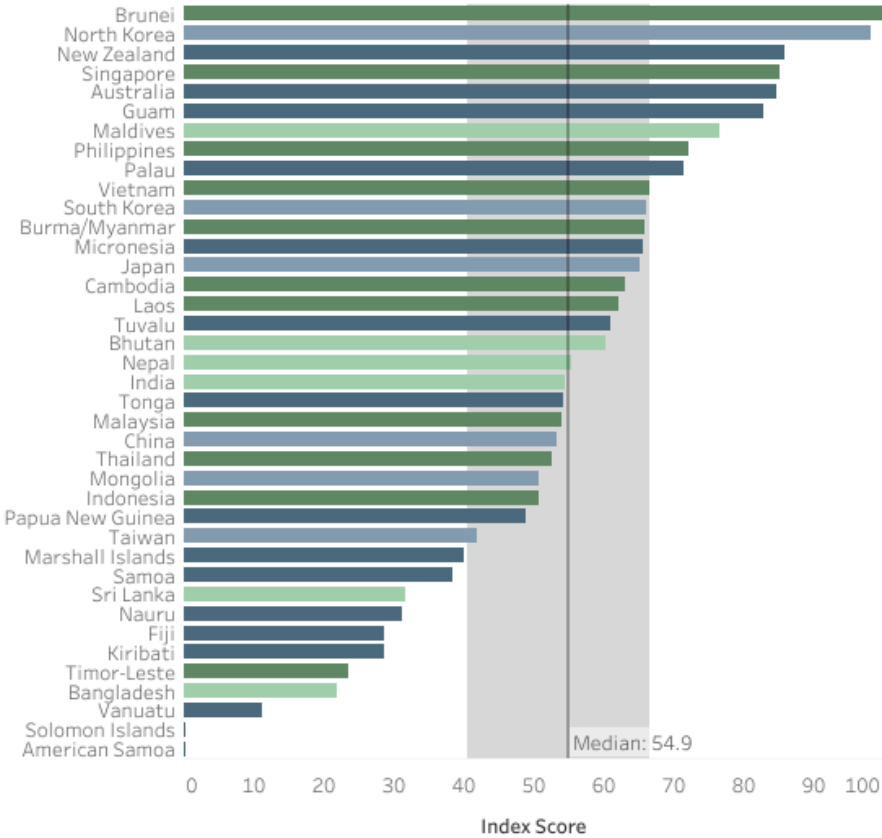


Image Credit: Pacific Forum

APPENDIX 1. TABLEAU DASHBOARD VIEW OF WOMEN'S WELLBEING AND SECURITY INDEX



