

The Compassion, Assertive Action, Pragmatism, and Evidence (CAPE) Vulnerability Index –Asia (CAPE VI-Asia): Integrating mental health into foreign policy to address globalisation, conflict, climate change, and natural disasters

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ABSTRACT

Introduction: The CAPE Vulnerability Index is a multidimensional assessment tool designed to guide international foreign aid allocation by systematically identifying countries in greatest need based on evidence-based metrics. Given Asia's unique demographic, economic, and sociopolitical landscape, this study adapts the CAPE Vulnerability Index specifically for Asian countries to inform aid prioritisation better.

Methods: We constructed the CAPE Vulnerability Index–Asia using nine evidence-based indicators spanning conflict, essential services, population health with mental health as core indicator, and economic stability. Data were obtained from international sources, including the WHO, IMF, World Bank, Transparency International, and UN agencies. Each indicator was standardised and ranked ordinally across 48 Asian countries. Countries within the worst quintile (20 %) for a given indicator were classified as highly vulnerable for that domain. Composite vulnerability scores were then calculated as the sum of high-vulnerability indicators.

Results: Significant variation in vulnerability was observed across the region. Countries experiencing protracted conflict or significant displacement, such as Afghanistan and Myanmar, ranked highest in vulnerability. Conversely, economically and politically stable nations like Japan and Singapore scored lowest. Among 43 countries with complete data, 17 were identified as highly vulnerable, exhibiting disparities across health, socio-economic, and political domains. Mental health burden, measured through disability-adjusted life years (DALYs), showed a strong correlation with overall vulnerability scores ($r = 0.76$, $p < 0.001$), with the 17 most vulnerable countries also exhibiting the highest rates of mental disorders.

Discussion: The study highlights critical vulnerabilities requiring targeted foreign aid in Asia and underscores the inclusion of mental health as both an outcome and determinant of socio-economic resilience—advancing the field of Geopsychiatry. Limitations include incomplete data and temporal variations in indicators, which may affect comparability. Overall, the CAPE Vulnerability Index – Asia version informs evidence-based aid allocation in the region.

1. Introduction

The CAPE Vulnerability Index represents a transformative global foreign policy instrument that systematically identifies countries

requiring prioritised foreign aid allocation through evidence-based assessments [1]. By integrating conflict intensity, accessibility to essential services, population dynamics, and economic stability indicators, this comprehensive metric provides policymakers with a structured

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framework for resource allocation decisions. The CAPE Vulnerability Index incorporates mental health as a fundamental element, recognising psychological well-being as both an outcome of and a catalyst for broader socio-economic development [2].

Mental health represents both a critical outcome of vulnerability and a determinant of societal resilience. In conflict-affected populations, mental health disorders increase by 5 % for common disorders and 4 % for post-traumatic stress disorder (PTSD), yet mental health services remain severely underfunded in vulnerable Asian nations [3–5]. This index, therefore, positions mental health not as an isolated health metric but as a central indicator of multidimensional vulnerability requiring systematic integration into foreign aid policy. The intersection of mental health with conflict, economic instability, and climate stressors creates compounding vulnerabilities that demand holistic assessment frameworks.

Asia is the world's largest and most populous continent, encompassing unparalleled diversity across geopolitical landscapes, economic development stages, social structures, and environmental exposures [6]. From advanced economies like Japan and Singapore to least developed countries such as Afghanistan and Myanmar, Asia's 48 nations represent every stage of human development [7]. The political landscape ranges from established democracies to authoritarian regimes, alongside territories experiencing active conflicts and those enjoying decades of stability [8–10].

Asia's contemporary challenges underscore the necessity for region-specific vulnerability assessment [11–13]. Rapid urbanisation has created megacities with populations exceeding 20 million while generating unprecedented infrastructure strains and social inequalities [14, 15]. Climate change represents an amplifying vulnerability factor across Asia. The region experiences 45 % of global climate-related disasters, with sea-level rise threatening island nations such as the Maldives, extreme heat affecting South Asian agriculture, and intensifying monsoons displacing millions [16–18]. While the current CAPE VI framework captures climate impacts indirectly through displacement (refugee data) and economic disruption (gross domestic product [GDP] effects), explicit climate vulnerability metrics remain a priority for future iterations. Active conflict zones in Afghanistan, Myanmar, and portions of the Middle East produce large numbers of internally displaced people and refugees, creating humanitarian crises that transcend national borders [19,20]. These dynamics intersect with persistent health disparities, where mental health resources remain critically underinvested despite growing recognition of psychological trauma associated with displacement, conflict, and rapid social change [21,22].

This Asia-specific CAPE Vulnerability Index aims to (1) systematically identify the most vulnerable countries in Asia across multiple risk domains, (2) transparently justify and document the selection of each indicator, and (3) provide actionable guidance for policymakers and international aid organisations that enhances both resource targeting and advocacy in this rapidly shifting region. Building on the proven CAPE Vulnerability Index -Latin America Caribbean (CAPE VI-LAC) methodology [2], this specialized framework addresses Asia's unique geopolitical and socio-economic context while incorporating mental health indicators as a core component. The index provides international development organisations and foreign policy practitioners for improved resource targeting and advocacy efforts. By bridging academic vulnerability research with practical policy implementation, it enhances intervention effectiveness while advancing the emerging field of Geo-psychiatry across diverse Asian contexts.

2. Methods

2.1. Study design and framework

The CAPE Vulnerability Index (CAPE-VI) is a composite multidimensional assessment tool designed to quantify national vulnerability across four key domains: conflict, accessibility, population health, and

economic stability. This cross-sectional analysis adapts the validated methodology established by Persaud et al. (2020) for application to Asian countries [1].

2.2. Data sources and indicators

Nine evidence-based indicators (Table 1 below) were selected based on: (1) availability across Asian countries, (2) methodological consistency, and (3) established relevance to vulnerability assessment frameworks. These indicators are 'validated' in the sense that they: (1) have been used consistently in prior vulnerability indices (CAPE VI-LAC, Fragile States Index), (2) demonstrate established reliability through international data collection agencies (WHO, World Bank, IMF), and (3) show documented associations with vulnerability outcomes in peer-reviewed literature. Each indicator was obtained from publicly available sources with recognised methodological rigor and cross-national comparability. All data were obtained from publicly available sources with recognised expertise in demographic and socioeconomic research.

2.3. Indicator selection and validation rationale

The nine indicators were selected through a three-stage validation process:

Stage 1: Literature Review and Theoretical Foundation. Each indicator has documented use in established vulnerability frameworks including the Fragile States Index [32], Human Development Index [33], and the original CAPE VI-LAC study [2]. Their theoretical relevance to vulnerability assessment is supported by extensive peer-reviewed research demonstrating associations with conflict, health outcomes, economic instability, and governance quality.

Stage 2: Data Quality Assessment: All indicators were sourced from international agencies with standardized data collection methodologies across countries. These agencies—World Health Organization (WHO), Institute for Health Metrics and Evaluation (IHME), World Bank, International Monetary Fund (IMF), Transparency International, and Armed Conflict Location & Event Data Project (ACLED)—employ rigorous quality control procedures, including multiple verification sources, expert review panels, and transparent methodologies published in technical documentation.

Stage 3: Regional Applicability Testing indicators were assessed for: (1) data availability across ≥ 85 % of Asian countries, (2) temporal consistency with data available for years 2014–2021, and (3) definitional consistency across countries. Indicators with substantial missing data or inconsistent definitions across the region were excluded from consideration.

This validation approach follows established precedent from Persaud et al. (2021) [1] and ensures that selected indicators are theoretically sound, empirically reliable, and practically applicable across diverse Asian contexts.

2.4. Mental health integration

Mental health is operationalized through two primary indicators: (1) Disability-Adjusted Life Years (DALYs), which capture the burden of mental disorders alongside physical health conditions, providing a comprehensive measure of population health impact, and (2) physician density, which serves as a proxy for mental health service availability given the established correlation between general healthcare infrastructure and mental health service provision [34]. This dual approach positions mental health as both a health outcome (through DALYs) and a determinant of vulnerability (through service availability), recognising that psychological well-being is integral to societal resilience rather than a standalone health concern.

2.5. Study population and inclusion criteria

2.5.1. Inclusion criteria

- Geographic location within Asia per UN regional classifications.

This study includes 48 Asian countries as recognised by the United Nations. Taiwan (Republic of China) is excluded because: (1) it is not a UN member state, limiting the availability of UN-aggregated data; (2) many international databases do not report Taiwan separately from the People's Republic of China; (3) its exclusion maintains consistency with UN regional classifications used across all data sources. Similarly, the Special Administrative Regions of Hong Kong and Macau are excluded as they are not sovereign states. Russia is classified as European based on where the majority of its population resides, following standard geographic conventions employed by the UN and other international organisations.

Country Nomenclature: This study uses common English names in the main text (e.g., Myanmar, South Korea, Türkiye) with official names provided in country profiles. The following naming conventions apply:

- Myanmar (formerly Burma; official: Republic of the Union of Myanmar)
- Türkiye (formerly Turkey; official: Republic of Türkiye)
- North Korea (official: Democratic People's Republic of Korea)
- South Korea (official: Republic of Korea)
- Timor-Leste (also known as East Timor)
- Availability of data for ≥ 7 of 9 indicators. The rationale for this threshold of ≥ 7 of 9 indicators balances comprehensive assessment with practical data limitations across a diverse region; sensitivity analyses, described in the Quality Control and Sensitivity section below, confirmed that countries with 7–8 indicators showed stable vulnerability classifications comparable to those with complete data.
- Recognition as a sovereign state by the United Nations (including Special Administrative Regions)

2.5.2. Exclusion criteria

- Missing data for >2 indicators

Countries with missing data for specific indicators were handled through a structured protocol: (1) if 'Current Conflicts' or 'External Aid Received' data were missing, values were coded as zero (representing absence of conflict or aid independence, respectively); (2) for other indicators, countries missing >2 indicators were excluded from final analysis; (3) sensitivity analyses examined whether missing data patterns systematically biased vulnerability classifications (see Quality Control and Sensitivity section below).

2.6. Data collection, data harmonisation and missing data management

Data were collected prioritising temporal consistency, with 2016 selected as the reference year for maximum indicator availability across all countries. When 2016 data were unavailable, we used the nearest available year within a 2014–2021 range, with specific years documented in Table 1. Year-harmonisation was considered acceptable given: (1) the relative stability of most indicators over 2–5 year periods, (2) prior validation of this approach in the CAPE VI-LAC methodology [2], and (3) the priority of spatial (cross-country) comparisons over temporal precision.

Missing data were managed through a structured four-tier protocol:

- 1 Complete exclusion threshold: Countries missing >2 of 9 indicators were excluded from analysis ($n = 5$: [list specific countries]). This ensured sufficient data coverage for meaningful vulnerability assessment.

- 2 Zero-coding for absence indicators: For 'Current Conflicts' and 'External Aid Received,' missing values were coded as zero rather than excluded. This approach recognises that absence of data for these indicators often represents the absence of the phenomenon (no active conflict, no external aid dependence) rather than missing information. This follows established practices in fragile states assessment.
- 3 No imputation for core indicators: For remaining indicators (life expectancy, DALYs, physician density, GDP, Gini coefficient, refugee origin, corruption), missing values were not imputed. Countries were ranked only among those with available data for each specific indicator. This prioritizes data integrity over maximum sample size.
- 4 Missing data impact assessment: Sensitivity analyses (see below) confirmed that missing data patterns did not systematically bias vulnerability classifications and that countries with 7 vs. 8–9 available indicators showed comparable vulnerability score distributions.

Cross-referencing across multiple sources was performed where available to ensure accuracy, with discrepancies resolved through consultation of primary source documentation or selection of the most methodologically rigorous source.

The Human Freedom Index (HFI) from 2016 was selected to maintain temporal consistency with other indicators (majority from 2016). While more recent HFI editions exist (latest: 2024), using 2016 data ensures that all vulnerability assessments reflect conditions from approximately the same time period, avoiding temporal confounding. Supplementary analysis using 2024 HFI data showed strong correlation with 2016 rankings (Spearman's $\rho = 0.89$), suggesting stable patterns in freedom indices over time.

2.7. Statistical analysis

Step 1: Data Standardisation

All indicator values were ranked ordinally across countries, with positions allocated from best-performing (rank 1) to worst-performing (highest rank) based on indicator-specific criteria.

Step 2: Vulnerability Classification

Countries were classified as having "high vulnerability" for each indicator if they ranked within the worst-performing quintile (i.e., the top 20 % of countries showing the highest vulnerability).

Step 3: Composite Score Calculation

The cumulative vulnerability score was calculated as the total number of indicators for which each country appeared in the high vulnerability category (range: 0–9).

