

POLICY PAPER



Bridging the SDG 4–SDG 13 Nexus in Asia-Pacific Higher Education: THE ROAD TO THE SDG 2030 AGENDA



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He is engaged with the high-level committees on the Sustainable Development Goals (SDG) agenda in Saudi Arabia and globally. He is leading the United Nations Sustainable Development Goals (SDG), and also 1st Saudi university to pledge Net Zero carbon by 2060. Under his leadership, PSU became the 1st Carbon Neutral Certified University in the MENA region. He also established Financial Literacy for Women in Business (SDG 5) to support micro, small and medium business. He is the founding leaders of four global think tanks including the Center for Sustainability and Climate, Global SME Policy Network, Global Education Policy Network, and Global Islamic Finance, Tax and Zakat Center (GIFTZ Center). He has engaged with 100 academics from 35 countries to accelerate progress on climate action within and beyond the sector. He has received prestigious awards including; PSU President's Distinguished Research Award, the IMA Faculty Leadership Award from the Institute of Management Accountants, USA, Financial Leadership and Reporting from ACCA, Outstanding Service as an IMA Campus Advocate from IMA. He is a regular invited speaker in the UN, COP 28, COP29, COP 16, Ministries, World Bank, CNBC etc.

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Dr Fletcher has published over 60 peer-reviewed articles, book chapters, and major international reports, and is a contributing author to the 2019 IPCC Special Report on Climate Change and Land. She has served as a consultant to the United Nations World Water Assessment Programme, as an official delegate to the United Nations Commission on the Status of Women and is former President of the Canadian Research Institute for the Advancement of Women. Fletcher holds two medals from the Governor General of Canada for her research and advocacy on gender equality in Canada.

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Professor Peter Wells took up his new post as Head of Education for Southern Africa at the UNESCO Regional Office in Harare in October 2022 where he oversees the Priority Africa education work in Education for Sustainable Development, teacher education, TVET and higher education across nine countries. Prior to this, Dr Wells was Chief of Global Higher Education at UNESCO Headquarters in Paris. In this role, he led UNESCO's priority areas of work on quality higher education with an emphasis on widening access, quality enhancement and academic mobility, the latter reinforced by the Global Convention on the Recognition of Qualifications concerning Higher Education adopted in 2019. In this capacity, Peter also drafted the text of the Addis Convention for Africa and was present at its adoption in 2014. He also worked with regional colleagues to draft and adopt the Buenos Aires Convention for Latin America and the Caribbean and the revised Convention for the Arab States – each of which has quality assurance and university cooperation in teaching and research as a foundation. Peter is an author of policy papers, articles, and monographs on the topic of higher education reforms, quality assurance, internationalisation, digitalisation, and equity and inclusion in national HE systems.



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Professor Charles Hopkins holds the UNESCO Chair in Reorienting Education towards Sustainability at York University in Toronto, Canada. This Chair, established in 1999, was the first to focus on Education for Sustainable Development (ESD) as an essential concept for quality education and to position sustainability as a purpose of education. Hopkins' Chair coordinates two global ESD research networks, the International Network of Teacher Education Institutions and the #IndigenousESD, conducting global research projects.

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Bilal Al Habian is a seasoned professional in strategy and policy-making in the education and development sectors, and is deeply committed to driving meaningful societal change. With over 15 years of experience, he has led the creation and implementation of education strategies across 50 countries, positively transforming the lives of more than 10 million beneficiaries worldwide. At Times Higher Education, Al Habian focuses on advancing higher education rankings and fostering development for governments and academic institutions across the Middle East and Africa. Leveraging his expertise, he delivers innovative solutions that reshape academic and policy landscapes, ensuring alignment with global standards and best practices.



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Sarah Omari is a Senior Research Executive working with Times Higher Education, supporting data-driven research and analysis across the global higher education sector, with a focus on MENA-based projects. She holds a BSc in Neuroscience from the University of Exeter and brings experience in market research, strategic analysis, and emerging technologies. As one of the winners of the AI71 Innovation Challenge, she combines strong analytical skills with a keen interest in policy, technology, and education to contribute to high impact research projects.

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Karen is the Director of Education Studies at the SDSN's Asia Headquarters. She is spearheading efforts under the Mission 4.7 initiative to transform K-12 education in the Asia Pacific by making sustainable development a key feature of national curriculums. Karen was previously the Director of Strategy and Operations at the Jeffrey Sachs Center on Sustainable Development at Sunway University, Malaysia. Prior to joining Sunway, Karen was with the Razak School of Government, Malaysia, where she led the development and delivery of senior level public sector executive education programs; and research projects on public sector improvement. She began her career as a strategy consultant at PwC. Karen holds a Master in Sustainable Development Management from Sunway University; a Master in ASEAN Studies from the University of Malaya; and a BSc in Finance and Accounting from the University of London.



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Dr. Joachim Monkelbaan is a Professor of Governance, Sustainability, and Law with over 20 years of experience in international trade, climate policy, and sustainability governance. His research focuses on the intersection of climate change, trade, and industrial policy, particularly carbon competitiveness and green industrial strategies. He holds a PhD in Environmental Sciences from the University of Geneva, a Master's in International Law and Economics from the World Trade Institute (Bern), and completed specialisation studies in Finance and Accounting at Harvard Business School. Dr. Monkelbaan has held senior roles at KAPSARC, the World Economic Forum, the Quaker United Nations Office, Climate-KIC, and the International Centre for Trade and Sustainable Development, and has advised organisations including UNEP, the European Commission, and UN bodies. His work bridges academic research and policy practice, supporting sustainability transitions and global climate governance, including in the context of Saudi Arabia's Vision 2030.

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All data presented in this paper are sourced from publicly available international databases as cited in the references. The research team have made every effort to ensure accuracy but accept no liability for any errors or omissions. Readers are advised to consult the original data sources for definitive figures.



FOREWORD

T

The year 2026 marks a critical juncture for the global sustainability agenda. With fewer than four years remaining before the 2030 deadline for the United Nations Sustainable Development Goals (SDGs), the urgency for accelerated, evidence-based action has never been greater. The AsiaPacific region, home to approximately 4.3 billion people across 55 UN member states, represents both the epicentre of the world's development challenges and the engine of its most promising solutions.

This policy paper was developed by the Center for Sustainability and Climate (CSC) at Prince Sultan University and the UNESCO Chair in Education for Sustainable Development, Green Skills and Climate Actions, in collaboration with Times Higher Education. It presents a comprehensive, data-driven assessment of the SDG 4–SDG 13 nexus across the 55 Asia-Pacific states, drawing on multiple international datasets including the SDSN Sustainable Development Report [10], UNESCO Institute for Statistics [20], UNDP Human Development Reports [15], Times Higher Education Impact Rankings [12], SCImago Country Rankings [11], IRENA Renewable Energy Statistics [7], UNEP Emissions Gap Reports [17], World Bank Governance Indicators [26, 27], WHO [24], ILO [6], UNICEF [23], UNDRR [16], and FAO [4] databases, spanning the period 2016–2025.

The paper is motivated by a fundamental proposition: that quality education (SDG 4) and climate action (SDG 13) are not parallel tracks but deeply interwoven strands of the same sustainability fabric (Chankseliani & McCowan, 2021 [3]). Universities and higher education institutions stand at the nexus of these two agendas—as producers of knowledge, incubators of innovation, and shapers of the human capital that will determine whether the 2030 Agenda succeeds or falls short.

I am hopeful that this analysis will serve as both a diagnostic tool and a call to action for policymakers, university leaders, and international organisations across the Asia-Pacific region and beyond.



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LIST OF ABBREVIATIONS

Abbreviation	Full Form	Abbreviation	Full Form
AACSB	Association to Advance Collegiate Schools of Business	NEET	Not in Education, Employment or Training
ABET	Accreditation Board for Engineering and Technology	One-Way ANOVA	One-Way Analysis of Variance
CO ₂	Carbon Dioxide	PSU	Prince Sultan University
CPI	Corruption Perceptions Index	R&D	Research and Development
CSC	Center for Sustainability and Climate	RE	Renewable Energy
ESD	Education for Sustainable Development	SD	Standard Deviation
FAO	Food and Agriculture Organization	SDG	Sustainable Development Goal
GHG	Greenhouse Gas Emissions	SDSN	Sustainable Development Solutions Network
GHI	Global Hunger Index	SIDS	Small Island Developing State
GII	Global Innovation Index	STEM	Science, Technology, Engineering and Mathematics
GNI	Gross National Income	THE	Times Higher Education
GPI	Gender Parity Index	UHC	Universal Health Coverage
GSDC	Global Sustainable Development Congress	UN	United Nations
HDI	Human Development Index	UNDP	United Nations Development Programme
HEI	Higher Education Institution	UNDRR	United Nations Office for Disaster Risk Reduction
ICT	Information and Communications Technology	UNEP	United Nations Environment Programme
ILO	International Labour Organization	UNESCO	United Nations Educational, Scientific and Cultural Organization
INFORM	Index for Risk Management	UNFCCC	United Nations Framework Convention on Climate Change
IRENA	International Renewable Energy Agency	UNICEF	United Nations Children's Fund
ITU	International Telecommunication Union	WEF	World Economic Forum
LDC	Least Developed Country	WHO	World Health Organization
LLDC	Landlocked Developing Country	WIPO	World Intellectual Property Organization
NDC	Nationally Determined Contribution		
ND-GAIN	Notre Dame Global Adaptation Initiative		

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EXECUTIVE SUMMARY

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This policy paper presents the most comprehensive data-driven analysis to date, of the SDG 4 (Quality Education) and SDG 13 (Climate Action) nexus across 55 United Nations Asia-Pacific member states. Drawing on longitudinal data from 2016 to 2025 sourced from fifteen authoritative international databases. This includes the SDSN Sustainable Development Report [10], UNESCO Institute for Statistics

[20], UNDP Human Development Reports [15], Times Higher Education Impact Rankings [12], SCImago Journal and Country Rank [11], AACSB [1] and ABET [2] accreditation databases, IRENA [7], UNEP [17], World Bank [26], WHO [24], ILO [6], UNICEF [23], UNDRR [16], and FAO [4]. The paper provides country benchmarks, sub-regional comparisons, trend analyses, research productivity assessments, accreditation landscapes, education financing diagnostics, greenhouse gas trajectories, cross-cutting indicator analysis, and actionable policy recommendations.

The mean SDG Index score across the 55 states stands at 66.3 (SD = 7.2), ranging from 47.7 to 80.7 (Sachs et al., 2025 [10]). SDG 4 scores average 76.8 (SD = 19.1), however there is a 71-point gap between top and bottom performers. A statistically significant negative correlation ($r = -0.343$, $p = 0.016$) between the SDG 4 and SDG 13 scores reflects the “development paradox”: countries with stronger education systems tend to have higher carbon footprints. One-way ANOVA confirms significant differences in SDG Index scores across sub-regions ($F = 3.65$, $p = 0.008$). While Kruskal-Wallis testing reveals highly significant SDG 4 variation across income groups ($H = 16.93$, $p < 0.001$).