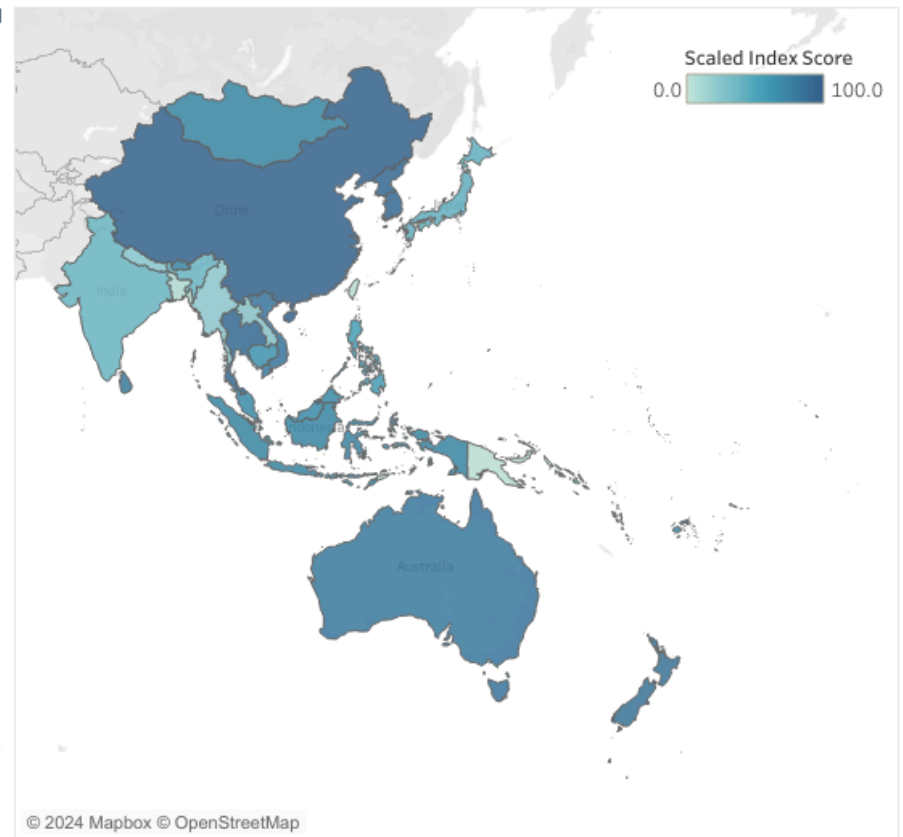
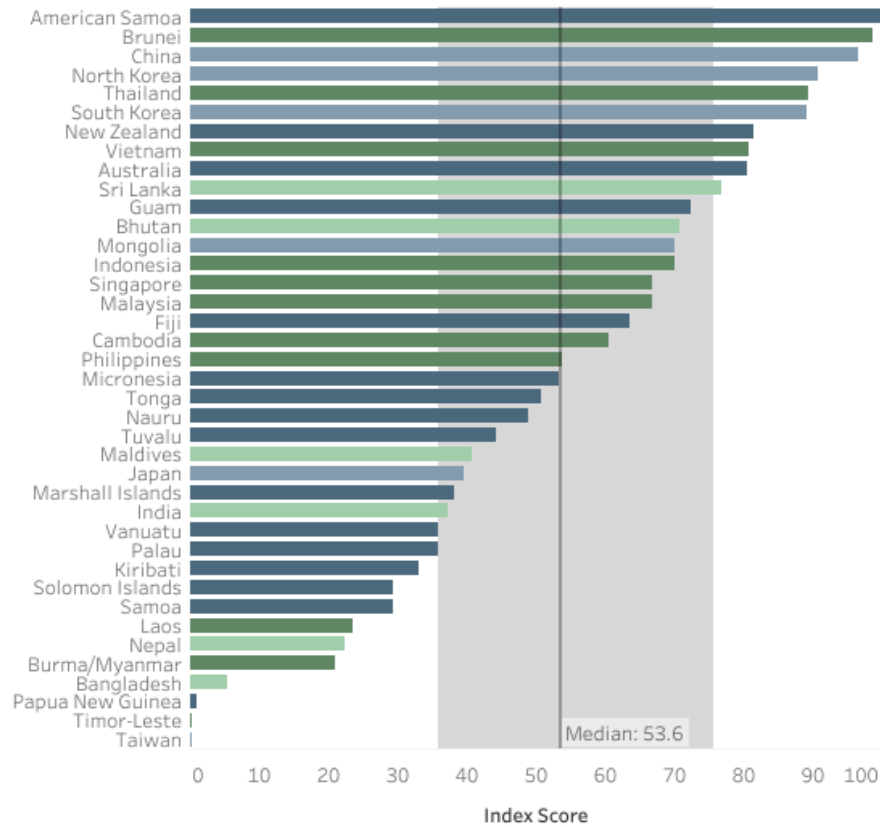
Women's Wellbeing & Security Scaled Index Scores