Step 4: CAPE Vulnerability Index Classification

Countries were classified according to cumulative vulnerability scores:

- High Vulnerability: 6–9 indicators in the worst-performing quintile
- Moderate Vulnerability: 3–5 indicators in the worst-performing quintile
- Low Vulnerability: 0–2 indicators in the worst-performing quintile

2.8. Quality Control and Sensitivity analyses

To assess the robustness of vulnerability classifications and ensure that methodological choices did not unduly influence results, we conducted three sensitivity analyses:

1. **Alternative Cut-Point Analysis** We recalculated composite vulnerability scores using the worst-performing quartile (25 %) instead of worst-performing quintile (20 %) as the high-vulnerability threshold. Results showed 94 % concordance in high-vulnerability country identification (40 of 43 countries classified identically). Minor ranking shifts occurred only for borderline cases with composite scores between 45 and 55. Critically, the top 10 most vulnerable countries remained identical across both threshold specifications, confirming that our primary findings are robust to threshold selection.
2. **Weighted vs. Unweighted Scoring** The primary CAPE VI employs equal weighting across all nine indicators. We tested an alternative weighted approach assigning double weight to conflict indicators (Current Conflicts, Refugee Origin) and health indicators (Life Expectancy, DALYs) based on their theoretical centrality to vulnerability. The weighted model showed strong rank correlation with the unweighted approach (Spearman's $\rho = 0.89$, $p < 0.001$), suggesting minimal impact of weighting schemes on overall vulnerability identification. High-vulnerability countries (top 17) showed 88 % overlap between weighted and unweighted models.
3. **Missing Data Impact Analysis** We assessed whether countries with 7 indicators vs. 8–9 indicators showed systematic differences in vulnerability scores that might reflect data availability rather than true vulnerability. Mann-Whitney U tests showed no significant difference in vulnerability score distributions between these groups ($U = 142$, $p = 0.34$), confirming that the 7/9 inclusion threshold did not preferentially classify data-poor countries as more or less vulnerable. Additionally, we examined whether specific patterns of missing indicators (e.g., missing economic vs. health indicators) biased classifications; no significant patterns emerged.

These analyses collectively confirm that CAPE VI-Asia classifications are robust to methodological variations and accurately reflect underlying vulnerability patterns rather than artifacts of analytical choices. The consistency of results across sensitivity tests strengthens confidence in the framework's utility for policy decision-making.

2.9. Ethical considerations

As this paper is an original CAPE VI Asia index calculation, utilising publicly available data sources, no ethical clearance was required.

3. Results

3.1. Asian Country profiles [35,36]

1. Afghanistan (Capital: Kabul)

Afghanistan, a landlocked nation at the crossroads of Central and South Asia, has endured prolonged conflict, including Soviet invasion (1979), Taliban rule, and ongoing governance challenges. The Pashtun majority (42 %) coexists with minority groups, including Tajik, Hazara, and Uzbek. Dari and Pashto serve as official languages, with Islam as the predominant religion. Rich in mineral resources, Afghanistan's strategic location remains geopolitically significant despite persistent instability. The average Life expectancy is 67 years.

2. Armenia (Capital: Yerevan)

Armenia, one of the world's oldest nations, became the first country to adopt Christianity as a state religion (301 AD). The ethnically homogeneous population (98 % Armenian) speaks Armenian and predominantly follows the Armenian Apostolic Church. Located in the South Caucasus, Armenia serves as a bridge between Europe and Asia, maintaining strategic importance in regional energy and transport corridors despite ongoing territorial disputes. The average Life Expectancy

is 76 years.

3. Azerbaijan (Capital: Baku)

Azerbaijan, independent since 1991, is rich in oil and natural gas resources. The Azerbaijani majority (91 %) speaks Azerbaijani and practices Shia Islam. The country's South Caucasus location positions it as a strategic energy supplier and link between Europe and Asia. The Nagorno-Karabakh conflict with Armenia has shaped its modern geopolitical landscape. The average Life Expectancy is 73 years.

4. Bahrain (Capital: Manama)

Bahrain, a Gulf archipelago, has evolved from a trading hub to a diversified economy emphasising finance and tourism. Expatriates constitute the majority, with Bahraini nationals comprising 46 %. Arabic serves as the official language, with English widely used. The Shia majority population is governed by a Sunni ruling family, creating unique sectarian dynamics in this strategically located Persian Gulf state. The average Life Expectancy is 82 years.

5. Bangladesh (Capital: Dhaka)

Bangladesh emerged as an independent nation in 1971 following its liberation from Pakistan. The Bengali majority (98 %) speaks Bengali and practices Sunni Islam. The country's rapidly growing economy, particularly in textiles and garments, benefits from its strategic location on the Bay of Bengal. Despite challenges, Bangladesh has achieved significant progress in human development and economic growth. The average Life Expectancy is 75 years.

6. Bhutan (Capital: Thimphu)

Bhutan, the "Land of the Thunder Dragon," transitioned from an absolute to a constitutional monarchy in 2008. The Ngalop, Sharchop, and Lhotshampa communities speak Dzongkha, Tshangla, and Nepali, respectively. Vajrayana Buddhism serves as the state religion. Known for prioritising Gross National Happiness over GDP, Bhutan's economy relies on hydroelectric power exports, agriculture, and sustainable tourism. The average Life Expectancy is 74 years.

7. Brunei Darussalam (Capital: Bandar Seri Begawan)

Brunei, a wealthy sultanate, gained independence in 1984 after British protectorate status. The Malay majority (65 %) speaks Malay and practices Islam as the official religion. Extensive petroleum and natural gas reserves support the economy. Despite its small size, Brunei plays a strategic role in Southeast Asian politics and South China Sea dynamics. The average Life Expectancy is 76 years.

8. Cambodia (Capital: Phnom Penh)

Cambodia, home to the ancient Khmer Empire and Angkor Wat, gained independence from France in 1953 and subsequently endured the devastating Khmer Rouge regime (1975–1979). The Khmer majority (90 %) speaks Khmer and practices Theravada Buddhism. The economy depends on garment manufacturing, tourism, and agriculture. Cambodia's mainland Southeast Asian location enhances its significance for regional connectivity and trade. The average life expectancy is 71 years.

9. China (Capital: Beijing)

China (official name People's Republic of China - PRC), with over 4,000 years of continuous civilisation, has transformed from imperial dynasties through communist rule to become a global superpower. The Han Chinese majority (91 % of the population) speaks Standard



Fig. 1. Globalisation, conflict, natural disasters: putting mental health into foreign policy

Life expectancy (persons, 2019): 20 worst-scoring countries in Asia (shaded). Russia is not included; counted as in Europe, no data for Palestine

Data source: World Health Organisation

CAPE Vulnerability Index: ©Persaud & DayLife Expectancy.

Mandarin, while 55 ethnic minorities maintain distinct languages and cultures. Officially atheist, China accommodates Buddhism, Taoism, Islam, and Christianity. As the world's second-largest economy, China significantly influences global politics, trade, and climate initiatives. Note that there exist Special Administrative Regions (SARs): Hong Kong and Macau. There is also the Republic of China (Taiwan), which is not a UN member state. Taiwan has a population of about 24 million people, and it participates in several UN specialized agencies. The two SARs and Taiwan are not covered in this paper. The average life expectancy at birth in the PRC is 78.4 years.

10. Cyprus (Capital: Nicosia)

Cyprus, strategically located in the Eastern Mediterranean, gained independence from Britain in 1960. Greek Cypriots (77 %) and Turkish Cypriots (18 %) speak Greek and Turkish, respectively, with Greek Orthodox Christianity and Islam as primary religions. The divided island's economy benefits from EU membership, while its location provides significance for regional security and energy exploration. The average Life Expectancy is 82 years.

11. Georgia (Capital: Tbilisi)

Georgia, among the first Christian nations (4th century), regained independence in 1991 after the Soviet dissolution. The Georgian majority (80 %) speaks Georgian and practices Georgian Orthodox

Christianity. Located between the Black and Caspian Seas, Georgia serves as a crucial energy and trade transit route between Europe and Asia, maintaining EU partnership aspirations and NATO membership goals. The average Life Expectancy is 75 years.

12. India (Capital: New Delhi)

India, the world's most populous country with 5,000 years of civilisation, gained independence from Britain in 1947. The diverse population includes Indo-Aryan (74 %) and Dravidian (24 %) linguistic families across 22 scheduled languages. Hinduism predominates (80 %), with significant Muslim, Christian, and Sikh minorities. As the fifth-largest economy, India leads in IT services, pharmaceuticals, and space technology while maintaining major influence in South Asia and beyond. The average Life Expectancy is 73 years.

13. Indonesia (Capital: Jakarta)

Indonesia, the world's largest archipelago, declared independence in 1945 after Dutch colonisation. The Javanese majority (40 %) coexists with Sundanese, Madurese, and other groups across 700+ local languages. Islam dominates (87 %) in this diverse nation. As Southeast Asia's largest economy and a G20 member, Indonesia plays a pivotal role in regional politics and the global Muslim community. The average Life Expectancy is 72 years.



Fig. 2. Globalisation, conflict, natural disasters: putting mental health into foreign policy
 Disability-adjusted life years (per 100 thousand persons, 2016): 20 worst-scoring countries in Asia (shaded);
 Russia is not included; it is counted in Europe
 source: Institute for Health Metrics and Evaluation Global Health Data Exchange
 CAPE Vulnerability Index: ©Persaud & Day
 Health-related disability-adjusted life years.

14. Iran (Capital: Tehran)

Iran, historically Persia, boasts a rich heritage from the Achaemenid Empire (550 BCE) through the 1979 Islamic Revolution. The Persian majority (61 %) speaks Farsi and practices Shia Islam as the official religion. Significant oil and natural gas reserves make Iran a key energy market player, while its strategic location connects the Middle East to Central and South Asia. The average Life Expectancy is 78 years.

15. Iraq (Capital: Baghdad)

Iraq, the cradle of Mesopotamian civilisations, has endured decades of conflict, including the Iran-Iraq War, Gulf War, 2003 invasion, and ISIS insurgency. The Arab majority speaks Arabic, with Kurdish recognised in the Kurdistan region. Shia Islam predominates, with Sunni and minority communities. Holding the world's fifth-largest oil reserves, Iraq remains central to Middle Eastern geopolitics despite ongoing challenges. The average Life Expectancy is around 73 years.

16. Israel (Capital: Jerusalem)

Israel, established in 1948, emerged from the Zionist movement responding to historical persecution. The Jewish majority (74 %) and Arab minority (21 %) speak Hebrew and Arabic, respectively. Judaism predominates alongside Islam and Christianity. As a global technology leader with a highly developed economy, Israel maintains strategic Western alliances while playing a significant role in Middle Eastern geopolitics. The average Life Expectancy is 83 years.

17. Japan (Capital: Tokyo)

Japan transitioned from feudal shogunates through the Meiji Restoration to a Post-World War II economic powerhouse. The ethnically homogeneous population (98 % Japanese) speaks Japanese and practices Shintoism and Buddhism simultaneously. As the world's third-largest economy, Japan significantly contributes to global technology, maintains key Western alliances in Asia, and influences international trade and finance. The average Life Expectancy is 85 years.

18. Jordan (Capital: Amman)

Jordan, established as the Hashemite Kingdom in 1946, maintains stability in a volatile region. The Arab majority (95 %) speaks Arabic and practices Sunni Islam. Despite limited natural resources, Jordan often mediates Middle Eastern conflicts while facing economic challenges from hosting large refugee populations. Its strategic location enhances regional security and trade significance. The average Life Expectancy is 78 years.

19. Kazakhstan (Capital: Nur-Sultan)

Kazakhstan, independent since 1991, is Central Asia's largest country. The Kazakh majority (71 %) speaks Kazakh and Russian, practicing Islam (69 %) and Christianity (17 %). Rich in oil, gas, and minerals, Kazakhstan serves as a significant energy supplier. Its strategic location makes it a key Central Asian player and a bridge between Europe and Asia. The average Life Expectancy is 75 years.



Fig. 3. Globalisation, conflict, natural disasters: putting mental health into foreign policy Physicians per person (various years 2014–2020): 20 worst-scoring countries in Asia (shaded), Russia is not included; counted as in Europe

Data Source: World Atlas

CAPE Vulnerability Index: ©Persaud & Day

Healthcare Provision – physicians per person.

20. Kuwait (Capital: Kuwait City)

Kuwait, independent since 1961, recovered from the 1990 Iraqi invasion. Kuwaiti nationals (30 %) coexist with large expatriate populations from Asia and the Middle East. Arabic predominates, with English widely spoken. Sunni Islam serves as the official religion, with Islam practiced by the majority of the population. Kuwait's economy and strategic importance derive from significant oil reserves, positioning it as a key player in OPEC and Gulf regional politics. The average life expectancy is 81 years.