Research productivity analysis reveals that log-transformed SCImago documents per million population correlates positively with SDG 4 scores ($r = 0.548$, $p < 0.001$), confirming the education–research nexus [11]. International accreditation is heavily concentrated in Western Asia (136 AACSB/ABET accreditations), Eastern Asia (80), and South-Eastern Asia (61), while Central Asia and Oceania have limited representation [1, 2]. THE Impact Rankings participation has grown from approximately 170 universities in 2019 to over 1000 in 2025 [12]. Government education expenditure averages 3.6% of GDP—below UNESCO’s recommended 4–6% threshold [20]. Total GHG emissions exceed 20,000 MtCO₂ e [17]. Cross-cutting analysis reveals UHC coverage ranging from 45.6 in Oceania to 78.0 in Eastern Asia [24], INFORM disaster risk highest in Southern Asia (4.8) [16], and youth unemployment reaching 19.9% in Oceania [6].

The paper concludes with 17 evidence-based policy recommendations targeting governments, higher education institutions, and international organisations to bridge the education climate nexus and accelerate progress toward the 2030 Agenda [14].



1. INTRODUCTION

1.1 Background and Rationale

The 2030 Agenda for Sustainable Development, adopted unanimously by all 193 United Nations Member States in September 2015, established 17 interconnected Sustainable Development Goals (SDGs) as a universal blueprint for peace, prosperity, and planetary stewardship (UN DESA, 2015 [14]). Among these, SDG 4 (Quality Education) and SDG 13 (Climate Action) occupy a uniquely synergistic and sometimes paradoxical position. Education is both an enabler and accelerator of climate action: it equips populations with the knowledge, skills, and values needed to understand climate science, adopt sustainable behaviours, and develop low-carbon technologies (UNESCO, 2021 [19]). Conversely, climate change directly threatens educational outcomes through school closures, population

displacement, resource diversion, and health impacts that reduce attendance and learning (UNICEF, 2025 [23]).

The relationship between education and climate action in higher education has received growing scholarly attention (Chankseliani & McCowan, 2021 [3]). Universities serve as producers of climate-relevant research, incubators of green innovation, and shapers of the human capital that will drive the transition to a netzero economy. Yet, the evidence base for how these two agendas interact across diverse national contexts remains limited, particularly in the Asia-Pacific region where development heterogeneity is greatest.

The Asia-Pacific region is the world's most diverse development landscape, consisting of; high-income economies, Least Developed Countries (LDCs), and Small Island Developing States (SIDS). High income economies encompass; Japan, Singapore, the Republic of Korea, and the Gulf Cooperation Council states. Least Developed Countries (LDCs) include; Afghanistan, Myanmar, Nepal, and Timor-Leste. Small Island Developing States (SIDS) facing existential climate threats encompass; Tuvalu, Kiribati, and the Marshall Islands. The region accounts for approximately 60 per cent of the global population and 50 per cent of global greenhouse gas emissions (UNEP, 2024 [17]; Global Carbon Project, 2024 [5]). It hosts the world's largest education systems (China, India, Indonesia), its most research-intensive universities (Japan, Republic of Korea), and its most vulnerable populations (Pacific Island nations, South Asian LDCs).

1.2 Purpose and Scope

This collaborative policy paper, prepared by Prince Sultan University's Center for Sustainability and Climate (CSC) and the UNESCO Chair in Education for Sustainable Development, Green Skills and Climate Actions for the Global Sustainable Development Congress 2026, pursues six interlinked objectives. First, it maps the current state of SDG 4 and SDG 13 performance across all 55 AsiaPacific states using the 2025 Sustainable Development Report [10]. Second, it benchmarks country-level progress over a ten-year window (2016–2025). Third, it analyses the SDG 4–SDG 13 nexus through statistical methods including Pearson correlations, ANOVA, and Kruskal-Wallis tests. Fourth, it evaluates research productivity using SCLmago data [11] and international accreditation through AACSB [1] and ABET [2] databases. Fifth, it examines education financing, GHG trajectories, renewable energy, health, disaster risk, employment, and governance across all 64 analytical worksheets. Sixth, it synthesises findings into 17 evidence-based policy recommendations aligned with the 2030 Agenda [14].

1.3 Structure of the Paper

The paper is organised into 15 sections. Following the introduction, Section 2 outlines the methodology and data sources. Sections 3–7 present the core analytical findings, progressing from regional SDG performance to sub-regional comparisons and nexus analysis. Sections 8–12 examine thematic extensions, including research and accreditation, education financing, emissions and energy, cross-cutting indicators, and university SDG engagement. Section 13 presents the policy recommendations, followed by conclusions in Section 14 and references in Section 15.



2. METHODOLOGY AND DATA SOURCES

2.1 Research Design

This study employs a quantitative, cross-national comparative research design with all 55 UN Asia-Pacific member states as units of analysis. The analytical framework integrates descriptive statistics, trend analysis, bivariate Pearson correlations, one-way analysis of variance (ANOVA), Kruskal-Wallis non-parametric tests, and visual analytics including heatmaps, violin plots, scatter plots, and trend charts.

2.2 Data Sources

Data were compiled from fifteen authoritative international databases, all verified as of February 2026: (1) SDSN Sustainable Development Report 2025 [10]; (2) UNESCO Institute for Statistics [20]; (3) UNDP Human Development Report 2025 [15]; (4) THE Impact Rankings 2019–2025 [12]; (5) SCImago Journal and Country Rank (Scopus-based, 1996–2024) [11]; (6) AACSB International [1] and ABET [2] accreditation databases; (7) World Bank Open Data [26] and Worldwide Governance Indicators [27]; (8) UNEP Emissions Gap Report 2024 and EDGAR GHG Database [17]; (9) IRENA Renewable Capacity Statistics 2025 [7]; (10) ND-

GAIN Country Index 2023 [9]; (11) ITU ICT Development Index 2024 [8]; (12) ILO ILOSTAT [6]; (13) WHO Global Health Observatory [24]; (14) WEF Global Gender Gap Report 2024 [28]; (15) FAO [4], UNICEF [23], and UNDRR [16] databases. This data spans 64 analytical worksheets covering 16 thematic domains.

Table 1: Data Sources and Coverage Matrix

Domain	Indicators Covered	Primary Sources
SDG Index & Overview	SDG Index, Sub-Regional, Income Group	SDSN SDR 2025 [10]
Education (SDG 4)	Literacy, Enrollment, Expenditure, Benchmarks, Accreditation	UNESCO [20], AACSB [1], ABET [2]
Climate (SDG 13)	CO ₂ , GHG, RE Share, Net-Zero, NDC	UNEP [17], IRENA [7], UNFCCC [22]
Human Development	HDI, Life Expectancy, GNI	UNDP HDR [15]
University Rankings	THE Impact, SDG Reporting	THE [12]
Research Output	H-Index, Docs/M, Citations	SCImago [11]
Health	UHC, U5 Mortality, Life Expectancy	WHO [24]
Climate Adaptation	ND-GAIN, Vulnerability, Readiness	ND-GAIN [9]
Gender Parity	GPI, Female Literacy, STEM	UNESCO [20], WEF [28]
Decent Work	Unemployment, NEET, Female LFP	ILO [6]
Disaster Risk	INFORM, Disasters, Hazard	UNDRR [16]
Children	Out-of-School, Climate Disruptions	UNICEF [23]
Digital	Internet, Broadband, 4G/5G	ITU [8]
Renewables	RE Capacity, Solar PV	IRENA [7]
Food & Water	GHI, Undernourishment, Water	FAO [4]
Governance	CPI, Effectiveness, GII, R&D	WB [26, 27], TI [13], WIPO [25]

2.3 Statistical Methods

Descriptive statistics (mean, SD, median, range) were calculated for all indicators. Pearson correlations examined bivariate relationships. One-way ANOVA tested sub-regional differences. Kruskal-Wallis H test examined non-normally distributed variables across income groups. Log-transformations were applied to highly skewed variables (e.g., research documents per capita). All tests used $\alpha = 0.05$. Analyses were conducted in Python 3.12 with SciPy, Pandas, Matplotlib, and Seaborn.

2.4 Limitations

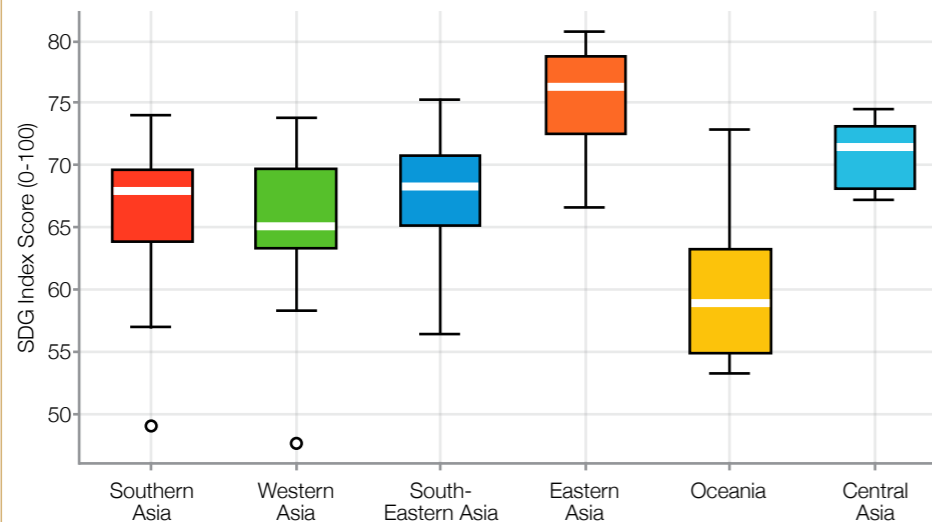
Data availability varies across countries, with SIDS and conflict-affected states having more missing values. Some indicators rely on estimates. THE Impact Rankings [12] and SCImago [11] data capture voluntary submissions, introducing self-selection bias. Despite these limitations, multi-source triangulation across 15 databases lends robustness to findings.