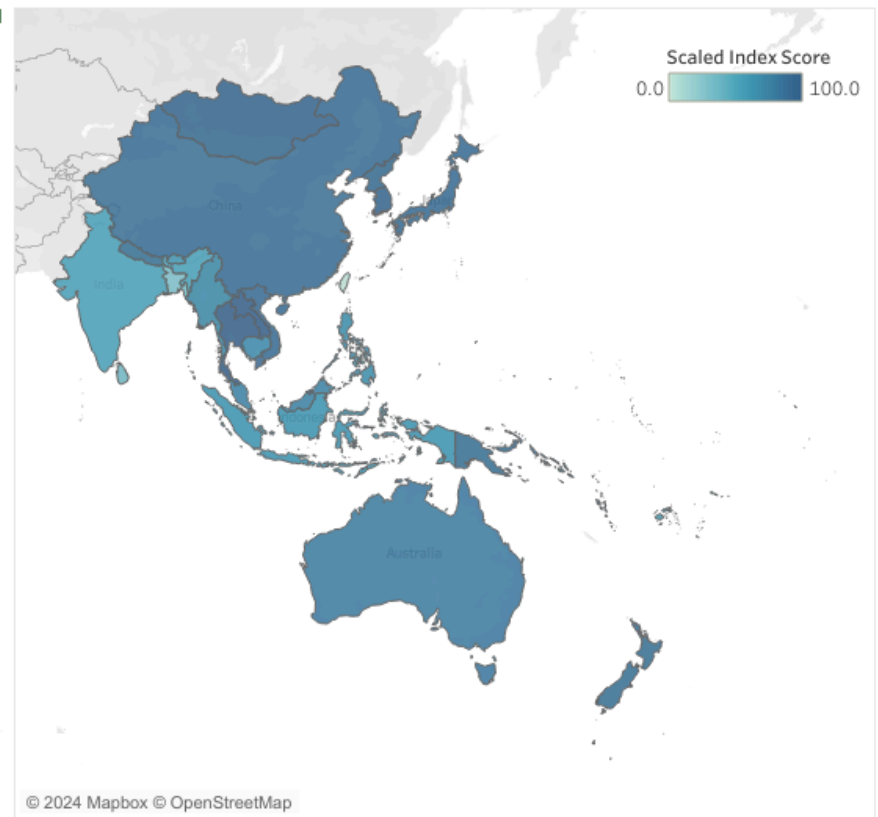
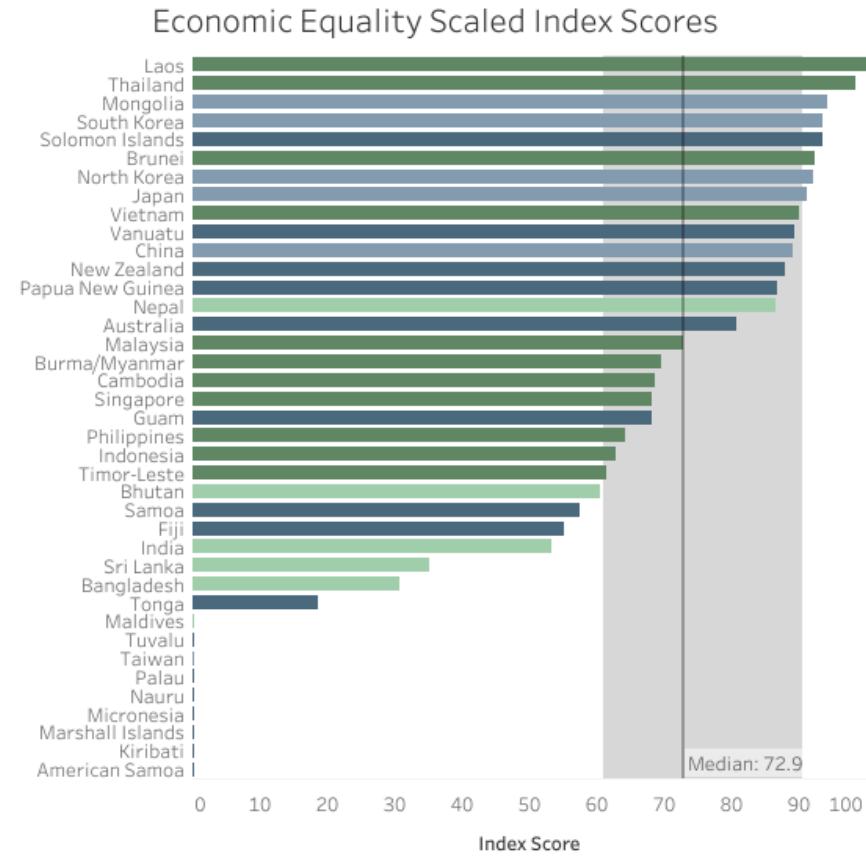
APPENDIX 2. TABLEAU DASHBOARD VIEW OF WOMEN'S HEALTH CARE ACCESS INDEX