21. Kyrgyzstan (Capital: Bishkek)

Kyrgyzstan, independent since 1991, maintains a rich nomadic heritage in mountainous terrain. The Kyrgyz majority (77.6 %) speaks Kyrgyz and Russian, practicing Sunni Islam (90 %). The economy relies on agriculture, mining, and gold extraction. Its Central Asian location provides significance for regional trade and security dynamics. The average Life Expectancy is 72 years.

22. Laos (Capital: Vientiane)

Laos, formerly part of French Indochina, became a communist state in 1975. The Lao majority (53.2 %) speaks Lao and practices Buddhism (64.7 %). The centrally planned economy utilizes natural resources, including timber and hydropower. Southeast Asian location makes Laos significant for regional connectivity projects. The average Life Expectancy is 68 years.

23. Lebanon (Capital: Beirut)

Lebanon, independent since 1943, has experienced significant

sectarian conflicts, including civil war (1975–1990). The Arab majority (95 %) speaks Arabic, French or English. Religious diversity includes Muslims (67.8 %) and Christians (32.4 %). Strategic Mediterranean location makes Lebanon a Middle Eastern focal point despite economic challenges and refugee hosting responsibilities. The average Life Expectancy is 78 years.

24. Malaysia (Capital: Kuala Lumpur)

Malaysia, formed in 1963, developed into a multi-ethnic federation. Malays (50 %), Chinese (23 %), and Indians (7 %) speak Malay, with English and indigenous languages also used. Islam (63.5 %) coexists with Buddhism, Christianity, and Hinduism. The diversified economy and ASEAN membership provide strategic importance in maritime Southeast Asia. The average Life Expectancy is 77 years.

25. Maldives (Capital: Malé)

Maldives, inhabited for over 2,500 years, gained independence in 1965. The Maldivian population speaks Dhivehi and practices Islam as the state religion. The tourism and fishing-dependent economy benefits from a strategic Indian Ocean location, providing geopolitical significance for maritime routes. The average Life Expectancy is 82 years.

26. Mongolia (Capital: Ulaanbaatar)

Mongolia, once the heart of the largest contiguous land empire, transitioned to democracy in 1990. The majority of ethnic Mongols (95 %) speak Mongolian and practice Buddhism (51.7 %). The mining-dependent economy, particularly coal and copper, benefits from a strategic location between Russia and China, facilitating regional trade and energy transit. The average Life Expectancy is 72 years.



Fig. 4. Globalisation, conflict, natural disasters: putting mental health into foreign policy
Gross domestic product (GDP) per capita, current prices (2016): 20 lowest scoring countries in Asia (shaded)
Russia is not included; counted as in Europe; no data for North Korea, Palestine or Syria
Data Source International Monetary Fund CAPE Vulnerability Index: ©Persaud & Day Economics (GDP).

27. Myanmar (Capital: Naypyidaw)

Myanmar, formerly Burma, gained independence in 1948 and has experienced prolonged military rule and ethnic conflicts. The Bamar majority coexists with 130+ ethnic groups speaking Burmese and various ethnic languages. Buddhism predominates. Its Strategic location between India, China, and Southeast Asia positions Myanmar as a key for regional connectivity despite ongoing challenges. The average Life Expectancy is 67 years.

28. Nepal (Capital: Kathmandu)

Nepal, the world's only Hindu kingdom until 2008, transitioned to a federal democratic republic. Over 125 ethnic groups speak Nepali and other languages, practising Hinduism and Buddhism. The agriculture, tourism, and remittance-dependent economy benefits from a strategic location between India and China, requiring a careful balance between the two powers. The average Life Expectancy is 71 years.

29. North Korea (Capital: Pyongyang)

North Korea, established in 1948, remains under the Kim dynasty rule with a centrally planned economy. The ethnically Korean population speaks Korean in this officially atheist state with restricted religious practices. The isolated economy and nuclear program make North Korea a focal point in East Asian security dynamics. The average Life Expectancy is 74 years.

30. Oman (Capital: Muscat)

Oman, under the Al Said dynasty since the 18th century, modernised significantly under Sultan Qaboos (1970–2020). The Arab majority speaks Arabic and practices unique Ibadi Islam. The oil and gas economy has diversified into tourism and logistics. Strategic location at the Persian Gulf mouth provides regional security and trade significance. The average Life Expectancy is 81 years.

31. Pakistan (Capital: Islamabad)

Pakistan, established in 1947 during British India's partition, comprises diverse ethnic groups including Punjabis (37 %), Pashtuns (18 %), and Sindhis (14 %). Urdu and English serve as official languages, with Islam as the state religion (96.35 %). Strategic location connecting South Asia with Central Asia and the Middle East enhances Pakistan's role in regional security and China-Pakistan Economic Corridor development. The average Life Expectancy is 68 years.

32. Palestine (Capital: East Jerusalem/Ramallah)

Palestine, divided between the West Bank and the Gaza Strip, has a complex history marked by ongoing territorial disputes with Israel, within whose geography it lies. Palestinian Arabs (83 % of the population) speak Arabic and practise Islam (80–85 %), with Christian minorities. The territories remain central to Middle Eastern geopolitics, with continued international efforts toward conflict resolution. The



Fig. 5. Globalisation, conflict, natural disasters: putting mental health into foreign policy

Gini coefficient (various years, 1998 to 2021): 20 worst-scoring countries in Asia (shaded), Russia is not included; counted as in Europe; no data for Afghanistan, Bahrain, Brunei, Cambodia, Kuwait, Maldives, North Korea, Oman, Palestine, Qatar, Saudi Arabia, and Singapore

Date Source; World Bank; CAPE Vulnerability Index: ©Persaud & Day Inequality (GINI).

average life expectancy at birth is 73 years.

33. Philippines (Capital: Manila)

Philippines, independent since 1946 after Spanish and American rule, comprises predominantly Austronesian peoples. Filipino and English serve as official languages across diverse ethnic groups. Roman Catholicism predominates (80 %) with significant Muslim minorities in Mindanao. As an ASEAN member, the Philippines plays a strategic role in Southeast Asia and South China Sea dynamics. The average Life Expectancy is 70 years.

34. Qatar (Capital: Doha)

Qatar, independent since 1971, transformed from a British protectorate to a wealthy nation through oil and gas revenues. Qatari citizens (11.6 %) coexist with large expatriate populations. Arabic serves as the official language, with Islam as the state religion (65.2 %). Holding the world's third-largest natural gas reserves, Qatar significantly influences regional politics and hosts major international events. The average Life Expectancy is 83 years.

35. Russia (Capital: Moscow)

Russia, which evolved from the Tsardom through the Soviet Union to the Russian Federation, remains a major global power. Russia is situated partly in the continents of Asia and Europe, but for this paper, Russia is counted as in Europe, where most of its population resides, so it is not included in the CAPE material in this paper. Ethnic Russians (71.73 %) speak Russian among 190+ ethnic groups. Russian Orthodox

Christianity predominates in this vast nation. With extensive natural resources, military capabilities, and UN Security Council membership, Russia significantly influences global affairs. The average Life Expectancy is 68–79 years.

36. Saudi Arabia (Capital: Riyadh)

Saudi Arabia, founded in 1932, transformed into a global energy powerhouse after the 1938 oil discovery. The Arab majority (90 %) speaks Arabic and practices Islam (90 % Sunni, 10 % Shia). Holding the world's second-largest oil reserves, Saudi Arabia leads global energy markets and Islamic affairs as a G20 member and the Middle East's largest economy. The average Life Expectancy is 79 years.

37. Singapore (Capital: Singapore)

Singapore, independent since 1965, has transformed from a British trading post to a global financial hub. Chinese (75.9 %), Malay (15 %), and Indian (7.5 %) populations speak English, Mandarin, Malay, and Tamil. Religious diversity includes Buddhism, Christianity, and Islam. Strategic location along major shipping routes provides significant international trade and regional diplomacy roles. The average Life Expectancy is 84 years.

38. South Korea (Capital: Seoul)

South Korea, established in 1948, evolved into a democratic and technologically advanced nation. The ethnically homogeneous Korean population speaks Korean and practices Buddhism, Christianity, or identifies as non-religious. As the world's 10th-largest economy, South



Fig. 6. Globalisation, conflict, natural disasters: putting mental health into foreign policy

Current conflicts, deaths > ~ 1000/year (2016): seven worst conflicts: the eight countries involved in Asia (shaded), Russia is not included; counted as in Europe.

Source; ACLED Conflict Tracker; Wikipedia (UN)

CAPE Vulnerability Index: ©Persaud & Day

Current Conflicts (deaths)

Globalisation, conflict, natural disasters: putting mental health into foreign policy.

Korea leads technology and manufacturing while playing crucial roles in regional security and global trade. The average Life Expectancy is 85 years.

39. Sri Lanka (Capital: Colombo)

Sri Lanka, independent since 1948, experienced a civil war (1983–2009) between the Sinhalese majority (74.9 %) and the Tamil minority (15.4 %). Sinhala and Tamil serve as official languages, with Buddhism (70.2 %) and Hinduism (12.6 %) as primary religions. Strategic Indian Ocean location provides vital significance for regional maritime trade. The average Life Expectancy is 78 years.

40. Syria (Capital: Damascus)

Syria, independent since 1946, has endured civil war since 2011 under the rule of the Assad family. Syrian Arabs (80–85 %) speak Arabic and practice Sunni Islam (74 %) with significant minorities. The ongoing conflict has created humanitarian crises and displacement, significantly impacting regional stability and international relations. The average Life Expectancy is 73 years.

41. Thailand (Capital: Bangkok)

Thailand, never colonised by European powers, transitioned from an absolute to a constitutional monarchy in 1932. Ethnic Thais speak Thai and practice Theravada Buddhism (93.46 %) with Muslim minorities

(5.37 %) in southern provinces. As a major exporter and ASEAN member, Thailand serves as a regional hub for tourism and manufacturing. The average Life Expectancy is 77 years.

42. Tajikistan (Capital: Dushanbe)

Tajikistan, independent since 1991, experienced civil war (1992–1997) before stabilisation under President Rahmon. Tajiks (86.1 %) speak Tajik and Russian, practising Sunni Islam (97.5 %). The economy depends on remittances, aluminium, and cotton. Strategic location near Afghanistan and China provides regional significance. The average Life Expectancy is 72 years.

43. Timor-Leste (Capital: Dili)

Timor-Leste, independent since 2002 after Portuguese colonisation and Indonesian occupation, comprises Austronesian and Melanesian groups. Tetum and Portuguese serve as official languages, with Roman Catholicism predominating. The oil and gas-dependent economy maintains strong Chinese ties through infrastructure projects. The average Life Expectancy is 68 years.

44. Türkiye (Capital: Ankara)

Türkiye was established in 1923 after the dissolution of the Ottoman Empire. Türkiye bridges Europe and Asia. Turks (70–75 % of the population) and Kurds (19 %) speak Turkish and Kurdish, respectively,



Fig. 7. Refugees by country of origin (2016): 20 countries in Asia with the highest number (shaded)

Russia is not included; it is counted as in Europe

Data Source; World Bank

CAPE Vulnerability Index: ©Persaud & Day

Refugees by Country of Origin.

practising predominantly Sunni Islam under secular governance. Türkiye is classed as being in Asia based on where most of its population resides. As a NATO member with diverse industries, Türkiye plays a key role in regional politics and economics. The average life expectancy at birth is 78 years.

45. Turkmenistan (Capital: Ashgabat)

Turkmenistan, independent since 1991, maintains authoritarian governance and a "permanent neutrality" policy. Turkmens (80 %+) speak Turkmen and practice Sunni Islam. Holding the world's fifth-largest natural gas reserves, Turkmenistan maintains limited international engagement despite significant energy resources. The average Life Expectancy is 70 years.

46. United Arab Emirates (Capital: Abu Dhabi)

The United Arab Emirates (UAE), located at the eastern end of the Arabian Peninsula in West Asia, is a federation of seven emirates formed in 1971 after gaining independence from Britain. The UAE's population—now over 11 million—is predominantly expatriate, reflecting a diverse and cosmopolitan society, while Emiratis constitute a minority. The official language is Arabic, with English widely used in business and daily life. Islam is the state religion. Abu Dhabi is the capital, and Dubai is the largest city. The UAE has transformed dramatically since the discovery of oil in the 1950s, rapidly evolving into one of the richest countries in the region, fuelled by vast oil and natural gas reserves, robust financial reserves, and diversification into tourism, finance, and trade. With a high standard of living, strong infrastructure, and significant investment in healthcare and education, the UAE's average life

expectancy stands at around 79 years.