3. SDG INDEX OVERVIEW AND REGIONAL LANDSCAPE

3.1 Aggregate Performance

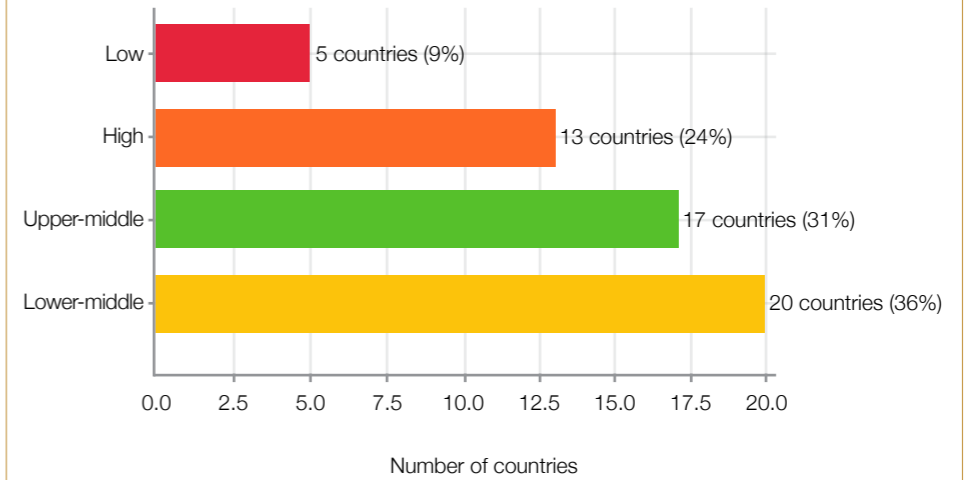
Figure 1: SDG Index Score Distribution by Sub-Region (2025)



Source: Sachs et al. [10].

The SDG Index 2025, computed by SDSN (Sachs et al., 2025 [10]), provides a composite measure of progress across all 17 SDGs on a 0–100 scale. Across the 55 Asia-Pacific states, the regional mean is 66.3 (SD = 7.2), median 67.3, and range 47.7–80.7—a spread of 33 points underscoring profound heterogeneity.

Figure 2: Income Group Distribution of 55 Asia-Pacific States

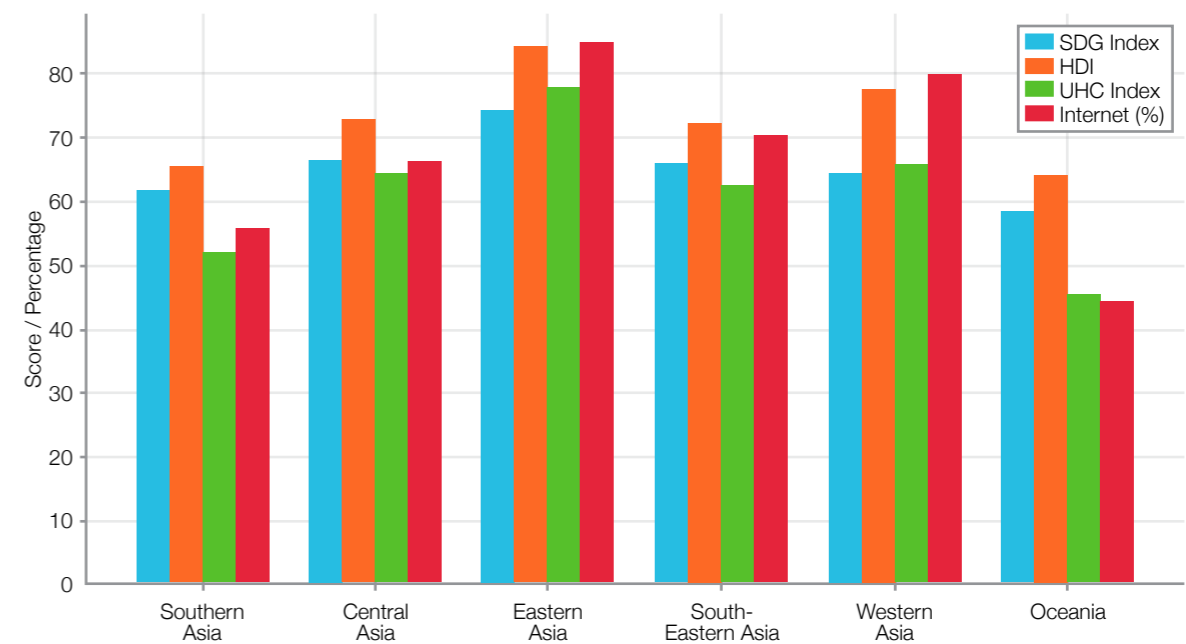


Source: World Bank [26].

Eastern Asia records the highest median SDG Index scores, anchored by Japan (80.7) and the Republic of Korea. Central Asia clusters in the mid-to-upper range, benefiting from Soviet-era education and health infrastructure [15]. Oceania displays the widest interquartile range, reflecting the contrast between larger economies and remote Pacific Island states.

3.2 Sub-Regional Summary

Figure 3: Sub-Regional Development Indicators Comparison



Source: Sachs et al. [10]; UNDP [15]; WHO [24]; ITU [8].

Table 2: Sub-Regional Summary Statistics

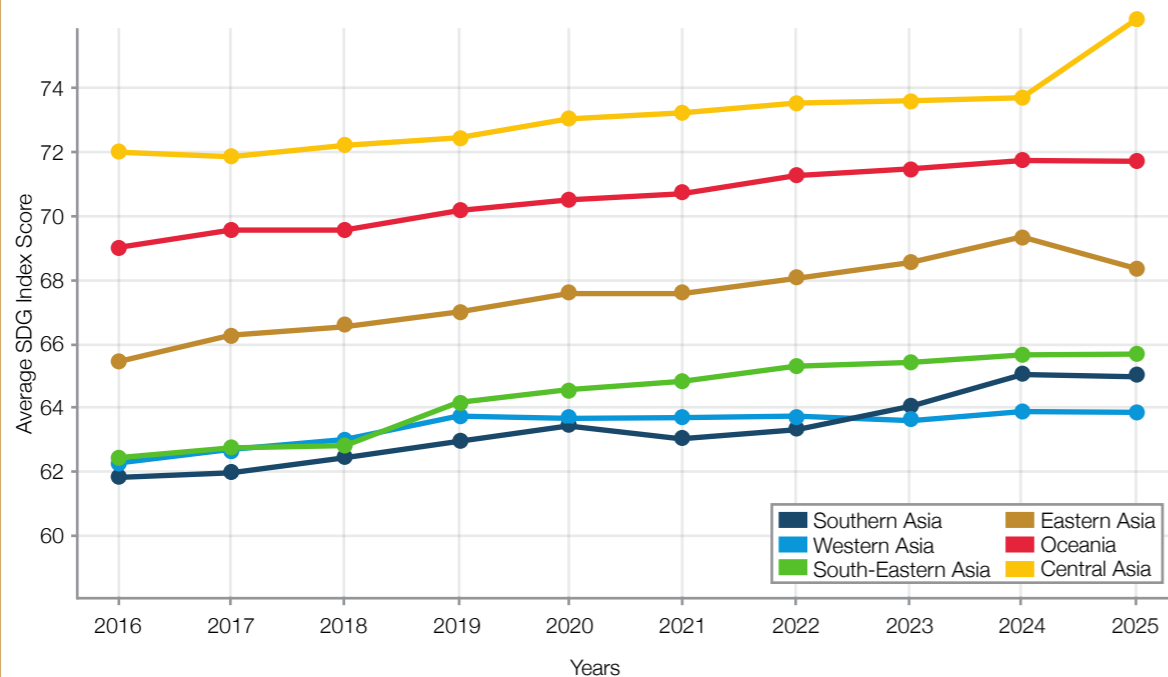
Sub-Region	N	LDCs	Avg SDG Index	Avg SDG 4	Avg SDG 13	Avg CO ₂ /Cap
Southern Asia	9	4	65.3	69.4	93.1	2.0
Central Asia	5	0	70.9	84.1	82.1	6.1
Eastern Asia	5	0	75.0	96.7	70.7	8.5
South-Eastern Asia	11	3	67.8	81.1	80.6	4.2
Western Asia	13	1	64.8	75.2	55.3	12.0
Oceania	12	4	60.2	66.3	92.1	0.9

Source: Sachs et al. [10]; World Bank [26]; Global Carbon Project [5].

3.3 Longitudinal Trends (2016–2025)

All six sub-regions show upward SDG Index trajectories over the decade, but the pace varies considerably (UNESCAP, 2025 [18]). Eastern Asia maintained the highest scores, rising from approximately 70 to 75. Central Asia demonstrated consistent acceleration. Oceania and Southern Asia, while improving in absolute terms, show signs of plateauing, a concerning signal as the 2030 deadline approaches. The gap between the highest- and lowest-performing sub-regions has narrowed modestly from approximately 18 points in 2016 to 15 points in 2025.

Figure 4: SDG Index Score Trends by Sub-Region (2016–2025)



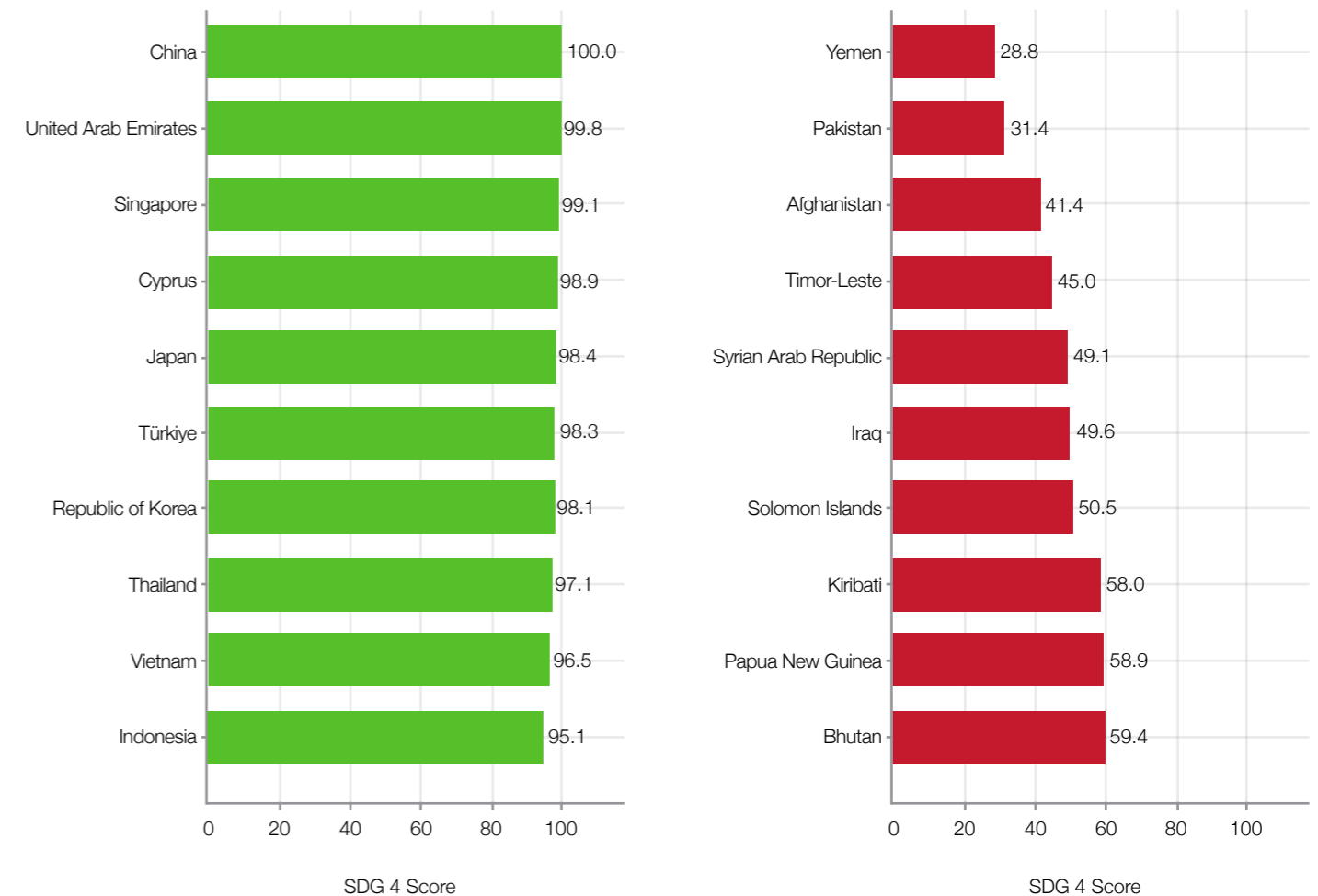
Source: Sachs et al. [10].