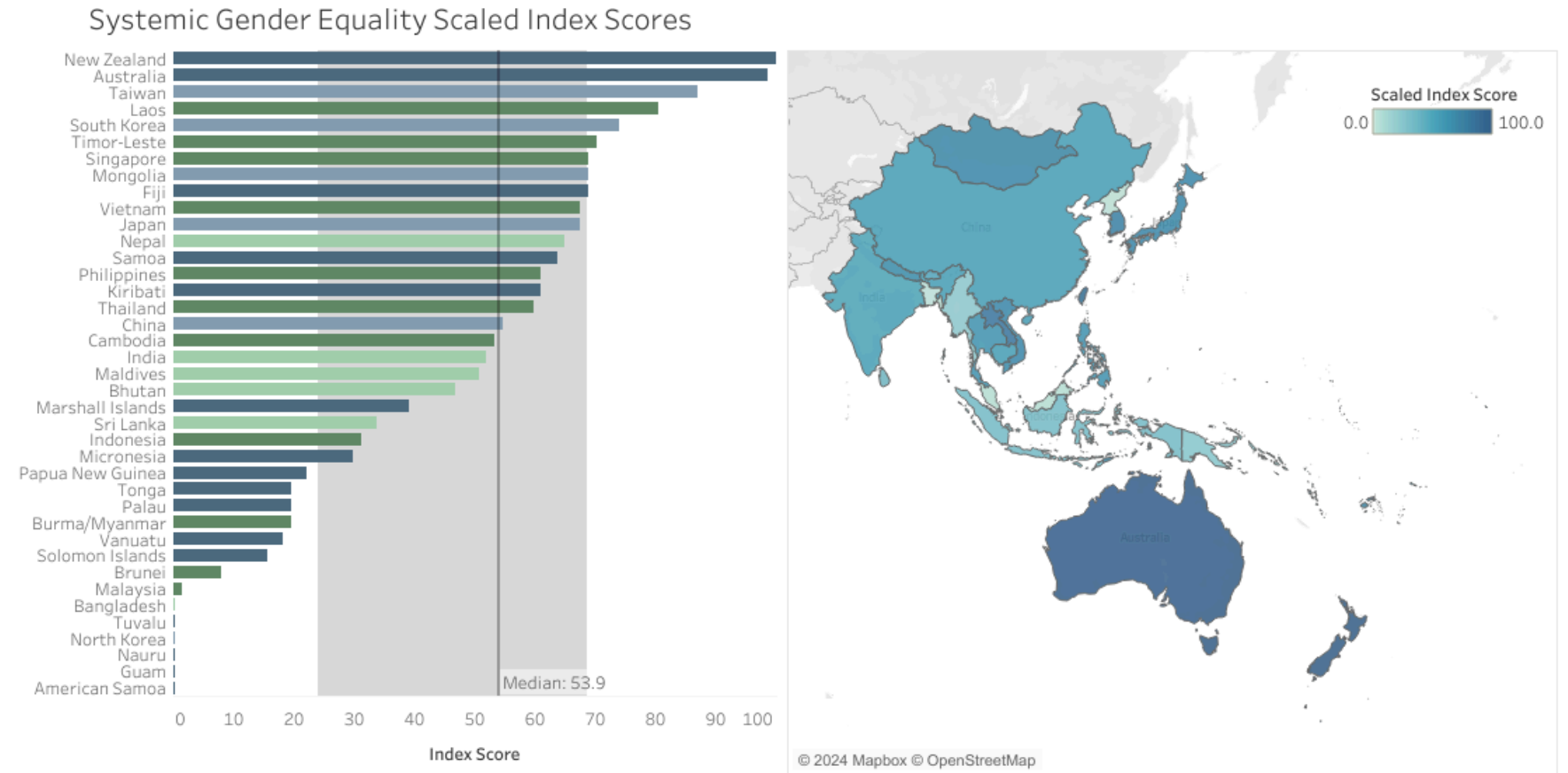
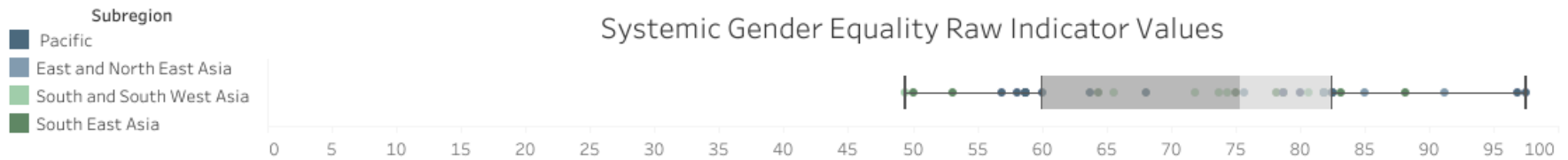
Women's Health Care Access Scaled Index Scores