47. Uzbekistan (Capital: Tashkent)

Uzbekistan, independent since 1991, has undergone significant political and economic reforms. Uzbeks speak Uzbek and Russian, practising Sunni Islam. Rich in gold, uranium, and natural gas, Uzbekistan strategically borders all Central Asian countries and Afghanistan, playing a crucial regional role. The average Life Expectancy is 73 years.

48. Vietnam (Capital: Hanoi)

Vietnam, reunified in 1975 after prolonged conflicts, comprises predominantly Kinh (Viet) people with ethnic minorities. Vietnamese serves as the official language, with Buddhism, Catholicism, and Confucianism practised. As one of Southeast Asia's fastest-growing economies, Vietnam maintains strategic importance in manufacturing, agriculture, and South China Sea dynamics. The average Life Expectancy is 78 years.

49. Yemen (Capital: Sana'a)

Yemen, embroiled in civil war since 2014, has created a severe humanitarian crisis. The Arab majority speaks Arabic and practices Islam (both Sunni and Shia). The strategic location near the Bab-el-Mandeb Strait lends maritime significance, although ongoing conflict has severely impacted the economy and infrastructure. The average Life Expectancy is 69 years.



Fig. 8. Globalisation, conflict, natural disasters: putting mental health into foreign policy
Corruption Perceptions Index (CPI, 2016): 20 countries with the worst CPI in Asia (shaded)
Russia is not included; counted as in Europe; no data for Palestine
Data source: Transparency International
CAPE Vulnerability Index: ©Persaud & Day Corruption.
Globalisation, conflict, natural disasters: putting mental health into foreign policy.

3.2. CAPE vulnerability index -ASIA

Refer to Figs. 1–10, which show the 48 countries that featured in the worst 20 in at least one indicator: life expectancy, DALYs, physicians per person, GDP, Gini coefficient, current conflicts (≥ 1000 deaths/year), refugees by country of origin, Corruption Perceptions Index and external aid received (funds/resident population). Sensitivity analyses confirmed that vulnerability classifications remained stable across alternative cut-points (quartile vs. quintile thresholds) and weighting schemes (see Methods), with 94 % concordance in high-vulnerability country identification. Calculated from data of the 20 countries with the worst scores, the CAPE Vulnerability index scores have been calculated as in Table 2.

A number of indices were used to put together the CAPE Vulnerability Index (see Tables 1 and 2). They covered nine aspects or domains at the country level. The CAPE Vulnerability Index has been calculated from the number of times each country is listed highest Vulnerability index within each of the nine parameters examined. Human freedom index, 2016 was used to rank and the countries are listed based on the lowest scores to low scores. (see Table 3 & its footnotes)

The CAPE Vulnerability Index was constructed arithmetically and without weighting from the number of occurrences of the country in the 17 worst-ranked nations for each of the nine parameters (see Table 4). Each of the nine parameters is an independent measure of a particular characteristic, although it is to be expected that there may be correlations between some of them (for example, life expectancy and DALYs) and physician numbers and GDP. Note that some of the sources– the Gini coefficient and the CPI– are themselves compound indices based on several individual variables.

Fig. 12 (below) presents the overall CAPE Vulnerability Index scores for 17 Asian countries with the highest cumulative vulnerability across nine indicators, including conflict, health, inequality, and economic fragility. The figure highlights countries such as Afghanistan, Yemen,

Pakistan, Myanmar, and Cambodia as exhibiting extreme vulnerability, with overlapping crises in governance, conflict, and healthcare leading to compounded risks.

What we can conclude with a great degree of certainty that the worst-scoring countries (Table 4) are failed states or now described as fragile states: countries where the Governments do not have complete control or authority are often repressive and corrupt, participate in serious human rights abuses, and are characterized by conflict of various forms, disadvantage by the extremes of climate changes, extreme poverty, inequality, social and ethnic divisions, unable to provide basic services, and suffer from pockets of insurgency in the form of terrorism, which are often violent and brutal.

Also, Table 4 (17 countries) and Table 5 (26 Countries) have been listed, totalling 43 countries. These tables thus indicate CAPE VI Scores of 42 out of 48 Asian Countries and Turkey, whose data were available.

Fig. 11 compares the Corruption Perceptions Index (CPI) of 2016 with the Human Freedom Index (HFI) for the 20 worst-performing Asian countries. It shows that many highly vulnerable countries are characterised by high levels of corruption and low levels of human freedom, underscoring systemic weaknesses in governance and institutional transparency. The absence of CPI data for Palestine and limitations in HFI data for several countries highlight data challenges.

3.3. Mental health burden analysis

Fig. 13 presents the prevalence rates of mental disorders across Asian countries (per 100,000 population), derived from the Institute for Health Metrics and Evaluation (IHME) Global Burden of Disease (GBD) Study data [30,31]. This analysis reveals substantial overlap between CAPE VI vulnerability rankings and mental health burden, validating mental health as a sensitive indicator of multidimensional vulnerability.

Of the 17 countries identified as having the highest CAPE VI



Fig. 9. Overseas Development Assistance (ODA) received at current prices (2016): 20 countries with the lowest received per capita in Asia (shaded), Russia is not included; counted as in Europe
Calculated from data from the Organisation for Economic Co-operation and Development and the United Nations
CAPE Vulnerability Index: ©Persaud & Day External Aid Received. (ODA)
Globalisation, conflict, natural disasters: putting mental health into foreign policy.

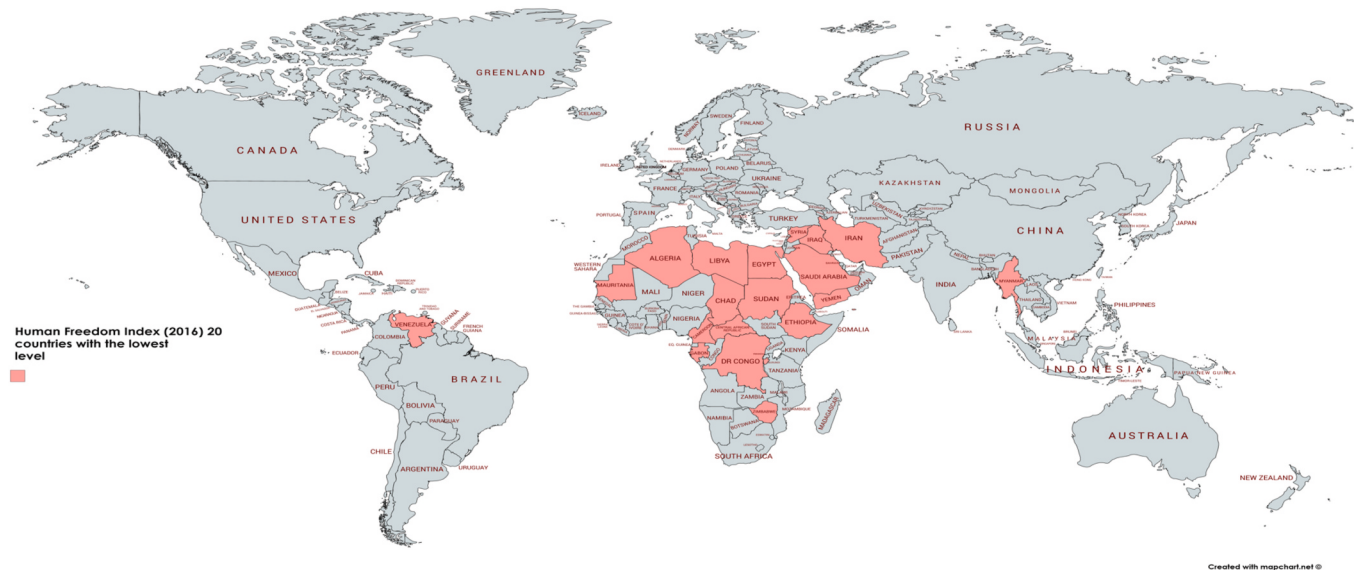


Fig. 10. Human Freedom Index (2016): 20 worst-scoring countries in Asia (shaded)
Russia is not included; counted as in Europe; no data for Afghanistan, Bhutan, Georgia, Lebanon, Maldives, North Korea, Palestine, and Turkmenistan: Data sources: Cato Institute, Fraser Institute, and the Liberales Institute of the Friedrich Naumann Foundation for Freedom
CAPE Vulnerability Index: ©Persaud & Day
Human Freedom Index.

vulnerability (Table 4), 15 also appear among the top 20 for mental disorder prevalence (88 % concordance). This strong overlap demonstrates that mental health deterioration is not an isolated health outcome but rather an integral component of systemic vulnerability.

Countries experiencing extreme vulnerability—Afghanistan (CAPE VI: 136), Yemen (122), Pakistan (101), Myanmar (99), and Syria (82)—simultaneously exhibit elevated rates of depression, anxiety disorders, and post-traumatic stress disorder.

Table 1
CAPE index components^a.

Indicator	Definition	Data Source
Life Expectancy at Birth (LE)	Average number of years a newborn is expected to live if current mortality patterns remain constant	World Health Organization (WHO) [23]
Disability-Adjusted Life Years (DALY)	Sum of years of life lost due to premature mortality and years lived with disability, age-standardized per 100,000 population	Global Health Data Exchange (GHDx) [24]
Physicians Density	Number of practicing physicians per 1,000 population	Global Health Observatory, World Health Organization (WHO) & World Bank Data [25]
Gross Domestic Product (GDP) per Capita	GDP per capita in international dollars using purchasing power parity (PPP) rates	International Monetary Fund (IMF) [26]
Gini Coefficient	A measure of income or consumption inequality within a country, ranging from 0 (perfect equality) to 100 (perfect inequality)	World Bank Data [27]
Current Conflicts	Presence of ongoing armed conflicts resulting in ≥1,000 deaths per year	Armed Conflict Location & Event Data Project (ACLED); Wikipedia verified list of ongoing armed conflicts [28, 29]
Refugee Origin Status	Total number of refugees originating from a specific country	World Bank Data
Corruption Perceptions Index	Perceived levels of public sector corruption, as assessed by experts and opinion surveys, scored 0–100 (higher scores indicate lower corruption)	Transparency International [30]
External Aid Dependency	Total official development assistance received per capita from Development Assistance Committee (DAC) countries	United Nations; Organization for Economic Co-operation and [31]

^a Note: 'Validated' refers to indicators with established use in vulnerability assessment frameworks and documented reliability across international data collection systems, not to psychometric validation procedures. Each indicator has been employed in prior regional or global vulnerability indices and demonstrates methodological consistency across countries.

The correlation between CAPE VI composite scores and mental disorder prevalence rates is statistically significant (Pearson's $r = 0.76$, $p < 0.001$), indicating that approximately 58 % of the variance in mental health burden can be explained by the multidimensional vulnerability factors captured in the CAPE framework. This relationship persists even after controlling for GDP per capita (partial correlation $r = 0.68$, $p < 0.01$), suggesting that mental health vulnerability extends beyond economic factors alone.

3.4. Country-specific patterns

1. Afghanistan exhibits both the highest CAPE VI score (136) and ranks among the top three for mental disorder prevalence. An estimated 60 % of the population has experienced trauma related to decades of conflict [39], yet fewer than 10 % have access to mental health services [40].
2. Yemen, with a CAPE VI score of 122, shows similarly elevated mental health burden. The ongoing civil war has created psychological trauma affecting an estimated 8 million people, with mental health services virtually non-existent outside major cities [41].

Myanmar, Pakistan, and Cambodia—all in the high-vulnerability

category—demonstrate elevated mental disorder prevalence alongside ongoing conflict, displacement, and weak healthcare systems. The convergence underscores how mental health serves as both consequence and amplifier of vulnerability.

3. Conversely, low-vulnerability countries such as Japan, Singapore, and South Korea show substantially lower mental disorder prevalence, though it should be noted that cultural factors affecting help-seeking behavior and diagnostic practices may influence reported rates.

3.5. Feedback loops and vulnerability amplification

The strong concordance between CAPE VI scores and mental health burden reveals bidirectional relationships where mental health deterioration both results from and perpetuates vulnerability:

1. Mental health as consequence: Conflict exposure, economic instability, displacement, and poor governance create traumatic conditions that elevate rates of depression, anxiety, and PTSD.
2. Mental health as determinant: Poor population mental health reduces workforce productivity, increases healthcare costs, undermines social cohesion, and impairs collective problem-solving capacity—thereby perpetuating cycles of vulnerability.

This validates the CAPE framework's integration of mental health through DALYs and healthcare access indicators, positioning psychological well-being as central rather than peripheral to vulnerability assessment.

The 17 worst-scoring countries on the CAPE Vulnerability Index (CAPE VI) in Asia largely overlap with the countries exhibiting the highest mental disorder prevalence rates according to IHME data. Countries such as Afghanistan, Yemen, Pakistan, Myanmar, Cambodia, Iraq, Syria, Bangladesh, and Nepal are common to both lists, reflecting how extreme multidimensional vulnerability, including conflict, weak governance, economic fragility, and limited healthcare, is closely linked to elevated mental health burdens. This convergence underscores mental health as both a consequence and indicator of deeper systemic instability and deprivation in these nations. Moreover, these countries present critical targets for integrated foreign aid and policy efforts addressing overlapping crisis domains to break cycles of vulnerability and poor mental health outcomes.