4. SDG 4 (QUALITY EDUCATION): IN-DEPTH ANALYSIS

4.1 Current Landscape

The SDSN SDG 4 composite score [10] averages 76.8 (SD = 19.1) across the 55 Asia-Pacific states, with scores ranging from 28.8 to 100.0. This 71-point range, the largest among all SDGs analysed, reflects extreme education inequality. The top performers — China (100.0), United Arab Emirates (99.8), Singapore (99.1), Cyprus (98.9), and Japan (98.4) — achieve scores above 95, reflecting universal literacy, high tertiary enrolment, and sustained public investment. The bottom performers include conflict-affected and least-developed states: Yemen (28.8), Pakistan (31.4), Afghanistan (41.4), Timor-Leste (45.0), and Syrian Arab Republic (49.1) where decades of underinvestment, armed conflict, and gender exclusion have devastated education systems [20].

Figure 5: Top and Bottom Performers — SDG 4 (Quality Education)



Source: Sachs et al. [10].

4.2 Education Indicators by Income Group

Table 3: Education Indicators by Income Group

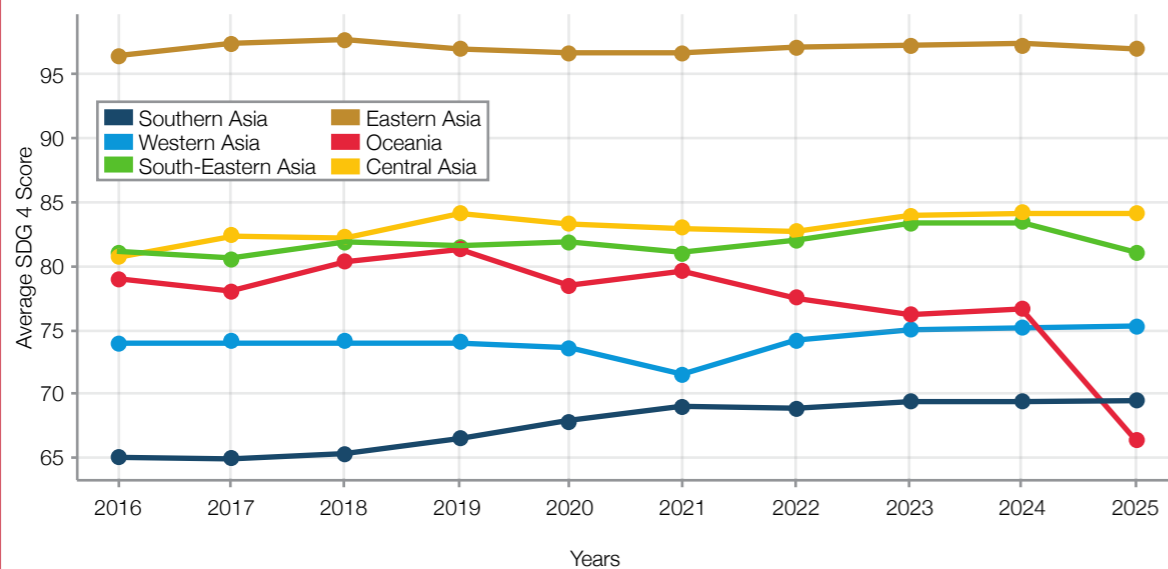
Income Group	Literacy (%)	Mean Yrs School	Tertiary Enrl (%)	Edu Spend (% GDP)	SDG 4
High	95.2	11.4	62.3	3.8	88.5
Upper Middle	96.1	10.8	48.7	4.2	83.7
Lower Middle	85.6	7.9	28.4	3.5	71.2
Low	55.4	4.5	12.8	3.1	48.6

Source: UNESCO UIS [20]; UNDP [15]; Sachs et al. [10].

The Kruskal-Wallis test confirms SDG 4 scores differ significantly across income groups ($H = 16.93, p < 0.001$). High-income countries average 88.5 versus 48.6 for low-income—a 40-point gap reflecting systemic underinvestment in education infrastructure, teacher training, and digital learning ecosystems (UNESCO, 2021 [19]). Adult literacy in low-income states averages just 55.4%, compared to 95.2% in high-income states [20]. Mean years of schooling drop from 11.4 to 4.5 across the income spectrum [15].

4.3 SDG 4 Trends (2016–2025)

Figure 6: SDG 4 Score Trends by Sub-Region (2016–2025)



Source: Sachs et al. [10].

Eastern Asia maintained scores above 90 throughout the decade. South-Eastern and Central Asia improved by 5–8 points. Western Asia shows a mixed picture: Gulf states perform well, but conflict-affected states (Syria, Iraq, Yemen) depress the average. Oceania shows concerning stagnation, with Pacific Island states experiencing increasing climate-related school disruptions (UNICEF, 2025 [23]).



5. SDG 13 (CLIMATE ACTION): IN-DEPTH ANALYSIS

5.1 Current Performance

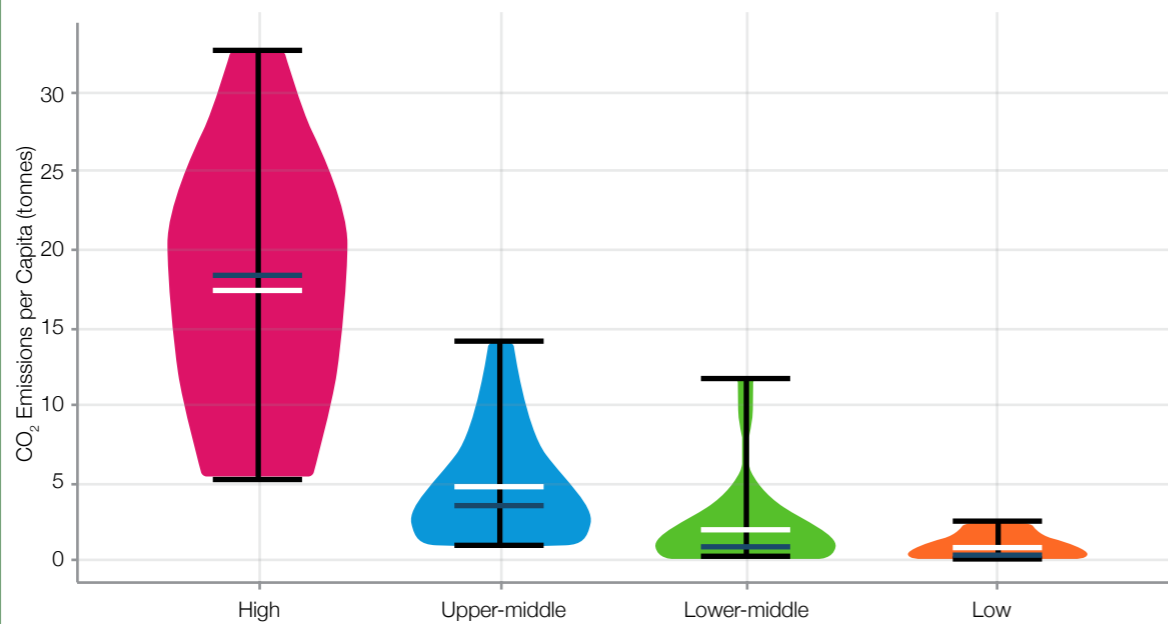
The SDSN SDG 13 score [10] averages 77.2 (SD = 27.2), ranging from 2.6 to 98.9. The scoring methodology is inverse to emissions intensity: lower per-capita CO₂ yields higher scores. This creates a structural paradox: LDCs with negligible emissions (Afghanistan: 98.9, Nepal: 97.5) score highest, while high-income petrochemical economies (Qatar: 2.6, Kuwait: 16.7, Bahrain: 19.4) score lowest (Global Carbon Project, 2024 [5]).

Table 4: Climate Indicators by Sub-Region

Sub-Region	CO ₂ /Cap	RE Share(%)	SDG 13	ND-GAIN	Vuln
Southern Asia	2.0	38.2	93.1	37.8	0.49
Central Asia	6.1	28.4	82.1	42.6	0.40
Eastern Asia	8.5	22.8	70.7	60.2	0.33
South-Eastern Asia	4.2	32.5	80.6	45.3	0.42
Western Asia	12.0	8.6	55.3	48.7	0.38
Oceania	0.9	42.8	92.1	38.5	0.48

Source: Sachs et al. [10]; ND-GAIN [9]; UNFCCC [22].

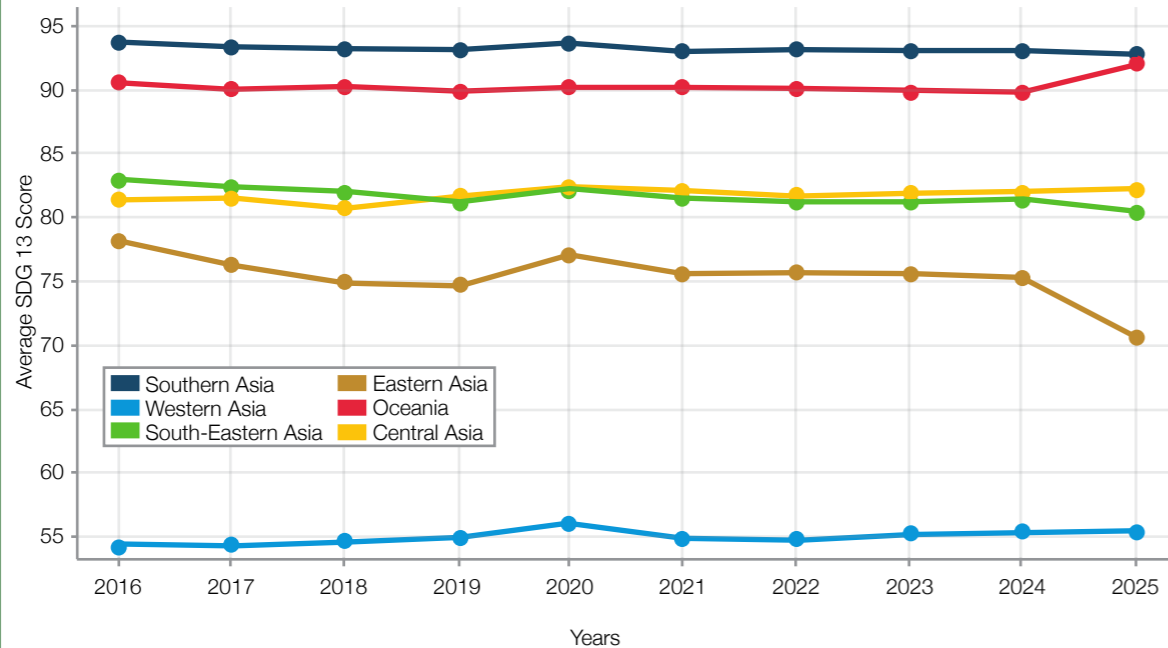
Figure 7: CO₂ Emissions per Capita by Income Group (Violin Plot)



Source: Sachs et al. [10]; Global Carbon Project [5].