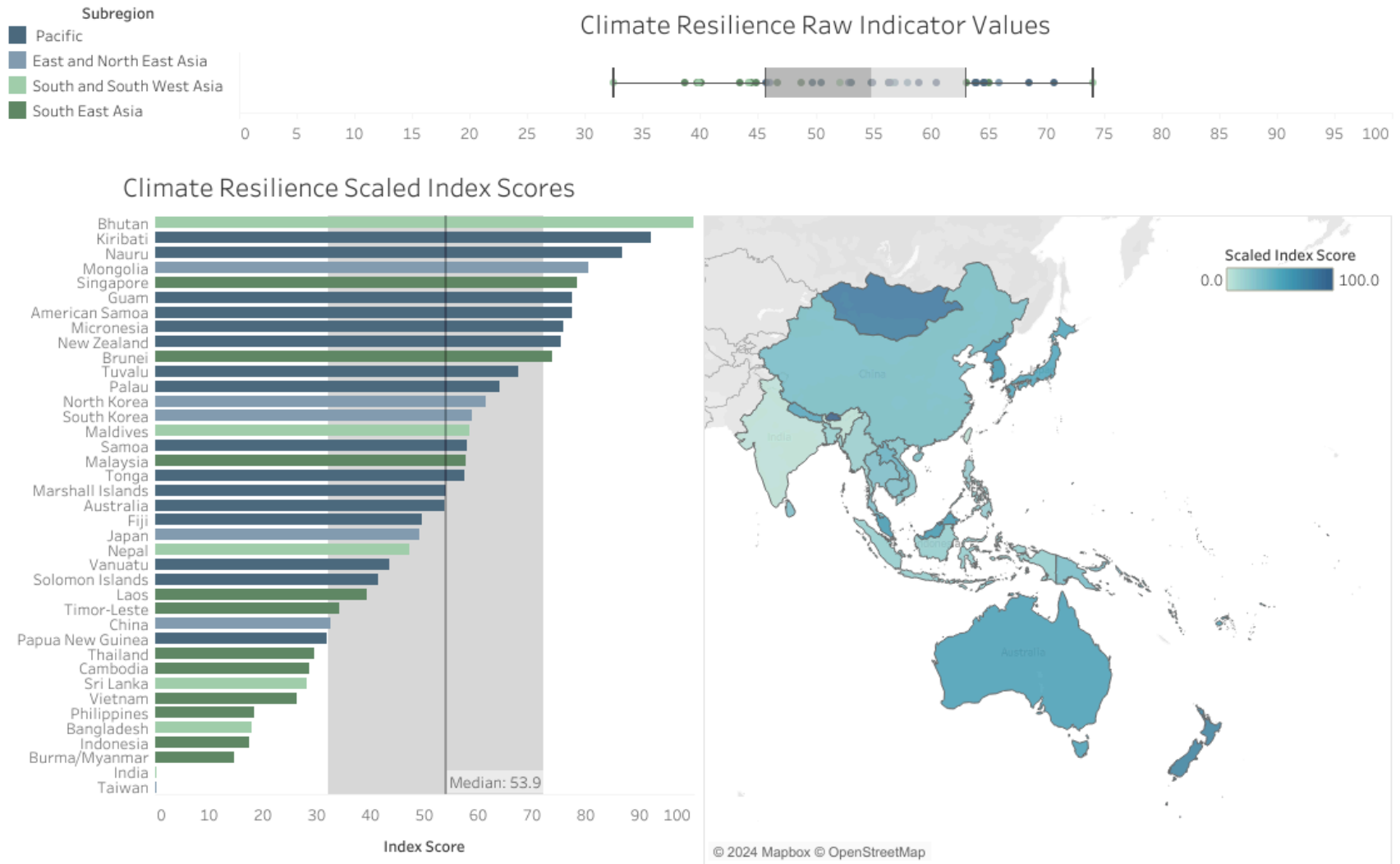
APPENDIX 3. TABLEAU DASHBOARD VIEW OF ECONOMIC EQUALITY INDEX



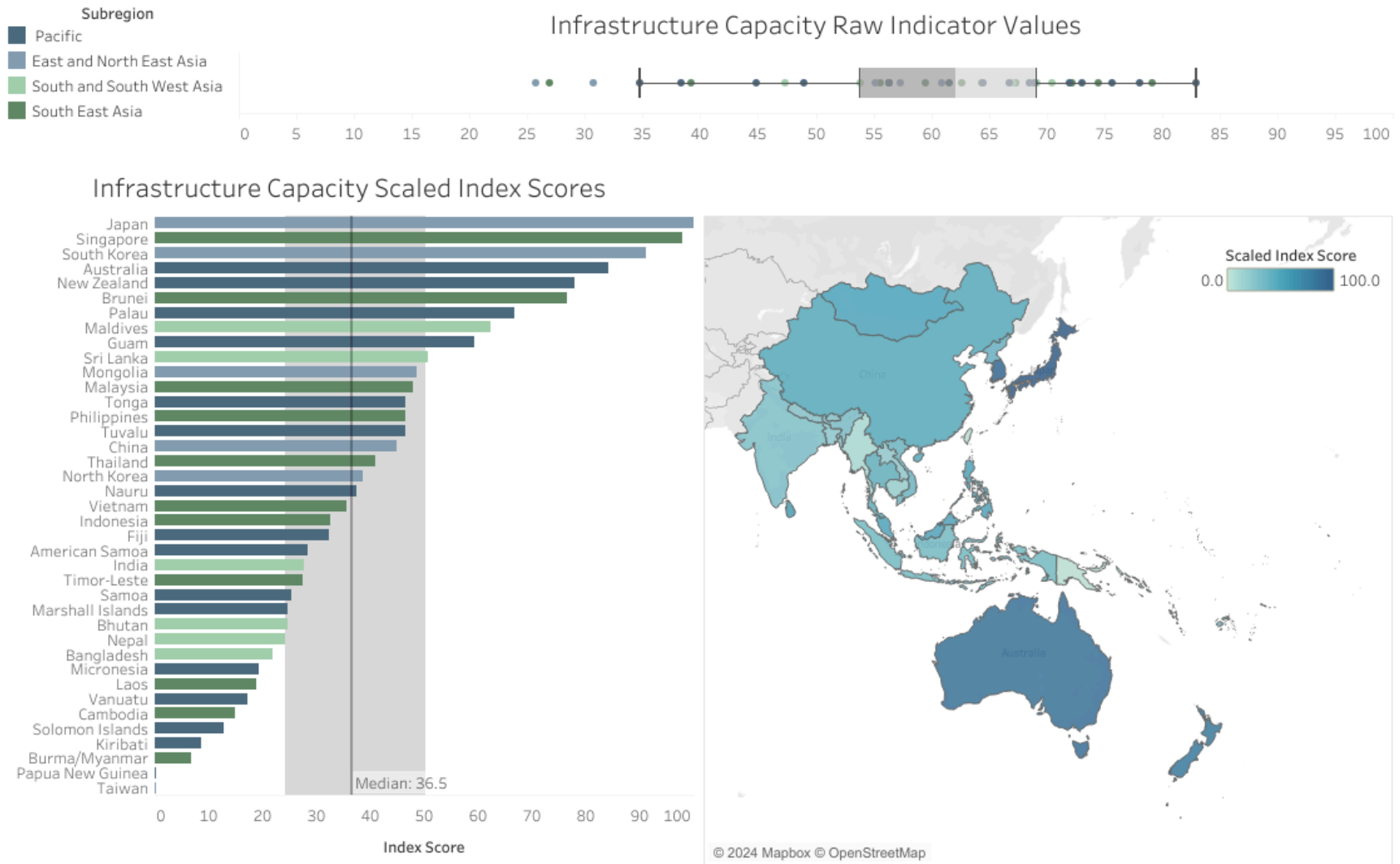