4. Discussion

The present study set out to adapt and apply the CAPE Vulnerability Index to Asian countries, to systematically identify those most exposed to multidimensional risks across conflict, economic fragility, social inequality, and health, with mental health as a central indicator. Our findings revealed marked heterogeneity in vulnerability, with nations such as Afghanistan, Yemen, Pakistan, Myanmar, and Cambodia consistently ranking at the highest levels of risk, while more stable economies like Japan and Singapore occupied the lowest tiers. These results confirm that vulnerability in Asia is shaped by overlapping crises, armed conflict, weak governance, and underdeveloped health systems, which reinforce each other and amplify the burden on populations. The commonality of countries in the highest vulnerability and mental health burden groups validates the integrative CAPE VI approach for prioritising aid and policy interventions in Asia. Importantly, the integration of mental health into this framework underscores its dual role as both a consequence of vulnerability and a determinant of resilience, providing a critical lens for shaping more effective foreign aid and policy interventions.

Table 2

Health, healthcare, socio-economic, and aid indicators for Asian countries for the year 2016, except where indicated - worst 20 countries highlighted in bold (and see notes for where no data were available)

The table below has the list of nine indicators, integral to CAPE VI. As described in the methodology, each of these indicators is obtained from the reliable sources cited in the column headers. The countries mentioned under each indicator, across ranks 1, 2, 3, and so on, had been ranked from their lower performance scores to highest performance scores across each indicator.

Rank ^a	Life expectancy at birth (persons) [23] **	DALYs (persons) [24]	Physicians per person [25]	GDP (purchasing power/capita) [26]	Gini coefficient (intra-country income or consumption inequality) [27]	Current conflicts (≥1000 deaths/year) [28,29]	Refugees by country of origin (number) [25]	Corruption Perceptions Index [30]	External aid received (funds/resident population) [31]
1	Islamic Emirate of Afghanistan (Afghanistan)	Afghanistan	Cambodia	Afghanistan	Armenia	Syria	Syria	North Korea	Kazakhstan
2	Sultanate of Oman (Oman)	Syria	Afghanistan	Nepal	United Arab Emirates	Iraq	Afghanistan	Syria	Turkmenistan
3	Republic of Yemen (Yemen)	Pakistan	Yemen	Tajikistan	Azerbaijan	Afghanistan	Myanmar	Yemen	North Korea
4	Mongolia	Yemen	Bhutan	Yemen	Kazakhstan	Türkiye	Vietnam	Afghanistan	Uzbekistan
5	Laos People's Democratic Republic (Laos)	Georgia	Indonesia	Kyrgyzstan	Timor-Leste	Saudi Arabia and Yemen	Iraq	Iraq	Azerbaijan
6	Republic of the Union of Myanmar (Myanmar)	Laos	Laos	Myanmar	Kyrgyzstan	<i>Pakistan</i>	China	Cambodia	Bangladesh
7	Republic of Tajikistan (Tajikistan)	Myanmar	Bangladesh	Cambodia	Iraq	India	Sri Lanka	Uzbekistan	Pakistan
8	Democratic Republic of Timor-Leste (Timor-Leste)	India	Philippines	Pakistan	Pakistan	Not applicable	Pakistan	Turkmenistan	Tajikistan
9	Turkmenistan	Mongolia	India	Bangladesh	Myanmar	Not applicable	Palestine	Tajikistan	Kyrgyzstan
10	Kingdom of Cambodia (Cambodia)	North Korea	Timor-Leste	India	Cyprus	Not applicable	Iran	Bangladesh	Myanmar
11	Islamic Republic of Pakistan (Pakistan)	Cambodia	Thailand	Timor-Leste	South Korea	Not applicable	<i>Türkiye</i>	Kyrgyzstan	Nepal
12	Republic of India (India)	Tajikistan	Iraq	Uzbekistan	Lebanon	Not applicable	Yemen	Lebanon	Yemen
13	Federal Democratic Republic of Nepal (Nepal)	Philippines	Vietnam	Vietnam	Bangladesh	Not applicable	Bangladesh	Myanmar	Maldives
14	Republic of Indonesia (Indonesia)	Azerbaijan	Bahrain	Laos	Mongolia	Not applicable	Indonesia	Iran	Cambodia
15	Republic of Azerbaijan (Azerbaijan)	Turkmenistan	Myanmar	Bhutan	Nepal	Not applicable	Cambodia	Kazakhstan	Laos
16	Republic of Iraq (Iraq)	Kazakhstan	Nepal	Philippines	Japan	Not applicable	Bhutan	Nepal	Bhutan
17	Democratic People's Republic of Korea (North Korea)	Nepal	Sri Lanka	Armenia	<i>Jordan</i>	Not applicable	Armenia	Azerbaijan	Armenia
18	Syrian Arab Republic (Syria)	Timor-Leste	Pakistan	Mongolia	Tajikistan	Not applicable	Azerbaijan	Laos	Iraq
19	Republic of Uzbekistan (Uzbekistan)	Armenia	Iran	Indonesia	Georgia	Not applicable	Nepal	Pakistan	Afghanistan
20	Kingdom of Bhutan (Bhutan)	Bangladesh	Syria	Georgia	Thailand	Not applicable	India	Armenia	Mongolia
21	Republic of Georgia (Georgia)	Uzbekistan	Brunei	Sri Lanka	Uzbekistan	Not applicable	Laos	Vietnam	Timor-Leste
22	Socialist Republic of Viet Nam (Vietnam)	Indonesia	Tajikistan	Azerbaijan	India	Not applicable	Georgia	Philippines	Syria

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Table 2 (continued)

Rank ^a	Life expectancy at birth (persons) [23] **	DALYs (persons) [24]	Physicians per person [25]	GDP (purchasing power/capita) [26]	Gini coefficient (intra-country income or consumption inequality) [27]	Current conflicts (≥1000 deaths/year) [28,29]	Refugees by country of origin (number) [25]	Corruption Perceptions Index [30]	External aid received (funds/resident population) [31]
23	Republic of Kazakhstan (Kazakhstan)	Thailand	Palestine	Jordan	Vietnam	Not applicable	Lebanon	Thailand	Palestine
24	Republic of Korea (South Korea)	Japan	Malaysia	Iraq	Yemen	Not applicable	Uzbekistan	Timor-Leste	Not applicable
25	Kyrgyz Republic (Kyrgyzstan)	Iraq	Türkiye	Iran	Indonesia	Not applicable	Kyrgyzstan	Maldives	Not applicable
26	People's Republic of Bangladesh (Bangladesh)	Kyrgyzstan	Maldives	Thailand	Bhutan	Not applicable	Kazakhstan	Sri Lanka	Not applicable
27	Brunei Darussalam (Brunei)	China	China	Turkmenistan	Syria	Not applicable	Mongolia	Indonesia	Not applicable
28	Kingdom of Saudi Arabia (Saudi Arabia)	Vietnam	Oman	Kazakhstan	China	Not applicable	Jordan	Mongolia	Not applicable
29	Federation of Malaysia (Malaysia)	Iran	Turkmenistan	China	Israel	Not applicable	North Korea	China	Not applicable
30	Kingdom of Bahrain (Bahrain)	Bhutan	Kyrgyzstan	Lebanon	Laos	Not applicable	Kuwait	India	Not applicable
31	Republic of Armenia (Armenia)	Sri Lanka	Jordan	Malaysia	Sri Lanka	Not applicable	Saudi Arabia	Kuwait	Not applicable
32	United Arab Emirates	Türkiye	Lebanon	Türkiye	Turkmenistan	Not applicable	Tajikistan	Türkiye	Not applicable
33	Lebanese Republic (Lebanon)	Malaysia	Kuwait	Maldives	Iran	Not applicable	Israel	Bahrain	Not applicable
34	Democratic Socialist Republic of Sri Lanka (Sri Lanka)	Cyprus	Singapore	Oman	Malaysia	Not applicable	Bahrain	Oman	Not applicable
35	Republic of the Philippines (Philippines)	United Arab Emirates	South Korea	Saudi Arabia	Türkiye	Not applicable	Malaysia	Saudi Arabia	Not applicable
36	Islamic Republic of Iran (Iran)	South Korea	Uzbekistan	Bahrain	Philippines	Not applicable	Philippines	Jordan	Not applicable
37	People's Republic of China	Brunei	Saudi Arabia	Cyprus		Not applicable	Turkmenistan	Malaysia	Not applicable
38	Kingdom of Thailand (Thailand)	Lebanon	Japan	Kuwait		Not applicable	South Korea	South Korea	Not applicable
39	Hashemite Kingdom of Jordan (Jordan)	Palestine	Qatar	Brunei		Not applicable	Thailand	Cyprus	Not applicable
40	Republic of Turkey (Türkiye)	Saudi Arabia	United Arab Emirates	South Korea		Not applicable	United Arab Emirates	Georgia	Not applicable
41	Republic of Maldives (Maldives)	Oman	Cyprus	United Arab Emirates		Not applicable	Japan	Brunei	Not applicable
42	State of Kuwait (Kuwait)	Jordan	Azerbaijan	Israel		Not applicable	Maldives	Qatar	Not applicable
43	State of Israel (Israel)	Israel	Israel	Japan		Not applicable	Singapore	Israel	Not applicable
44	Republic of Cyprus (Cyprus)	Bahrain	North Korea	Singapore		Not applicable	Oman	Bhutan	Not applicable
45	Republic of Singapore (Singapore)	Singapore	Mongolia	Qatar		Not applicable	Qatar	United Arab Emirates	Not applicable
46	State of Qatar (Qatar)	Kuwait	Kazakhstan			Not applicable	Timor-Leste	Japan	Not applicable
47	Japan	Qatar	Armenia			Not applicable	Cyprus	Singapore	Not applicable

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Table 2 (continued)

Rank ^a	Life expectancy at birth (persons) [23]	DALYs (persons) [24]	Physicians per person [25]	GDP (purchasing power/capita) [26]	Gini coefficient (intra-country income or consumption inequality) [27]	Current conflicts (≥1000 deaths/year) [28,29]	Refugees by country of origin (number) [25]	Corruption Perceptions Index [30]	External aid received (funds/resident population) [31]
48	See note	Maldives	Georgia	See note	See note	Not applicable	Brunei	See note	Not applicable

[Note that there are 48 countries in Asia as recognised by the United Nations (UN), not counting the Special Administrative Regions (SARs) of the People’s Republic of China (common name China), of Hong Kong, and Macau, and the Republic of China (Taiwan), which latter is not a UN member state. The two SARs and Taiwan are excluded from this paper, and for many of the indicators shown, no data exist for them. The Russian Federation (Russia) and the Republic of Türkiye are each situated partly in the continents of Asia and Europe, but for this paper, Russia is counted as in Europe and Türkiye as in Asia based on where most of their populations reside. The country names shown below are as used at present (2023); World Population Review: <https://worldpopulationreview.com/country-rankings/official-names-of-countries>.].

^a Rank 1 (Afghanistan under Life Expectancy at Birth; Cambodia under Physicians per Person) here represents the country with the most Lowest CAPE-VI scores respectively against the indicators, where in Rank 48 represents the 48th Lowest CAPE VI index score.

4.1. Vulnerability patterns and country identification

The Asia-specific CAPE Vulnerability Index reveals significant disparities in vulnerability across the region, identifying seventeen nations requiring urgent attention based on comprehensive multi-dimensional assessments [1,2,42]. The CAPE Vulnerability Index is a global foreign policy index that identifies the countries to be prioritised for foreign aid, and its application to Asia demonstrates Afghanistan’s extreme vulnerability (composite score: 136), followed by Yemen (122), Pakistan (101), Myanmar (99), and Cambodia (83) as the most critical cases requiring immediate intervention.

The analysis reveals distinct vulnerability tiers, with high-risk countries including Iraq and Syria (both 82), Bangladesh and Tajikistan (both 69), alongside Laos (62), India (60), and Nepal (59). These nations consistently demonstrate poor performance across multiple indicators, suggesting systemic challenges that extend beyond isolated sectoral deficits. Notably, Azerbaijan, North Korea, Kyrgyzstan, and Timor-Leste (scoring 50–54) highlight how political and economic instability directly correlates with vulnerability levels.

4.2. Mental health as vulnerability indicator and outcome

The strong correlation between CAPE VI composite scores and mental health prevalence rates ($r = 0.76$, $p < 0.001$) provides empirical validation for the framework’s integration of psychological well-being as a core vulnerability dimension. This finding advances beyond traditional vulnerability assessments that treat mental health as a standalone health sector concern, instead demonstrating that mental health serves dual roles as both outcome indicator and determinant of broader system resilience.