5.2 SDG 13 Trends (2016–2025)

Figure 8: SDG 13 Score Trends by Sub-Region (2016–2025)



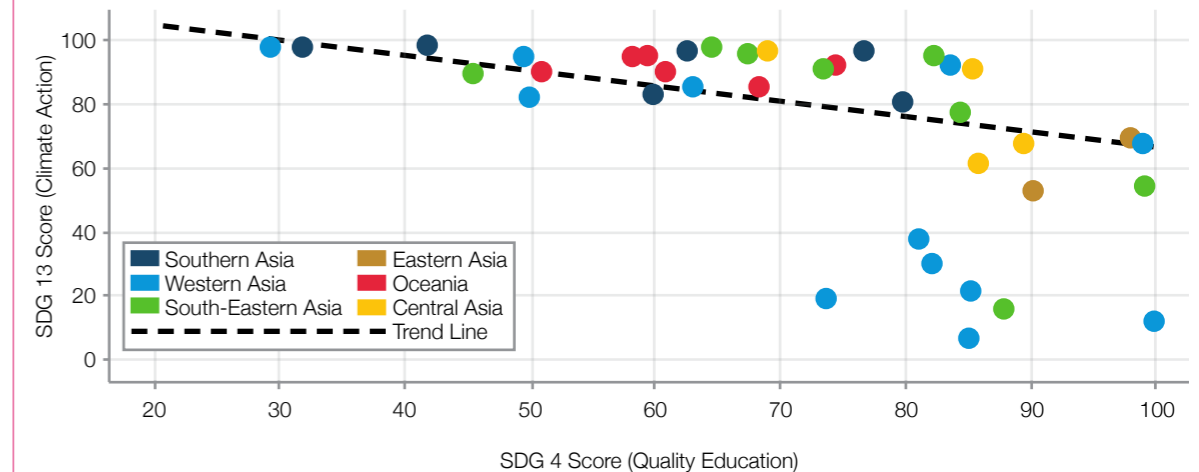
Source: Sachs et al. [10].

Southern Asia and Oceania maintained scores above 90 throughout (low emissions, but high vulnerability). Western Asia remained stagnant at 50–56, reflecting persistent fossil-fuel dependence. Eastern Asia declined slightly due to China’s industrial emissions growth, partially offset by massive renewable deployment (IRENA, 2025 [7]). The UNEP Emissions Gap Report 2024 [17] warns that current trajectories are insufficient to meet Paris Agreement targets.

6. THE SDG 4–SDG 13 NEXUS: STATISTICAL ANALYSIS

6.1 Correlation Analysis

Figure 9: SDG 4 vs SDG 13 Score Nexus ($r = -0.343$, $p = 0.016$)



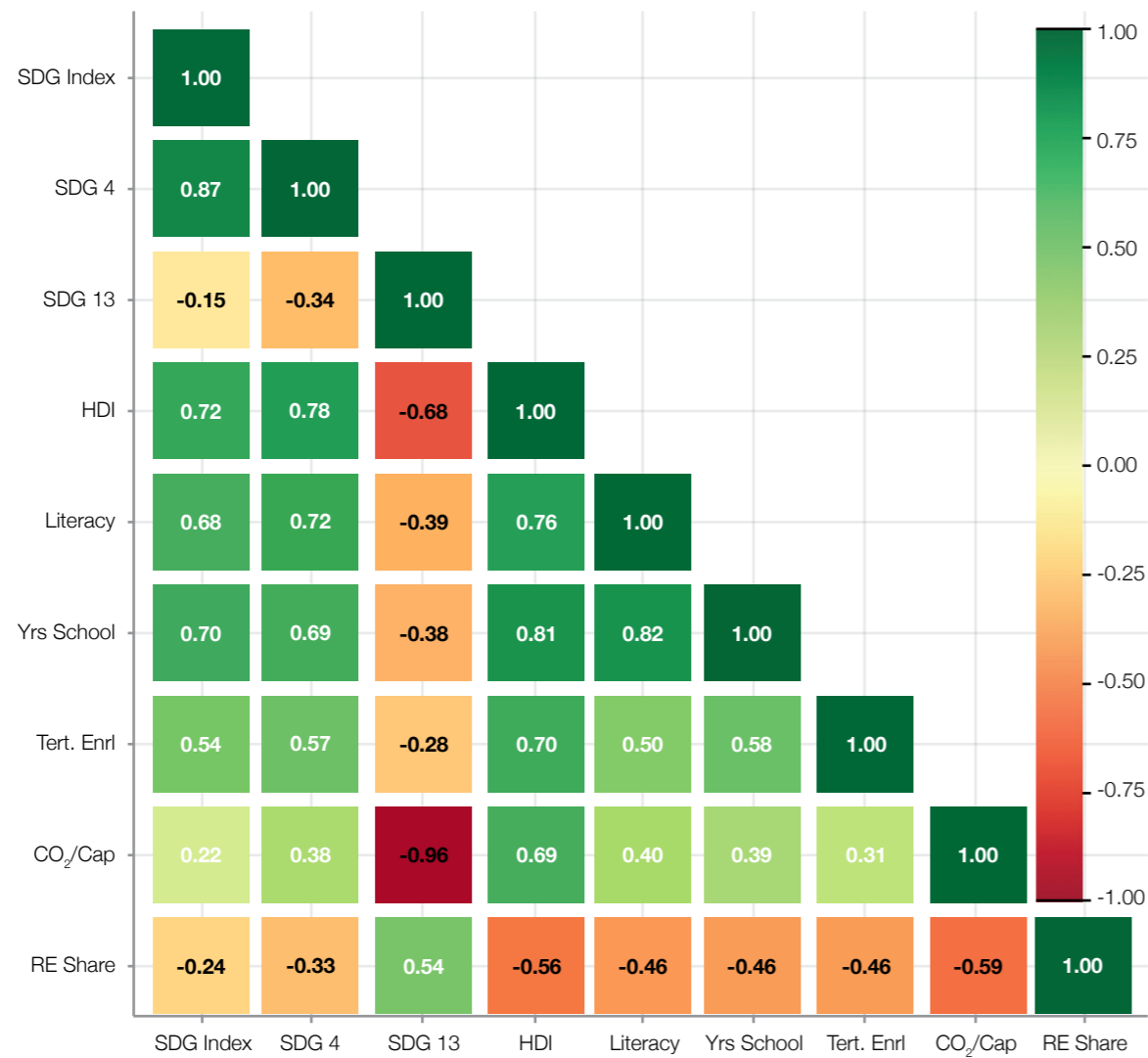
Source: Sachs et al. [10].

The Pearson correlation between SDG 4 and SDG 13 is $r = -0.343$ ($p = 0.016$), indicating a statistically significant moderate negative association. This reflects the “development paradox”: countries with stronger education systems tend to have higher carbon emissions (Chankseliani & McCowan, 2021 [3]). This is broadly consistent with development–emissions trade-offs discussed in the EKC literature, though the present evidence is a cross-sectional snapshot rather than the long-run income–pollution dynamic the EKC formally describes. In contrast, SDG 4 correlates strongly and positively with the overall SDG Index ($r = 0.866$, $p < 0.001$), confirming education as the single strongest predictor of overall SDG progress [10].

6.2 Comprehensive Correlation Matrix

The correlation matrix reveals several important relationships. HDI [15] correlates very strongly with SDG 4 ($r \approx 0.85$) and moderately with CO₂ per capita ($r \approx 0.50$), reinforcing the development–emissions trade-off. Renewable energy share shows weak correlations with most indicators, suggesting that RE deployment is driven by factors beyond development level—including geography, resource endowments, and policy choices (IRENA, 2025 [7]).

Figure 10: Correlation Matrix of Key SDG Indicators



Source: Sachs et al. [10]; UNESCO UIS [20]; UNDP [15]; Global Carbon Project [5].