APPENDIX 4. TABLEAU DASHBOARD VIEW OF SYSTEMIC GENDER EQUALITY INDEX



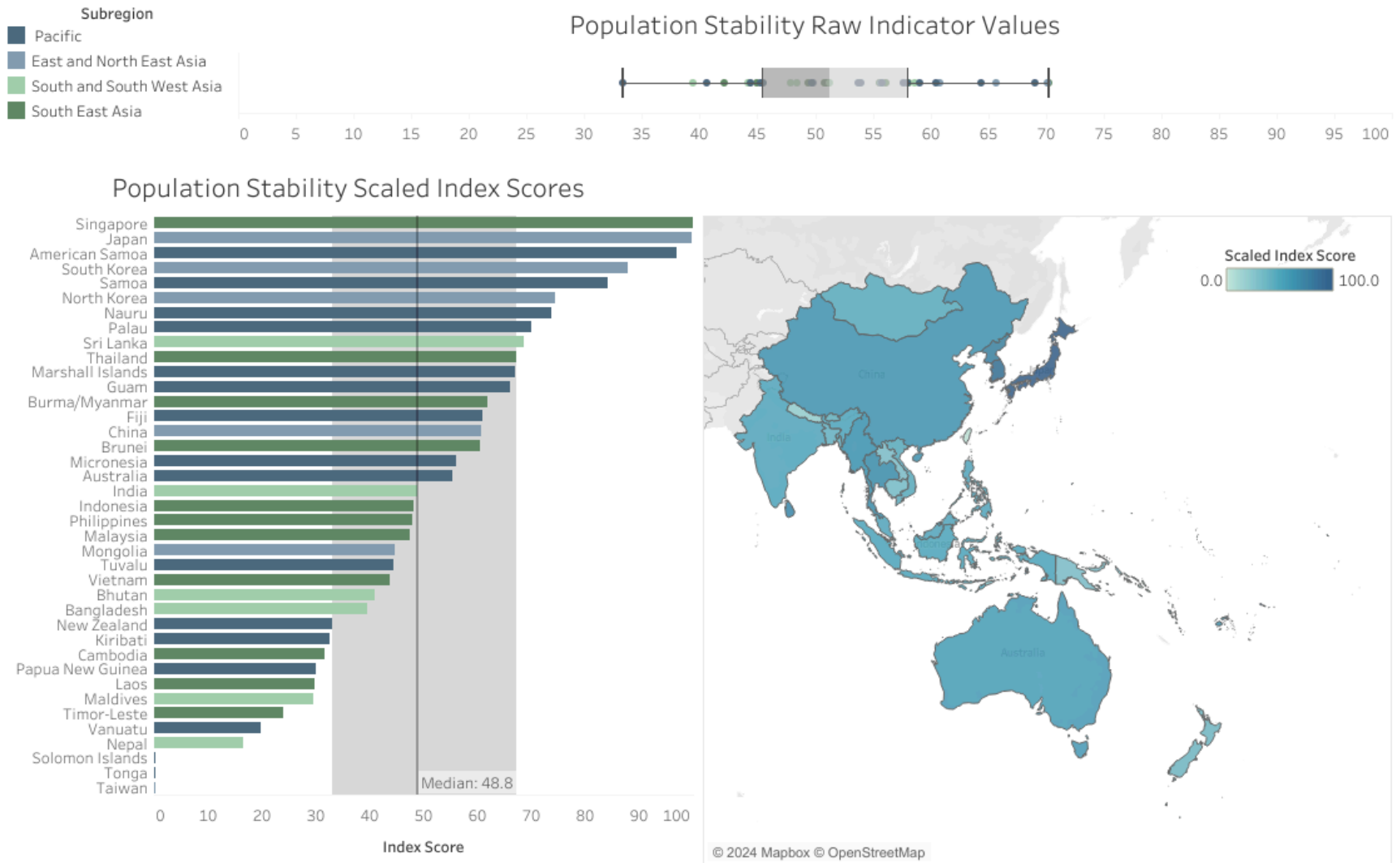
APPENDIX 5. TABLEAU DASHBOARD VIEW OF CLIMATE RESILIENCE INDEX