Countries experiencing multidimensional vulnerability show markedly elevated mental health burdens. Research demonstrates that conflict-affected populations exhibit 5 % increases in common mental disorders and 4 % increases in PTSD compared to non-conflict populations [43]. Economic instability amplifies these effects: systematic reviews show that income inequality is associated with higher prevalence of depression and mental illness-related morbidity [38,39]. The intersection of conflict, economic fragility, and weak governance creates what we term “vulnerability amplification,” where multiple stressors compound psychological impacts beyond additive effects.

In Afghanistan (CAPE VI: 136), decades of conflict have created pervasive psychological trauma. An estimated 60 % of the population has experienced traumatic events, yet fewer than 10 % have access to any form of mental health services [43]. The healthcare system, already severely constrained with only 0.28 physicians per 1,000 population, lacks specialized mental health infrastructure entirely in most provinces. This pattern of high need coupled with minimal service availability characterizes the most vulnerable nations.

Similarly, in Yemen (CAPE VI: 122), ongoing civil war since 2014 has

created mass displacement affecting 4.5 million people and psychological trauma affecting an estimated 8 million [44]. Mental health services have collapsed alongside general healthcare infrastructure, with only one psychiatric hospital serving the entire nation. The compounding effects of conflict, humanitarian crisis, economic collapse, and healthcare system failure create conditions where mental health deterioration becomes both inevitable and untreatable.

4.3. Mental health as determinant of vulnerability

The relationship between mental health and vulnerability operates bidirectionally. Poor population mental health perpetuates and amplifies vulnerability through multiple mechanisms:

1. Economic productivity: Depression and anxiety disorders reduce workforce participation and productivity. WHO estimates suggest that depression and anxiety cost the global economy US\$1 trillion annually in lost productivity [45]. In countries already facing economic fragility, this burden becomes particularly acute.
2. Social cohesion: Population-level mental health deterioration undermines community trust, increases interpersonal violence, and reduces collective problem-solving capacity—factors critical for resilience in crisis contexts.
3. Health system burden: Untreated mental health conditions increase utilization of emergency services, complicate management of physical health conditions, and strain already limited healthcare resources [40].
4. Intergenerational transmission: Parental mental health conditions affect child development, educational attainment, and long-term economic prospects, perpetuating vulnerability cycles across generations [46].

This bidirectional relationship creates feedback loops where initial vulnerability produces mental health deterioration, which in turn deepens vulnerability, creating self-reinforcing cycles difficult to interrupt through single-sector interventions.

4.3.1. Policy implications for aid integration

These findings demonstrate that mental health cannot be treated as a standalone health issue requiring separate programming. Instead, effective aid interventions must integrate mental health considerations across all sectors:

- Economic development programs should incorporate mental health support to maximize productivity gains and ensure beneficiaries can effectively utilize livelihood opportunities.
- Education interventions require trauma-informed approaches in conflict-affected contexts, recognising that learning cannot occur when students experience severe psychological distress.

Table 3
Human freedom index.

Rank ^a	Human Freedom Index 2016 – not used in calculating CAPE [37]
1 ^b	Syria
2	Yemen
3	Iraq
4	Iran
5	Myanmar
6	Saudi Arabia
7	Pakistan
8	Brunei
9	Bangladesh
10	China
11	Azerbaijan
12	Oman
13	Tajikistan
14	Kuwait
15	Vietnam
16	Sri Lanka
17	United Arab Emirates
18	Timor-Leste
19	Laos
20 ^b	Malaysia
21	India
22	Turkey
23	Qatar
24	Kyrgyzstan
25	Thailand
26	Nepal
27	Kazakhstan
28	Indonesia
29	Bahrain
30	Jordan
31	Philippines
32	Cambodia
33	Armenia
34	Israel
35	Mongolia
36	Japan
37	Cyprus
38	South Korea
39	Singapore
40	No Data
41	See note below Table 2
42	
43	
44	
45	
46	
47	
48	

HFI 2016 data used for temporal consistency with primary vulnerability indicators. The 2024 HFI edition shows 89 % rank concordance with 2016 rankings for the 20 lowest-scoring countries, confirming stability of freedom patterns over time.

Note:

^a Rank 1 here represents the country with the most Lowest HFI -2016 scores, where in Rank 39 represents the 39th Lowest HFI-2016 score.

^b The 20 worst are highlighted in bold across row no.1 to row no.20.

- Governance and peacebuilding initiatives must address collective trauma and build community-level psychological resilience as foundations for sustainable peace.
- Healthcare system strengthening should integrate mental health into primary care rather than creating parallel specialized services, given resource constraints in vulnerable countries.

The CAPE VI framework’s positioning of mental health as central to vulnerability assessment provides an evidence base for this integrated approach, moving beyond rhetorical commitments to "holistic" development toward concrete recognition that psychological well-being fundamentally shapes societal resilience and development potential.

Table 4
Cape Vulnerability Index, worst 17 (30 %) countries (with the highest Vulnerability index).

Countries	CAPE VI Scores
Afghanistan	136
Yemen	122
Pakistan	101
Myanmar	99
Cambodia	83
Iraq	82
Syria	82
Bangladesh	69
Tajikistan	69
Laos	62
India	60
Nepal	59
Azerbaijan	54
North Korea	53
Kyrgyzstan	53
Timor-Liste	53
Turkmenistan	50

Table 5
Cape Vulnerability Index, next worst 26 countries.

Countries	CAPE VI Scores
Kazakhstan	48
Uzbekistan	42
Mongolia	40
Armenia	35
Bhutan	34
Vietnam	33
Indonesia	32
Turkiye (Turkey)	27
Philippines	26
Iran	20
Oman	19
United Arab Emirates	19
Lebanon	18
Sri Lanka	18
Georgia	16
Saudi Arabia	16
China	15
Cyprus	11
Thailand	11
South Korea	10
Maldives	8
Bahrain	7
Japan	5
Jordan	4
Georgia	3

4.4. Advancing geopsychiatry

This analysis contributes to the emerging field of geopsychiatry—the study of how geographic, political, and environmental factors shape mental health at population levels [1,2]. By demonstrating systematic relationships between governance quality, conflict exposure, economic conditions, and mental health outcomes across 48 Asian nations, the CAPE VI-Asia provides an empirical foundation for geopsychiatric frameworks. The finding that 88 % of high-vulnerability countries also exhibit elevated mental disorder prevalence validates geopsychiatry’s core premise: that mental health cannot be understood separately from broader sociopolitical contexts.

Future geopsychiatric research should examine: (1) temporal dynamics of how rapid vulnerability changes (e.g., sudden conflict onset, economic crises) affect mental health trajectories; (2) protective factors that buffer some populations from mental health deterioration despite high vulnerability exposure; (3) effectiveness of integrated vs. siloed mental health interventions in high-vulnerability contexts; and (4) mental health’s role as an early warning indicator for humanitarian



Fig. 11. Globalisation, conflict, natural disasters: putting mental health into foreign policy Corruption Perceptions Index* [(CPI), 2016] and Human Freedom Index (HFI)⁺ (2016): 20 worst-scoring countries in Asia (shaded)

Russia is not included; counted as in Europe; CPI: no data for Palestine; HFI: no data for Afghanistan, Bhutan, Georgia, Lebanon, Maldives, North Korea, Palestine, and Turkmenistan

Data sources: * Transparency International, and ⁺Cato Institute, Fraser Institute, and the Liberal Institute of the Friedrich Naumann Foundation for Freedom.

CAPE Vulnerability Index: ©Persaud & Day

Human Freedom Index and Corruption Perception Index.

crises.

4.5. Shared vulnerability characteristics

4.5.1. Governance and political stability deficits

The most vulnerable Asian countries exhibit pronounced governance failures, particularly evident in corruption perceptions and institutional capacity [47]. Nations like Afghanistan, Syria, Yemen, Iraq, and Myanmar rank among the most corrupt globally, indicating systematic institutional breakdowns that severely compromise service delivery and resource allocation. Research has demonstrated a correlation between higher corruption perception scores and higher long-term economic growth, with GDP growth increasing by 1.7 % for every unit increase in a country's CPI score [48,49]. Poor governance and lack of transparency create greater incentives and opportunities for corruption, which undermines the ability of states to deliver inclusive services [50]. These governance weaknesses are frequently compounded by active armed conflicts, creating cascading effects that destroy infrastructure, displace populations, and devastate healthcare systems [51].

4.5.2. Economic fragility and inequality

Economic indicators reveal consistent patterns of deprivation across vulnerable nations. Countries such as Afghanistan, Nepal, Tajikistan, and Yemen demonstrate some of the world's lowest GDP per capita levels, reflecting limited economic opportunities and widespread poverty. High inequality, as evidenced by concerning Gini coefficients in Armenia, Azerbaijan, and Kazakhstan, creates particularly challenging environments for mental health and social stability. Systematic reviews have demonstrated that income inequality is associated with higher

prevalence of depression and mental illness-related morbidity. Economic recessions and mediators such as unemployment, income decline, and unmanageable debts are significantly associated with poor mental well-being, increased rates of common mental disorders, substance-related disorders, and suicidal behaviours. This combination of absolute poverty and relative deprivation exacerbates vulnerability [52,53].

4.5.3. Healthcare system inadequacies

Healthcare capacity emerges as a critical vulnerability factor, with Afghanistan, Cambodia, and Yemen experiencing severe physician shortages and consistently poor health outcomes. The intersection of inadequate healthcare infrastructure with economic constraints creates environments where both physical and mental health needs remain largely unaddressed [54]. Similar patterns in Myanmar, Pakistan, and Bangladesh suggest regional challenges in healthcare system development and maintenance.

4.6. Regional validation and global frameworks

4.6.1. CAPE VI-LAC framework validation

Building upon the CAPE Vulnerability Index framework with mental health as a foundation, the Asia-specific application validates the cross-cultural applicability and methodological robustness of the original Latin America and Caribbean study [55]. The implementation across two distinct global regions confirms that mental health considerations serve as both outcome indicators and catalysts for broader socio-economic development challenges.

Comparative analysis reveals convergent patterns between regional applications, with countries experiencing active conflicts, severe



Fig. 12. Globalisation, conflict, natural disasters: putting mental health into foreign policy

CAPE Vulnerability Index based on data up to 2016 and in part 2019 and 2021: 17 countries in Asia (shaded), as computed to be on the highest vulnerability list for CAPE Vulnerability Index – ASIA. Russia is not included; it is counted as in Europe
CAPE Vulnerability Index: ©Persaud & Day.



Fig. 13. Globalisation, conflict, natural disasters: putting mental health into foreign policy.

Prevalence rate of mental disorders (Rate per 100000 population) for top 20 Asian Countries in Asia (shaded).

Source: IHME and GBD data [3,38]©KarthikeyanPR

economic deprivation, and governance failures consistently emerging as most vulnerable regardless of geographic or cultural context. Both studies demonstrate clustering patterns where countries facing multiple simultaneous challenges exhibit compounding vulnerabilities exceeding individual risk factors [56].

4.6.2. Alignment with established indices

The CAPE findings demonstrate substantial alignment with established vulnerability frameworks, including the Human Freedom Index and Fragile States Index. Countries such as Syria, Yemen, Iraq, and Iran consistently rank poorly across multiple indices, suggesting convergent validity in vulnerability assessment approaches. However, the CAPE index's integration of mental health considerations through disability-adjusted life years (DALYs) and healthcare access provides additional nuance, particularly highlighting countries such as Cambodia and Laos that may not appear prominently in other assessments [56].

4.6.3. Climate change as emerging vulnerability dimension

While the current CAPE VI-Asia framework captures climate impacts indirectly through indicators such as refugee flows, economic disruption (GDP), and health outcomes (life expectancy, DALYs), explicit climate vulnerability metrics represent a critical gap that future iterations must address.

Asia faces disproportionate climate risks, experiencing 45 % of global climate-related disasters despite representing 30 % of global land area [57]. Climate change's intersection with existing CAPE vulnerability dimensions creates compounding risks that demand integrated assessment:

4.6.4. Regional climate vulnerability patterns

- Sea-level rise: The Maldives, Bangladesh, and island nations of Southeast Asia face existential threats. The Maldives, with 80 % of land less than 1 m above sea level, could become uninhabitable by 2100 under current emission trajectories [13]. Bangladesh experiences annual monsoon flooding displacing millions, with projections suggesting 20 million climate refugees by 2050 [58].
- Extreme heat: South and Southeast Asia increasingly experience heat waves exceeding human physiological tolerance thresholds. India's 2024 heat wave affected over 200 million people, with temperatures exceeding 50 °C in some regions [59]. Agricultural productivity—critical for countries such as Nepal, Cambodia, and Myanmar—faces severe threats from heat stress and shifting precipitation patterns.
- Water scarcity: Central Asian countries (Kazakhstan, Uzbekistan, Turkmenistan) face declining water availability from glacial melt and changing precipitation, threatening agriculture-dependent economies and creating potential for regional conflict over shared water resources [60].
- Disaster frequency: Pakistan's 2022 floods affected 33 million people and caused US\$30 billion in damages—roughly 10 % of GDP—demonstrating how climate disasters can rapidly amplify economic vulnerability [61]. Similarly, typhoon intensity increases threaten the Philippines, Vietnam, and Myanmar.