Table 5: ANOVA and Kruskal-Wallis Test Results

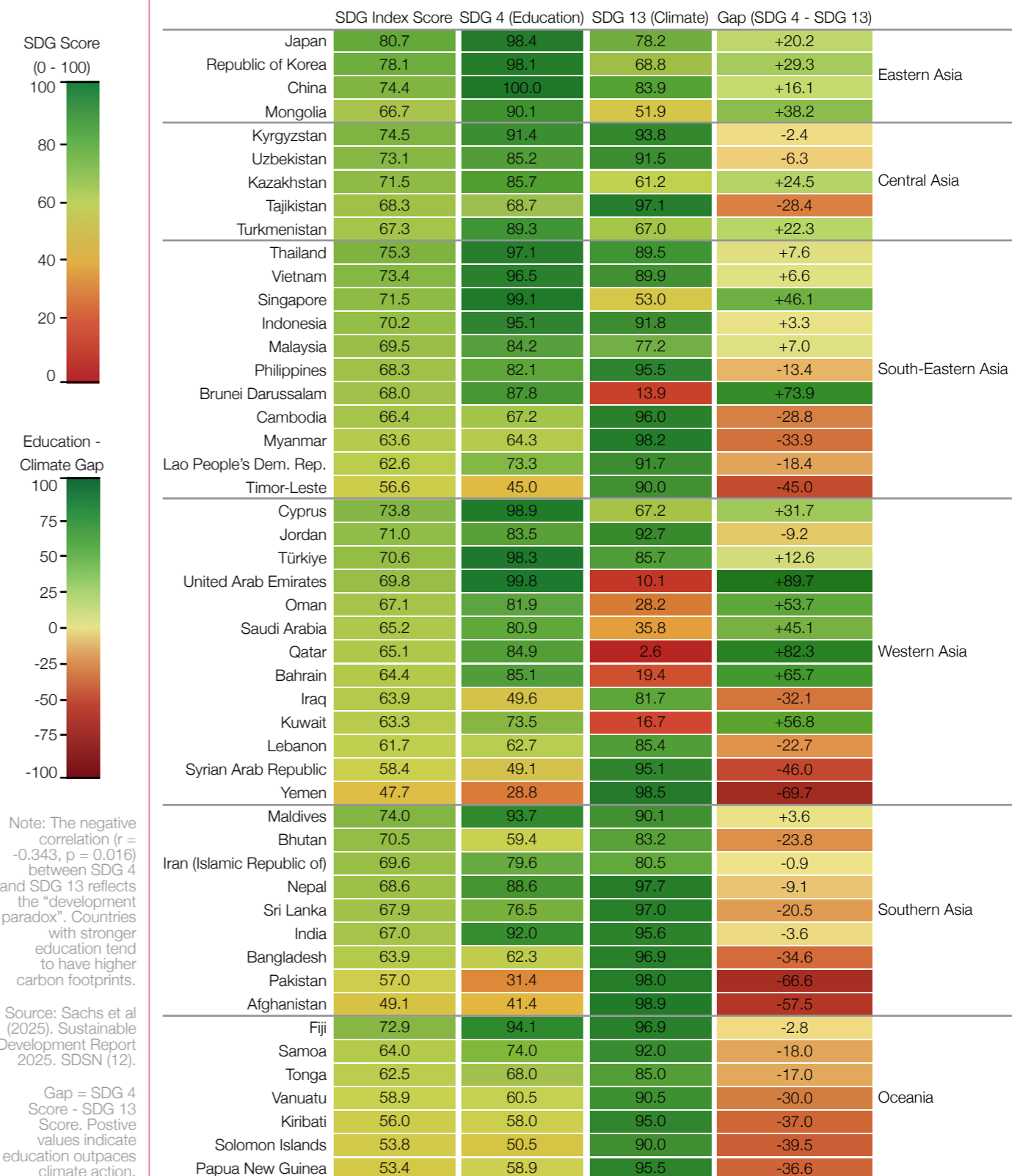
Test / Variables	Statistic	Value	p-value	Sig.
SDG 4 vs SDG 13 (Pearson)	r	-0.343	0.016	*
SDG 4 vs SDG Index (Pearson)	r	0.866	<0.001	***
SDG 13 vs SDG Index (Pearson)	r	-0.153	0.293	n.s.
SDG Index by Sub-Region (ANOVA)	F	3.65	0.008	**
SDG 4 by Income Group (Kruskal-Wallis)	H	16.93	<0.001	***
log(Docs/M Pop) vs SDG 4 (Pearson)	r	0.548	<0.001	***
H-Index vs SDG 4 (Pearson)	r	0.460	<0.001	***

Note: * p < 0.05; ** p < 0.01; *** p < 0.001; n.s. = not significant.

6.3 Country-Level Heatmaps

The heatmap provides a visual diagnostic of the SDG 4–SDG 13 tension. Green cells (>70) and red cells (<50) reveal the inverse pattern: most countries green on SDG 4 are yellow/red on SDG 13, and vice versa. This reinforces the statistical findings and highlights the core policy challenge.

Figure 11: SDG 4 - SDG 13 Nexus Heatmap





7. SUB-REGIONAL COMPARATIVE ANALYSIS

7.1 Southern Asia (9 Countries)

Southern Asia (Afghanistan, Bangladesh, Bhutan, India, Iran, Maldives, Nepal, Pakistan, Sri Lanka) averages 65.3 on the SDG Index, 69.4 on SDG 4, and 93.1 on SDG 13 [10]. The high SDG 13 score reflects low per-capita emissions (mean: 2.0 tonnes) rather than strong climate policy—several countries rank among the most climate-vulnerable globally (ND-GAIN, 2023 [9]). India, with 1.44 billion people, dominates sub-regional averages [26]. Afghanistan represents the extreme, with SDG 4 at 41.4, adult literacy at 37.3%, and female literacy at just 21.8% [20]. The sub-region hosts 40 internationally accredited universities [1, 2] and produces 2,665 research documents per million [11]. UHC coverage averages 52.2 [24] and INFORM risk is 4.8—the highest in the region [16]. Youth unemployment stands at 17.5% and NEET rates reach 28.2% [6].

7.2 Central Asia (5 Countries)

Central Asia (Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, Uzbekistan) achieves an average SDG Index of 70.9—the second-highest sub-regional mean [10]. All five are LLDCs/LDCs yet benefit from high literacy rates inherited from Soviet-era education systems (mean: 99.4%) [20]. SDG 4 averages 84.1. CO₂ per capita averages 6.1 tonnes, driven by Kazakhstan’s fossil-fuel-intensive economy [5]. The sub-region’s research output is modest (1,162 docs/million) with only 2 ABET accreditations and zero AACSB [1, 2, 11]. Central Asia remains a “blind spot” in international quality assurance and research networks. CPI averages 27.6 [13], indicating governance challenges. R&D expenditure averages just 0.12% of GDP [25].

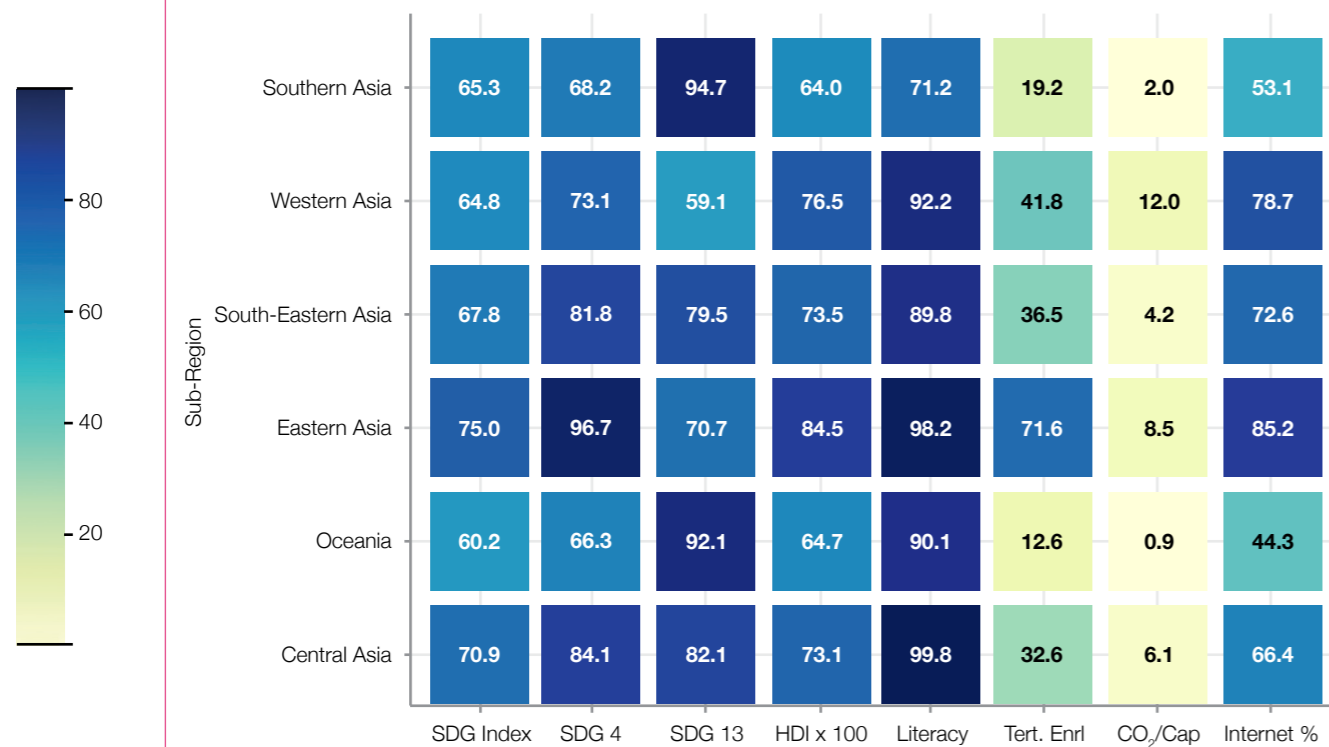
7.3 Eastern Asia (5 Countries)

Eastern Asia (China, Japan, Mongolia, DPRK, Republic of Korea) leads with an average SDG Index of 75.0 and SDG 4 of 96.7 [10]. However, four countries with available data were China, Japan, Republic of Korea, Mongolia. Japan achieves the highest SDG Index (80.7). The sub-region dominates research output with an average H-Index of 806 and 14,721 documents per million population [11]. Eastern Asia holds 80 international accreditations (79 AACSB, 1 ABET) [1, 2]. However, SDG 13 averages only 70.7, reflecting China’s massive carbon footprint and Japan’s post-Fukushima reliance on fossil fuels [17]. UHC coverage is 78.0, the highest in Eastern Asia [24.0]. R&D expenditure averages 2.75% of GDP [25]—by far the region’s highest. The Democratic People’s Republic of Korea (DPRK), the only East Asian country without available data, does not have a complete SDG profile (see Sustainable Development Report Dashboard: <https://dashboards.sdgindex.org/profiles/korea-dem-rep>).

7.4 South-Eastern Asia (11 Countries)

South-Eastern Asia displays the most balanced profile: SDG Index 67.8, SDG 4 at 81.1, SDG 13 at 80.6 [10]. Singapore, Thailand, and Vietnam anchor the

Figure 12: Multi-Indicator Sub-Regional Heatmap



Source: Sachs et al. [10]; UNDP [15]; UNESCO UIS [20]; ITU [8].



upper end, while Myanmar, Cambodia, and Timor-Leste face education deficits. The sub-region hosts 61 international accreditations (31 AACSB, 30 ABET) [1, 2] and produces 11,832 documents per million [11]. Indonesia, as GSDC 2026 host, exemplifies the region's challenge: balancing rapid industrialisation with climate commitments while expanding higher education access [18]. Youth unemployment is the lowest at 8.5% [6]. GHI averages 16.0 [4].

7.5 Western Asia (13 Countries)

Western Asia records the lowest mean SDG 13 score (55.3), driven by Gulf states' carbon-intensive economies [10]. Qatar, Kuwait, Bahrain, and the UAE have among the world's highest per-capita emissions [5]. Paradoxically, the sub-region holds the most accreditations (136 total: 43 AACSB, 93 ABET), reflecting massive investment in higher education infrastructure by Gulf states [1, 2]. Saudi Arabia alone hosts 31 ABET-accredited institutions. Conflict-affected states (Syria, Iraq, Yemen) severely depress SDG 4 averages. CPI averages 40.5 [13]. Youth unemployment is 18.1% [6]. R&D expenditure averages 0.56% [25].