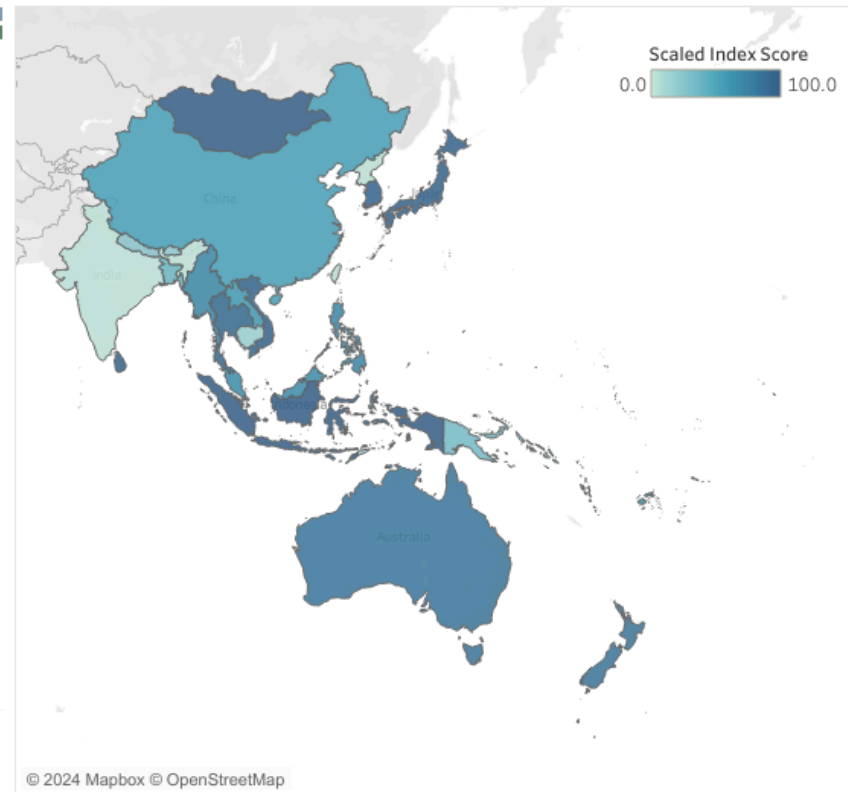
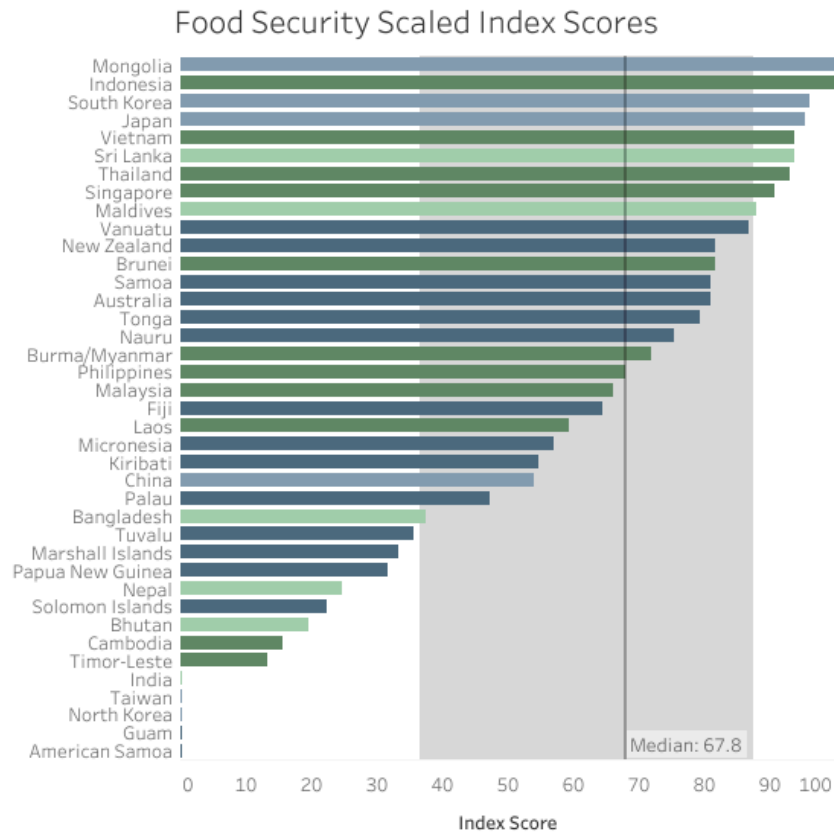
APPENDIX 6. TABLEAU DASHBOARD VIEW OF INFRASTRUCTURE CAPACITY INDEX