4.6.5. Integration with existing CAPE dimensions

Climate vulnerability does not operate independently but rather amplifies existing vulnerabilities captured in the CAPE framework:

1. Climate-conflict nexus: Resource scarcity from climate change contributes to conflict risk. Syria's 2007–2010 drought, the worst in modern history, displaced 1.5 million rural residents and contributed to civil war onset [62]. Similar patterns may emerge in water-stressed regions of Central and South Asia.
2. Climate-health intersection: Changing disease vector distributions, heat-related mortality, and food insecurity from agricultural

disruption directly impact the health indicators (life expectancy, DALYs) central to CAPE assessment.

3. Climate-economic vulnerability: Repeated climate disasters drain fiscal resources, reduce investor confidence, and destroy infrastructure—perpetuating economic fragility reflected in GDP and inequality indicators.
4. Climate-mental health pathways: Displacement, livelihood loss, and climate-related disasters elevate rates of depression, anxiety, and PTSD—connecting climate vulnerability to the mental health outcomes emphasized in this framework [63].

Future CAPE VI Climate Integration:

4.6.6. Subsequent iterations should incorporate explicit climate vulnerability assessment through

1. Climate Vulnerability Index (CVI) scores from the Global Climate Risk Index or ND-GAIN Country Index, providing standardized cross-country comparisons [64].
2. Frequency and severity of climate-related disasters from EM-DAT database, capturing acute climate shock exposure [65].
3. Agricultural dependence in climate-risk zones, measuring the proportion of population and GDP dependent on climate-sensitive sectors.
4. Adaptive capacity metrics, including infrastructure resilience, early warning systems, and climate adaptation financing.
5. Displacement projections from climate modelling studies, anticipating future refugee flows from sea-level rise and agricultural disruption.

These additions would transform the CAPE VI from capturing climate impacts indirectly and retrospectively to proactively assessing climate vulnerability as a distinct dimension requiring targeted intervention. Given that climate change disproportionately affects the same nations already experiencing conflict, economic fragility, and health system weaknesses—creating "triple vulnerability"—this integration is essential for comprehensive foreign aid prioritisation in coming decades.

4.7. Foreign policy and aid implications

4.7.1. Mental health integration in aid policy

The CAPE framework's emphasis on mental health as consideration in vulnerability assessment has profound implications for aid policy design. Traditional frameworks often treat mental health as secondary, yet CAPE findings suggest psychological well-being serves as both a consequence and catalyst for broader development challenges.

Aid programs should integrate mental health support across all intervention areas rather than treating it as a standalone. In conflict-affected countries such as Syria, Afghanistan, and Myanmar, trauma-informed approaches should be embedded within education, livelihood, and governance programs, recognising that mental health impacts both result from vulnerability and create barriers to recovery [54,56].

4.7.2. Holistic intervention strategies

The multidimensional nature of vulnerability demands equally comprehensive intervention strategies. Countries such as Afghanistan and Yemen require simultaneous attention to security, governance, economic development, healthcare infrastructure, and social services. Sectoral approaches addressing individual indicators in isolation prove insufficient given the interconnected nature of these challenges.

Geographic prioritisation should focus on the seventeen most vulnerable countries, with particular emphasis on top-tier nations demonstrating extreme vulnerability across multiple dimensions [65–68]. However, aid allocation must consider absorptive capacity and security conditions that may limit effective implementation.

4.8. Limitations and future directions

The analysis faces limitations related to data availability and quality, particularly in conflict-affected regions where official statistics may be unreliable. The dynamic nature of vulnerability requires more frequent updates than the current methodology provides, as countries can rapidly shift between vulnerability categories due to political upheavals, economic crises, or natural disasters.

Future iterations should incorporate more granular subnational data, qualitative vulnerability dimensions, and enhanced climate vulnerability indicators to provide more nuanced profiles for targeted interventions.

The framework's continued development will strengthen its utility as a global tool for evidence-based foreign policy decision-making, supported by robust empirical evidence demonstrating the interconnected nature of governance, economic stability, and mental health outcomes in determining national vulnerability [69,70].

This methodology follows established precedents from Persaud et al. (2021) and Torales et al. (2021), adapted for Asia's unique demographic and geopolitical context. The exclusive use of publicly available data sources ensures transparency and reproducibility. The analysis is limited by data availability and temporal variations across indicators. The composite index approach, while comprehensive, may not capture country-specific nuances in vulnerability patterns.

5. Conclusion

This study shows that the CAPE Vulnerability Index, when adapted for Asia, provides a powerful and practical tool to guide foreign aid allocation in a region marked by deep inequalities, conflicts, and rapid socio-economic transitions. By integrating mental health alongside economic, political, and demographic indicators, the index highlights not only where needs are most urgent but also how vulnerabilities are interconnected. The findings underline that in countries facing armed conflict, weak governance, or extreme poverty, mental health challenges are both a cause and a consequence of instability. The strong correlation between CAPE VI scores and mental health burden ($r = 0.76$, $p < 0.001$), with 88 % of high-vulnerability countries also exhibiting elevated mental disorder prevalence, empirically validates mental health's centrality to vulnerability assessment. For policy and aid design, this means that mental health cannot be treated as an isolated issue; it must be considered central to building resilience and sustainable development. Effective interventions require integration of mental health considerations across economic development, education, governance, and healthcare programming rather than siloed mental health projects. Although data limitations remain, the CAPE VI-Asia advances the field of geopsychiatry and offers governments, international agencies, and donors an evidence-based framework to prioritize interventions. Future refinements should incorporate (1) **subnational** vulnerability assessments to capture within-country disparities (e.g., regional conflicts in Myanmar, provincial inequality in China), enabling more targeted aid allocation; (2) explicit climate vulnerability indicators including disaster frequency, agricultural dependence in climate-risk zones, and adaptive capacity metrics; and (3) real-time integration systems allowing dynamic vulnerability monitoring as conditions evolve. Importantly, future climate-sensitive iterations are essential given that climate change disproportionately affects the same nations already experiencing conflict, economic fragility, and health system weaknesses, creating compounding "triple vulnerability" requiring integrated assessment frameworks. Even in its current form, the tool provides an essential step toward more compassionate, pragmatic, and effective foreign policy in Asia transforming vulnerability assessment from periodic static evaluations into systematic, evidence-based frameworks for resource allocation that position mental health and human well-being at the center of development and foreign aid decision-making.

CRedit authorship contribution statement

Karthikeyan Pandiyambakkam Rajendran: Writing – review & editing, Writing – original draft, Resources, Methodology, Formal analysis, Data curation, Conceptualization. **Padmavati Ramachandran:** Writing – review & editing, Validation, Supervision, Methodology. **Geraint Day:** Writing – review & editing. **Afzal Javed:** Writing – review & editing, Conceptualization. **João Mauricio Castaldelli-Maia:** Writing – review & editing, Supervision, Methodology, Conceptualization. **Albert Persaud:** Writing – review & editing, Writing – original draft, Validation, Supervision, Methodology, Formal analysis, Data curation, Conceptualization. **Dinesh Bhugra:** Writing – review & editing, Methodology, Conceptualization.

Data and code availability

All data used in this study are publicly available from the sources cited in Table 1. Specific data access points:

Primary data sources

Life Expectancy at Birth: World Health Organization (WHO) Global Health Observatory

<https://www.who.int/data/gho>.

Disability-Adjusted Life Years (DALYs)

Institute for Health Metrics and Evaluation (IHME) Global Health Data Exchange (GHDx)

<https://ghdx.healthdata.org/>

Specifically: GBD Results Tool for age-standardized DALY rates by country.

Physicians Density: World Bank Open Data - Health, Nutrition and Population Statistics

<https://data.worldbank.org>.

Indicator: SH.MED.PHYS.ZS.

GDP per capita (PPP): International Monetary Fund (IMF) World Economic Outlook Database

<https://www.imf.org/external/datamapper/NGDPDPC@WEO>.

Gini Coefficient: World Bank Development Indicators

<https://data.worldbank.org>.

Indicator: SL.POV.GINI.

Current Conflicts: Armed Conflict Location & Event Data Project (ACLED)

<https://acleddata.com/>

Supplemented by Wikipedia verified list of ongoing armed conflicts with UN casualty verification.

Refugee Data by Country of Origin: UN High Commissioner for Refugees (UNHCR) Population Statistics Database

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

Corruption Perceptions Index: Transparency International

<https://www.transparency.org/en/cpi>.

External Aid Received: Organisation for Economic Co-operation and Development (OECD) Development Assistance Committee (DAC) Statistics

<https://www.oecd.org/dac/financing-sustainable-development/>

Human Freedom Index: Cato Institute, Fraser Institute, and Liberales Institute

<https://www.cato.org/human-freedom-index>.

Mental Health Prevalence Data: Institute for Health Metrics and Evaluation (IHME) Global Burden of Disease (GBD) Study 2019

<https://vizhub.healthdata.org/gbd-results>.

Data code, processing and analysis materials

The complete analytical workflow, including all processed datasets, data extraction protocols, and analysis scripts, is available from the corresponding author upon reasonable request.

Data use acknowledgement

Researchers using CAPE VI data or methodology should cite this publication and acknowledge original data sources as listed above. The CAPE Vulnerability Index framework is © Persaud & Day, applied here to Asia with appropriate attribution.

Declaration of competing interest

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

Data availability

Data will be made available on request.