7.6 Oceania (12 Countries)

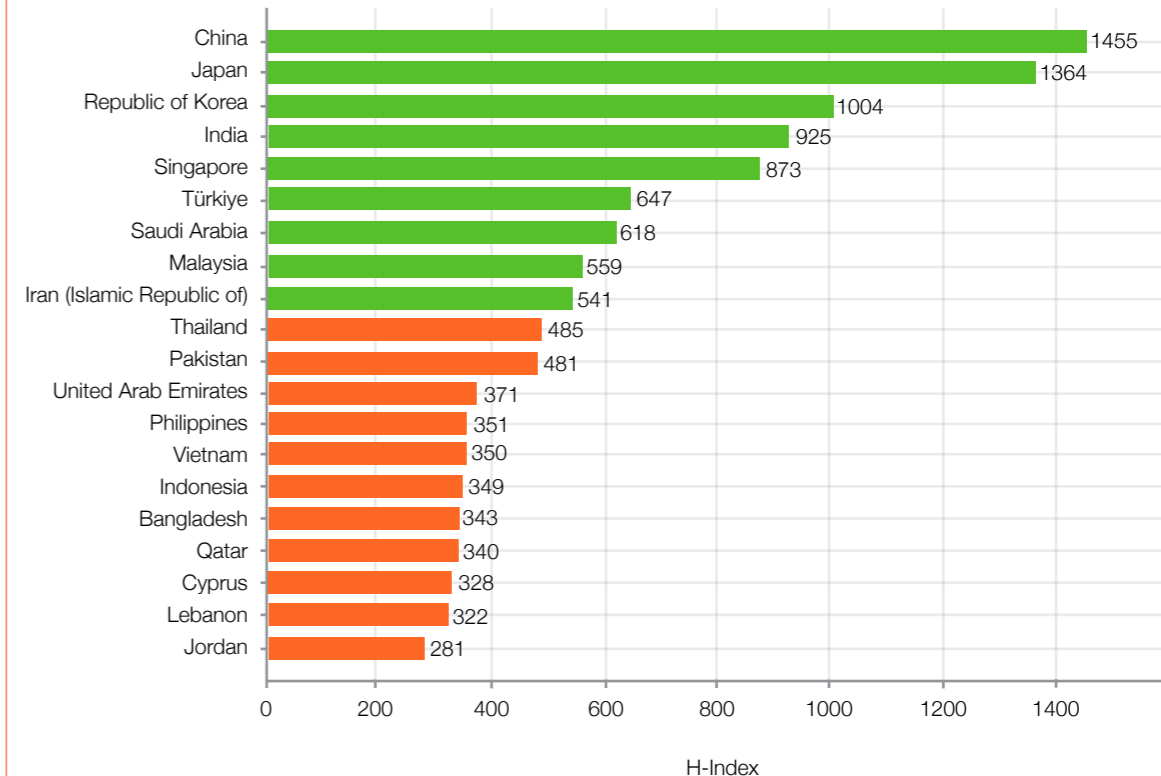
Oceania has the lowest mean SDG Index (60.2) and SDG 4 score (66.3), reflecting Pacific Island nations' development challenges [10]. Many SIDS face existential climate threats yet lack institutional capacity (ND-GAIN, 2023 [9]). The sub-region has zero AACSB or ABET accreditations [1, 2], the lowest research output (5,051 docs/million) [11], and the highest climate vulnerability. Education expenditure averages 4.8% of GDP—the highest among all sub-regions—yet outcomes remain lowest, pointing to structural barriers including geographic isolation, limited teacher supply, and small population scale [20]. UHC coverage is just 45.6 [24]. Youth unemployment reaches 19.9% [6].

8. RESEARCH OUTPUT AND INTERNATIONAL ACCREDITATION

8.1 SCImago Research Productivity

The SCImago Journal and Country Rank [11], based on Scopus bibliometric data covering 1996–2024, provides comprehensive metrics on research output, citation impact, and scholarly influence. Across the 55 Asia-Pacific states, research productivity varies by several orders of magnitude. Eastern Asia dominates with an average H-Index of 806, driven by China (H-Index: 1,455) and Japan (H-Index: 1,364). In contrast, Pacific Island states average H-Indices below 20.

Figure 13: Top 20 Asia-Pacific Countries by SCImago H-Index (1996–2024)



Source: SCImago [11].

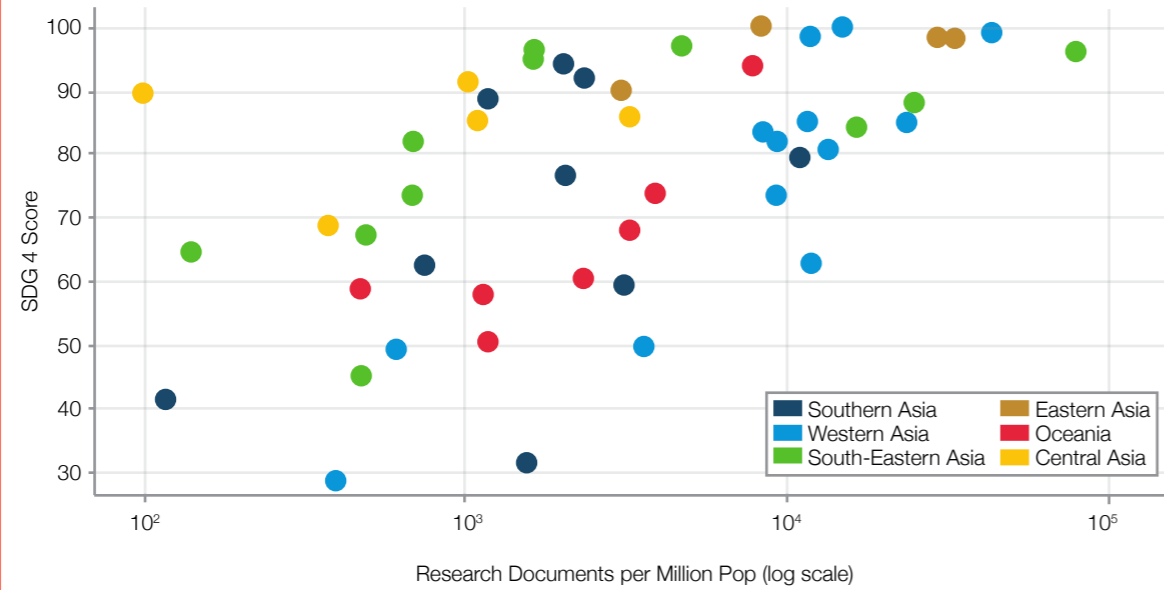
Source: SCImago [11]; AACSB [1]; ABET [2].

Table 6: SCImago Research Output by Sub-Region

Sub-Region	Avg H-Index	Avg Docs/M	Avg Cit/Doc	Self-Cit%	Total Accred.
Southern Asia	333	2,665	15.8	12.4%	40
Central Asia	114	1,162	11.0	8.2%	2
Eastern Asia	806	14,721	16.8	18.5%	80
South-Eastern Asia	322	11,832	17.1	11.8%	61
Western Asia	312	12,376	16.6	9.5%	136
Oceania	56	5,051	26.2	4.1%	0

8.2 Research-Education Nexus

Figure 14: Research Productivity vs Education Quality (r = 0.548)

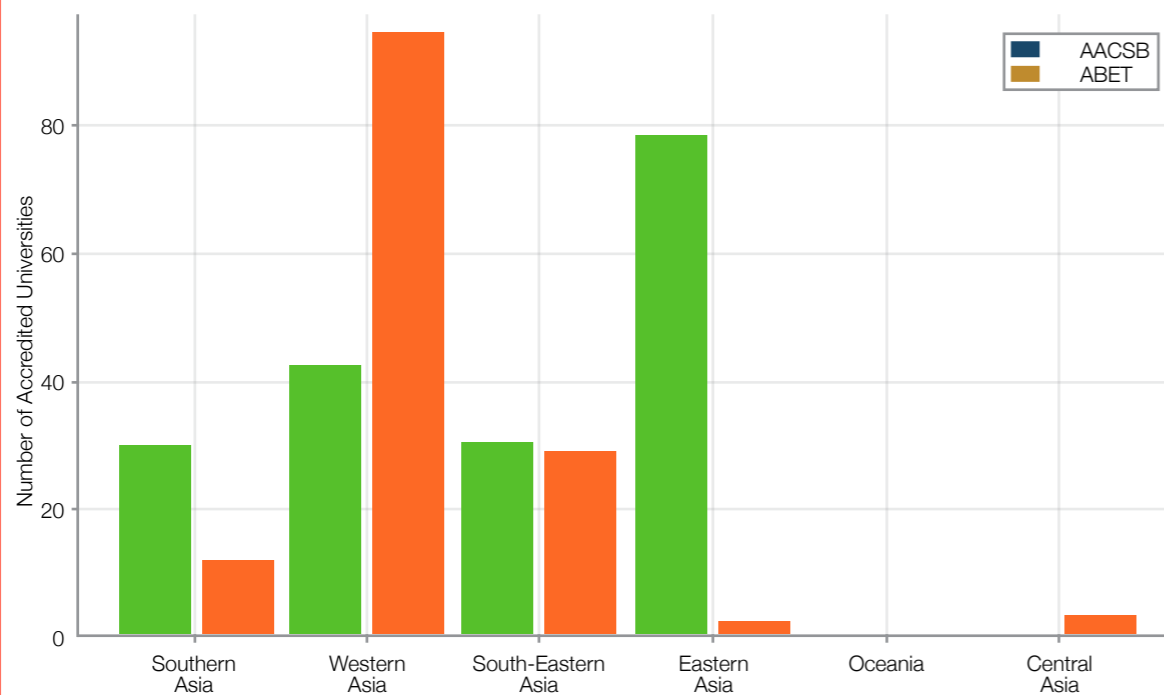


Source: SCImago [11]; Sachs et al. [10].

8.3 International Accreditation Landscape

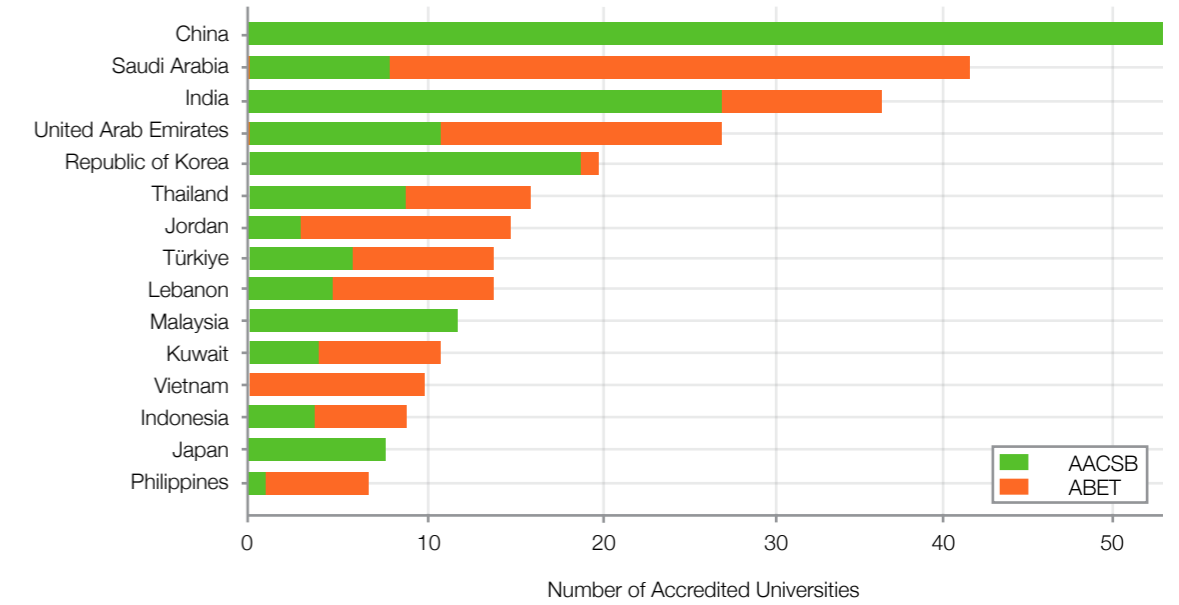
International accreditation by bodies such as AACSB [1] (business) and ABET [2] (engineering/technology) serves as a proxy for quality assurance in higher education. Across the 55 states, there are a total of 183 AACSB accreditations and 136 ABET accreditations, but distribution is profoundly uneven.