APPENDIX 7. TABLEAU DASHBOARD VIEW OF POPULATION STABILITY INDEX

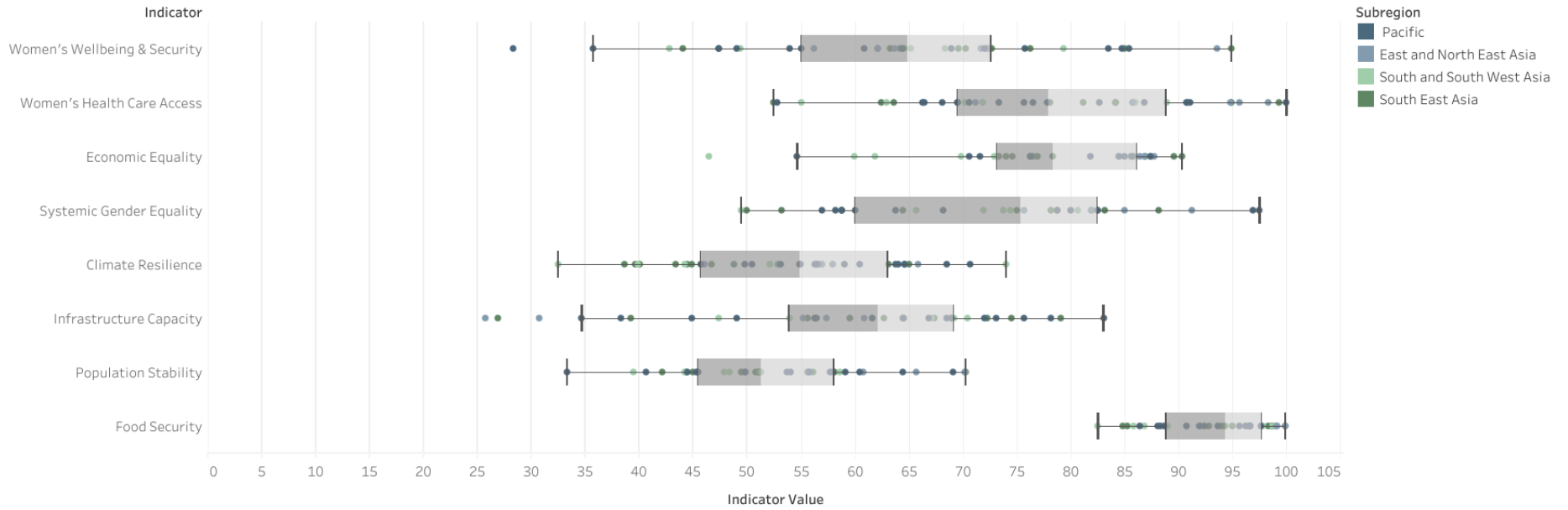


APPENDIX 8. TABLEAU DASHBOARD VIEW OF FOOD SECURITY INDEX



APPENDIX 9. RAW INDICATOR VALUES

Indicator Box Plot



APPENDIX 10. CONSOLIDATED INDEX SCORES BY COUNTRY

Index Score Table

Subregion	Country	Indicator								Scaled Index Score
		Women's Wellbeing & Security	Women's Health Care Access	Economic Equality	Systemic Gender Equality	Climate Resilience	Food Security	Infrastructure Capacity	Population Stability	
Pacific	American Samoa		100.0			77.3		28.3	97.0	
	Australia	84.7	80.5	80.6	98.7	53.7	81.0	84.3	55.3	
	Fiji	28.7	63.4	55.1	68.8	49.6	64.4	32.3	61.0	
	Guam	82.9	72.3	68.1		77.3		59.3	66.1	
	Kiribati	28.5	33.0		61.0	92.0	54.6	8.6	32.5	
	Marshall Islands	40.1	38.2		39.0	54.0	33.3	24.6	66.9	
	Micronesia	65.6	53.4		29.9	75.9	56.9	19.2	56.1	
	Nauru	31.1	48.9			86.7	75.3	37.3	73.7	
	New Zealand	85.7	81.3	87.9	100.0	75.4	81.6	78.0	33.1	
	Palau	71.3	35.9		19.5	63.9	47.1	66.7	69.9	
	Papua New Guinea	48.9	0.8	86.8	22.1	31.8	31.6	0.0	30.1	
	Samoa	38.4	29.2	57.4	63.6	57.8	81.0	25.3	84.3	
	Solomon Islands	0.0	29.4	93.4	15.6	41.4	22.4	12.7	0.0	
Tonga	54.2	50.6	18.7	19.5	57.3	79.3	46.6			
Tuvalu	61.0	44.1			67.5	35.6	46.4	44.4		
Vanuatu	11.1	35.9	89.3	18.2	43.4	86.8	17.3	19.8		
East and North East Asia	China	53.2	96.4	89.1	54.6	32.5	54.0	44.9	60.7	
	Japan	65.2	39.5	91.1	67.5	49.2	95.4	100.0	99.7	
	Mongolia	50.8	70.0	94.1	68.8	80.5	100.0	48.5	44.7	
	North Korea	98.0	90.8	92.0		61.4		38.6	74.5	
	South Korea	66.1	89.1	93.4	74.0	58.8	96.0	91.3	87.8	
Taiwan	41.9			87.0						
South and South West Asia	Bangladesh	21.8	5.5	30.8	0.0	17.8	37.4	21.8	39.6	
	Bhutan	60.2	70.6	60.4	46.8	100.0	19.5	24.6	40.9	
	India	54.5	37.2	53.3	52.0	0.0	0.0	27.7	48.8	
	Maldives	76.6	40.8	0.0	50.6	58.3	87.9	62.3	29.5	
	Nepal	55.3	22.3	86.6	64.9	47.2	24.7	24.1	16.5	
	Sri Lanka	31.5	76.7	35.1	33.8	28.2	93.7	50.8	68.6	
South East Asia	Brunei	100.0	98.5	92.3	7.8	73.7	81.6	76.4	60.4	
	Burma/Myanmar	65.9	21.0	69.5	19.5	14.7	71.8	6.8	61.8	
	Cambodia	62.9	60.5	68.6	53.2	28.7	15.5	14.8	31.7	
	Indonesia	50.8	70.0	62.9	31.2	17.3	100.0	32.5	48.2	
	Laos	62.0	23.5	100.0	80.5	39.3	59.2	18.8	29.8	
	Malaysia	53.9	66.8	72.9	1.3	57.6	66.1	47.8	47.4	
	Philippines	72.1	53.8	64.2	61.0	18.3	67.8	46.6	48.0	
	Singapore	85.1	66.8	68.1	68.8	78.3	90.8	97.9	100.0	
	Thailand	52.6	89.3	98.4	59.7	29.6	93.1	41.0	67.2	
	Timor-Leste	23.6	0.0	61.5	70.1	34.2	13.2	27.4	23.8	
Vietnam	66.5	80.7	90.0	67.5	26.3	93.7	35.6	43.6		