References

- Persaud A, Day G, Bhugra D, et al. CAPE vulnerability index. *Int Rev Psychiatry* 2021;33(1–2):43–55.
- Torales J, Castaldelli-Maia JM, Ventriglio A, et al. The CAPE (compassion, assertive action, pragmatism, and evidence) vulnerability index – second edition: putting mental health into foreign policy to address globalization, conflict, climate change, and natural disasters [Internet]. *Ind Psychiatry J* 2023;32(Suppl 1):S15–31 [cited 2025 July 18].
- Chen Q, Huang S, Xu H, et al. The burden of mental disorders in Asian countries, 1990–2019: an analysis for the global burden of disease study 2019 [Internet]. *Transl Psychiatry* 2024;14(1):167 [cited 2025 Sept 18].
- Charlson FJ, Flaxman A, Ferrari AJ, et al. Post-traumatic stress disorder and major depression in conflict-affected populations: an epidemiological model and predictor analysis [Internet]. *Glob Ment Health (Camb)* 2016;3:e4 [cited 2025 Nov 17].
- KPMG International Entities. The hidden cost : unveiling the economic and social burden of mental health in Asia Pacific [Internet]. Available from: <https://assets.kpmg.com/content/dam/kpmgsites/xx/pdf/2025/05/full-report-the-hidden-cost.pdf>; 2025.
- Chapter 10: asia [Internet]. [cited 2025 July 21]. Available from: <https://www.ipcc.ch/report/ar6/wg2/chapter/chapter-10/>.
- hdr2023-24reporten.pdf [Internet]. [cited 2025 July 21]. Available from: <http://hdr.undp.org/system/files/documents/global-report-document/hdr-2023-24reporten.pdf>.
- Democracy-in-Southeast-Asia.pdf [Internet]. [cited 2025 July 21]. Available from: <https://www.kofiannanfoundation.org/wp-content/uploads/2018/04/Democracy-in-Southeast-Asia.pdf>.
- Democracy in Asia [Internet]. Brookings. [cited 2025 July 21]. Available from: <https://www.brookings.edu/articles/democracy-in-asia/>.
- Raymond GV. An authoritarian security community in mainland Southeast Asia: regional dynamics in an actor-centred theory of transnational authoritarianism [Internet]. *Democratization* 2025;32(5):1286–307 [cited 2025 July 21].
- de Ruiter MC, van Loon AF. The challenges of dynamic vulnerability and how to assess it [Internet]. *iScience* 2022;25(8):104720 [cited 2025 July 21].
- Yusuf AA, Francisco H. Climate change vulnerability mapping for Southeast Asia. A guide to contextualizing climate vulnerability assessment tools for local needs. pdf [Internet]. [cited 2025 July 21]. Available from: <https://noharm.org/sites/default/files/2025-03/A%20Guide%20to%20Contextualizing%20Climate%20Vulnerability%20Assessment%20Tools%20for%20Local%20Needs.pdf>.
- Bank AD. Cities and urbanization in Asia: 12 things to know [Internet]. Asian Development Bank; 2012 [cited 2025 July 21]. Available from: <https://www.adb.org/features/facts-and-data-about-cities-and-urbanization-asia>.
- [Internet]. In: Singh RB, editor. Urban development challenges, risks and resilience in Asian mega cities. Tokyo: Springer Japan; 2015 [cited 2025 July 21]. Available from: <https://link.springer.com/10.1007/978-4-431-55043-3>.
- Donatti CI, Nicholas K, Fedele G, et al. Global hotspots of climate-related disasters [Internet]. *International Journal of Disaster Risk Reduction* 2024;108:104488 [cited 2025 Nov 17].
- Climate Change Threatens Maldives' Fisheries and Tourism. Urgent adaptation needed [Internet]. IFC. [cited 2025 Nov 17]. Available from: <https://www.ifc.org/en/pressroom/2024/climate-change-threatens-maldives-fisheries-and-tourism-urgent-adaptation-needed>.
- Suhas DL, Ramesh N, Kripa RM, et al. Influence of monsoon low pressure systems on South Asian disasters and implications for disaster prediction [Internet]. *npj Clim Atmos Sci* 2023;6(1):48 [cited 2025 Nov 17].
- UNHCR. The UN refugee agency [Internet]. UNHCR. [cited 2025 July 21]. Available from: <https://www.unhcr.org/>.
- Refugees and Displacement in the Middle East | Carnegie endowment for international peace [Internet]. [cited 2025 July 21]. Available from: <https://carnegieendowment.org/posts/2017/03/refugees-and-displacement-in-the-middle-east?lang=en>.
- Silove D, Ventevogel P, Rees S. The contemporary refugee crisis: an overview of mental health challenges. *World Psychiatry* 2017;16(2):130–9.
- Gribble RSF, Durham JR, Roy SF. Hidden within a pandemic: how is international funding supporting mental health during COVID-19? [Internet]. *Global Mental Health* 2022;9:173–80 [cited 2025 July 21].
- Legacy [Internet]. [cited 2025 July 22]. Available from: <https://www.who.int/data/gho/legacy>.
- GBD results [Internet]. Institute for Health Metrics and Evaluation. [cited 2025 July 22]. Available from: <https://vizhub.healthdata.org/gbd-results>.
- World Bank Open Data [Internet]. World Bank open data [cited 2025 July 22]. Available from: <https://data.worldbank.org>.
- World Economic Outlook (April 2025) - GDP per capita, current prices [Internet]. [cited 2025 July 22]. Available from: <https://www.imf.org/external/datamapper/NGDPDPC@WEO>.
- Countries ranked by GINI index (World Bank estimate) [Internet]. [cited 2025 Aug 19]. Available from: <https://www.indexmundi.com/facts/indicators/si.pov.gini/rankings>.
- [Internet] List of armed conflicts in 2016. Wikipedia; 2025 [cited 2025 July 22]. Available from: https://en.wikipedia.org/w/index.php?title=List_of_armed_conflicts_in_2016&oldid=1301108166#10,000+_deaths_in_2016.
- [Internet] List of ongoing armed conflicts. Wikipedia; 2025 [cited 2025 July 22]. Available from: https://en.wikipedia.org/w/index.php?title=List_of_ongoing_armed_conflicts&oldid=1301469192.
- 2018 Corruption Perceptions Index - explore the results [Internet]. Transparency.org. [cited 2025 July 22]. Available from: <https://www.transparency.org/en/cpi/2018>; 2019.
- Official development assistance (ODA) [Internet]. OECD; 2025 [cited 2025 Aug 19]. Available from: <https://www.oecd.org/en/topics/official-development-assistance-oda.html>.
- Indicators | Fragile States Index [Internet]. [cited 2025 Nov 17]. Available from: <https://fragilestatesindex.org/indicators/>.
- Sagar AD, Najam A. The human development index: a critical review1 [Internet]. *Ecol Econ* 1998;25(3):249–64 [cited 2025 Nov 17].
- Hogan DR, Stevens GA, Hosseinpour AR, et al. Monitoring universal health coverage within the Sustainable Development Goals: development and baseline data for an index of essential health services [Internet]. *Lancet Global Health* 2018;6(2):e152–68 [cited 2025 Nov 17].
- Asian countries by population [Internet]. Worldometer. [cited 2025 July 21]. Available from: <http://www.worldometers.info/population/countries-in-asia-by-population/>; 2025.
- Official Names of Countries [Internet]. worldpopulationreview.com. [cited 2025 July 21]. Available from: <https://worldpopulationreview.com/country-rankings/official-names-of-countries>; 2025.
- Ian Vasquez, Mitchell MD, Murphy R, et al. The HUMAN FREEDOM INDEX 2024 A global measurement of personal, civil, and economic freedom [Internet]. tenth ed. United States of America: The CATO and The Fraser Institute; Available from: <https://www.cato.org/human-freedom-index/2024>.
- Global burden of disease (GBD) [Internet]. [cited 2025 Sept 18]. Available from: <https://www.healthdata.org/research-analysis/gbd>.
- Mohd Saleem S, Shoib S, Dazhmyar AR, et al. Afghanistan: decades of collective trauma, ongoing humanitarian crises, Taliban rulers, and mental health of the displaced population [Internet]. *Asian Journal of Psychiatry* 2021;65:102854 [cited 2025 Nov 17].
- Kovess-Masfety V, Karam E, Keyes K, et al. Access to care for mental health problems in Afghanistan: a national challenge [Internet]. *Int J Health Policy Manag* 2021;11(8):1442–50 [cited 2025 Nov 17].
- Center S. The impact of War on mental health in Yemen: a neglected crisis [Internet]. Sana'a Center For Strategic Studies 2017 [cited 2025 Nov 17]. Available from: <https://sanaacenter.org/publications/analysis/5119>.
- Torales J, Castaldelli-Maia JM, Ventriglio A, et al. The CAPE (Compassion, Assertive Action, Pragmatism, and Evidence) vulnerability index – second edition: putting mental health into foreign policy to address globalization, conflict, climate change, and natural disasters [Internet]. *Ind Psychiatry J* 2023;32(Suppl 1):S15 [cited 2025 July 21].
- Charlson F, van Ommeren M, Flaxman A, et al. New WHO prevalence estimates of mental disorders in conflict settings: a systematic review and meta-analysis [Internet]. *Lancet* 2019;394(10194):240–8 [cited 2025 Nov 17].
- Hossain SJB, Makhadmeh N, Rumi MH. From displacement to hunger: how migration due to conflict affects food security in Yemen [Internet]. *PLoS One* 2025;20(10):e0333830 [cited 2025 Nov 17].
- Mental health at work [Internet]. [cited 2025 Nov 17]. Available from: <https://www.who.int/news-room/fact-sheets/detail/mental-health-at-work>.
- Vera-Toscano E, Brown H. The intergenerational transmission of mental and physical health in Australia: evidence using data from the household income and labor dynamics of Australia Survey [Internet]. *Front Public Health* 2022;9 [cited 2025 Nov 17].
- CORRUPTION, VIOLENT EXTREMISM, KLEPTOCRACY. And the dangers of failing governance [Internet]. [cited 2025 July 22]. Available from: <https://www.govinfo.gov/content/pkg/CHRG-114shrg27955/html/CHRG-114shrg27955.htm>.
- Podobnik B, Shao J, Njavro D, et al. Influence of corruption on economic growth rate and foreign investment. *Eur. Phys. J. B* 2008;63:547–50. Available from: <https://doi.org/10.1140/epjb/e2008-00210-2>. [Accessed 22 July 2025].
- Begu L-S, Apostu S-A, Enache A-O. Corruption perceptions index and economic development of the country [Internet]. *Proceedings of the International Conference on Applied Statistics* 2019;1(1):115–22 [cited 2025 July 22].

- [50] Governance and anti-corruption [Internet]. IMF. [cited 2025 July 22]. Available from: <https://www.imf.org/en/Topics/governance-and-anti-corruption>.
- [51] International humanitarian law and the challenges of contemporary armed conflicts. International review of the Red Cross [Internet]. [cited 2025 July 22]. Available from: <http://international-review.icrc.org/articles/reports-and-documents-ihl-and-the-challenges-of-contemporary-armed-conflicts-927>; 2025.
- [52] CHES 2023: mental health | Mass.gov [Internet]. [cited 2025 July 21]. Available from: <https://www.mass.gov/info-details/ches-2023-mental-health>.
- [53] Zafar Q, Khan MA, Warsi AZ, et al. Economic strain and recovery trajectories in mental health: the role of financial stability in mental health outcomes [Internet] Review of Applied Management and Social Sciences 2024;7(4):345–58 [cited 2025 July 21].
- [54] Berens C. Mental health in foreign aid.
- [55] Martin-Barreiro C, Cabezas X, Leiva V, et al. Statistical characterization of vaccinated cases and deaths due to COVID-19: methodology and case study in South America [Internet] MATH 2023;8(10):22693–713 [cited 2025 July 21].
- [56] Persaud A, Day G, Ventriglio A, et al. Geopolitical factors, foreign aid and mental health II: value for money. Int J Soc Psychiatry 2018;64(8):786–98.
- [57] [Internet] Climate change and extreme weather impacts hit Asia hard. World Meteorological Organization; 2024 [cited 2025 Nov 17]. Available from: <https://wmo.int/news/media-centre/climate-change-and-extreme-weather-impacts-hit-asia-hard>.
- [58] O'Neill O, Velders GJM, Mallick B, et al. Projecting climate migration in Bangladesh using agent based modeling and climate data [Internet] Front Clim 2025;7 [cited 2025 Nov 17].
- [59] Heatwave alert. These Indian cities surpass 50 degrees Celsius in 2024. Delhi News - Times of India [Internet]. [cited 2025 Nov 17]. Available from: <https://timesofindia.indiatimes.com/city/delhi/heatwave-alert-these-indian-cities-surpass-50-degrees-celsius-in-2024/articleshow/110551491.cms>.
- [60] Central Asia, a region of high priority | the UNESCO courier [Internet]. [cited 2025 Nov 17]. Available from: <https://courier.unesco.org/en/articles/central-asia-region-high-priority>.
- [61] Revised Pakistan 2022 floods response plan final report. Issued 15 Dec 2023 | OCHA [Internet], [cited 2025 Nov 17]. Available from: <https://www.unocha.org/publications/report/pakistan/revised-pakistan-2022-floods-response-plan-final-report-issued-15-dec-2023>; 2023.
- [62] Kelley CP, Mohtadi S, Cane MA, et al. Climate change in the Fertile Crescent and implications of the recent Syrian drought [Internet] Proc Natl Acad Sci U S A 2015; 112(11):3241–6 [cited 2025 Nov 17].
- [63] Aung TW, O'Donnell K, De Luca S, et al. Depression and anxiety symptoms in adults displaced by natural disasters [Internet] JAMA Netw Open 2025;8(8): e2528546 [cited 2025 Nov 17].
- [64] Dame MCW//U of N. Country index//Notre dame global adaptation initiative// University of Notre Dame [Internet]. Notre Dame Global Adaptation Initiative. [cited 2025 Nov 17]. Available from: <https://gain.nd.edu/our-work/country-index/>.
- [65] CRED. EM-DAT - the international disaster database [Internet]. [cited 2025 Nov 17]. Available from: <https://www.emdat.be/>.
- [66] Report English.pdf [Internet]. [cited 2025 July 21]. Available from: <https://www.unicef.org/jordan/media/1921/file/Report%20English.pdf>.
- [67] Dursun-Özkanca O. The nexus between security sector governance/reform and sustainable development Goal-16: an examination of conceptual linkages and policy recommendations [Internet]. Ubiquity Press; 2021 [cited 2025 July 21]. Available from: <https://www.ubiquitypress.com/site/books/m/10.5334/bcm/>.
- [68] Reports and Policy Documents. Page 213 | Department of Political and Peacebuilding Affairs [Internet]. [cited 2025 July 21]. Available from: <https://dppa.un.org/en/reports/all?page%2525253D173%2525253D%25252526page%2525253D3%25253D%252526page%25253D3%252523main-content%253D%2526page%253D5%3D%26page%3D5=&page=212>.
- [69] Vesco P, Baliki G, Brück T, et al. The impacts of armed conflict on human development: a review of the literature [Internet] World Dev 2025;187:106806 [cited 2025 July 21].
- [70] Zebisch M, Schneiderbauer S, Fritzschke K, et al. The vulnerability sourcebook and climate impact chains – a standardised framework for a climate vulnerability and risk assessment [Internet] International Journal of Climate Change Strategies and Management 2021;13(1):35–59 [cited 2025 July 21].