Figure 15: AACSB and ABET Accreditations by Sub-Region



Source: AACSB [1]; ABET [2].

Figure 16: Top 15 Countries by International Accreditations (AACSB + ABET)



Source: AACSB [1]; ABET [2].

Table 7: AACSB and ABET Accreditations by Sub-Region

Sub-Region	AACSB	ABET	Total	Countries w/ Any	% of Countries
Southern Asia	30	10	40	4	44%
Central Asia	0	2	2	1	20%
Eastern Asia	79	1	80	3	60%
South-Eastern Asia	31	30	61	7	64%
Western Asia	43	93	136	10	77%
Oceania	0	0	0	0	0%

The accreditation desert in Oceania and Central Asia represents a critical quality assurance gap. Without international benchmarking, universities in these sub-regions lack external validation mechanisms that drive curriculum improvement, research standards, and graduate employability. Targeted accreditation support programmes could yield significant returns.

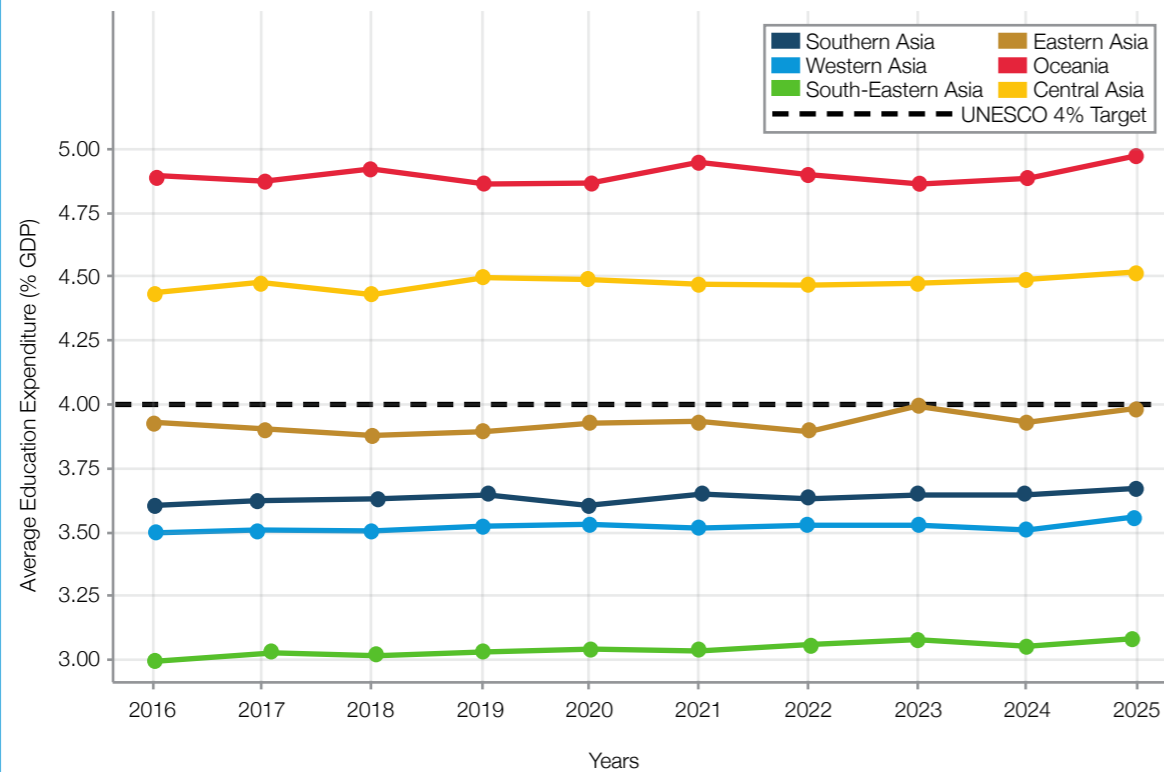
9. EDUCATION FINANCING, UNESCO BENCHMARKS AND EQUITY

9.1 Government Education Expenditure

G

overnment expenditure on education as a percentage of GDP is a critical input indicator for SDG 4. UNESCO recommends that countries allocate at least 4–6% of GDP and 15–20% of public expenditure to education (UNESCO, 2021 [19]). Across the 55 Asia-Pacific states, the average stands at approximately 3.6% of GDP [20], with enormous variation: Bhutan leads at 6.6%, while several states fall below 2%.

Figure 17: Government Education Expenditure Trends by Sub-Region (2016–2025)



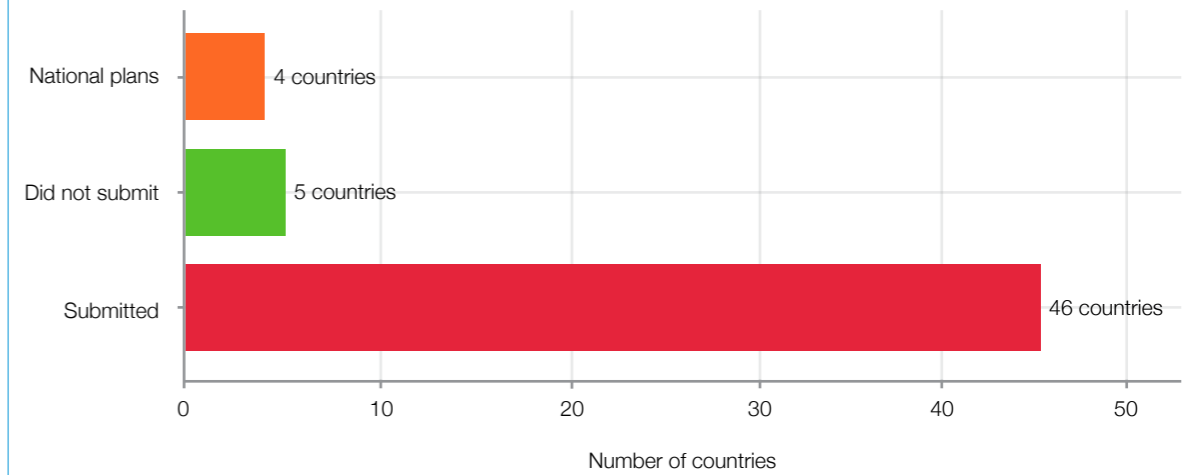
Source: UNESCO UIS [20]; World Bank [26].

Figure 17 reveals that education expenditure has remained remarkably flat across all sub-regions over the decade. This stagnation contrasts with rising SDG 4 ambitions and suggests that efficiency gains, private-sector contributions, and international aid have partially compensated for inadequate public financing. Oceania maintains the highest average expenditure (approximately 4.8% of GDP), yet achieves the lowest SDG 4 scores, indicating structural barriers beyond financing.

9.2 UNESCO SDG 4 National Benchmarks

The UNESCO SDG 4 Scorecard 2025 [21] tracks national benchmark submissions across 21 indicators covering early childhood education, out-of-school rates, completion rates, trained teachers, internet connectivity, and education expenditure. Among the 55 Asia-Pacific states, the submission picture is mixed.

Figure 18: UNESCO SDG 4 National Benchmark Submission Status

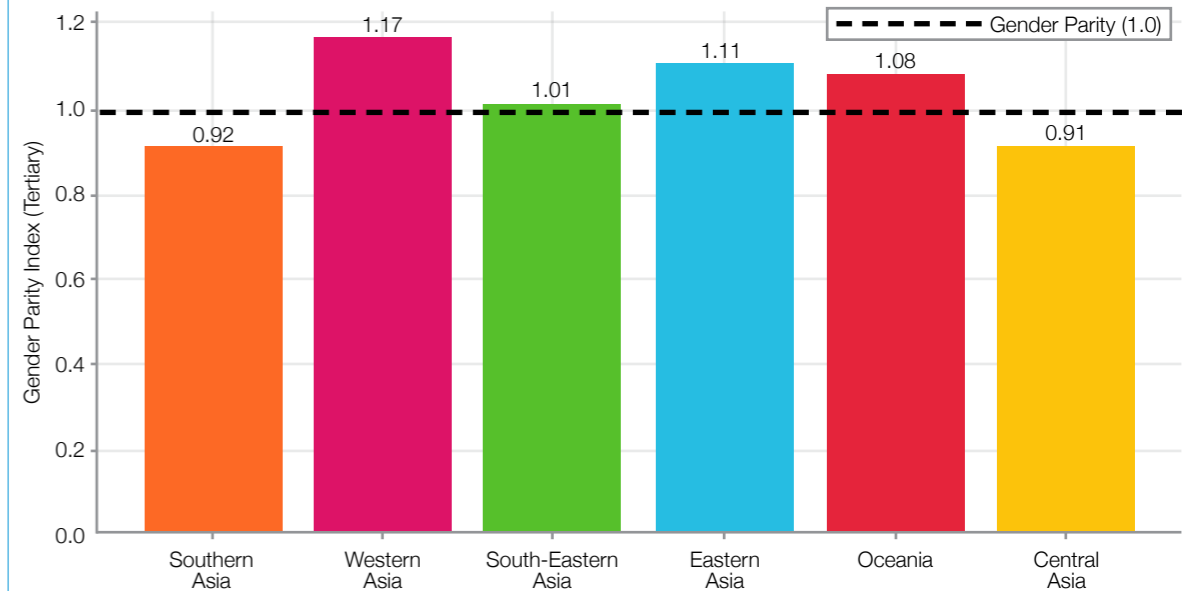


Source: UNESCO [21].

A substantial majority of states have submitted benchmarks, but the quality and completeness of submissions vary. Many countries report progress as “No data” or “No progress” on critical indicators. Only a minority of states meet both the 15% public expenditure threshold and the 4% GDP threshold simultaneously, underscoring the financing gap that continues to undermine education quality [20].

9.3 Gender Parity in Education

Figure 19: Gender Parity in Tertiary Education by Sub-Region

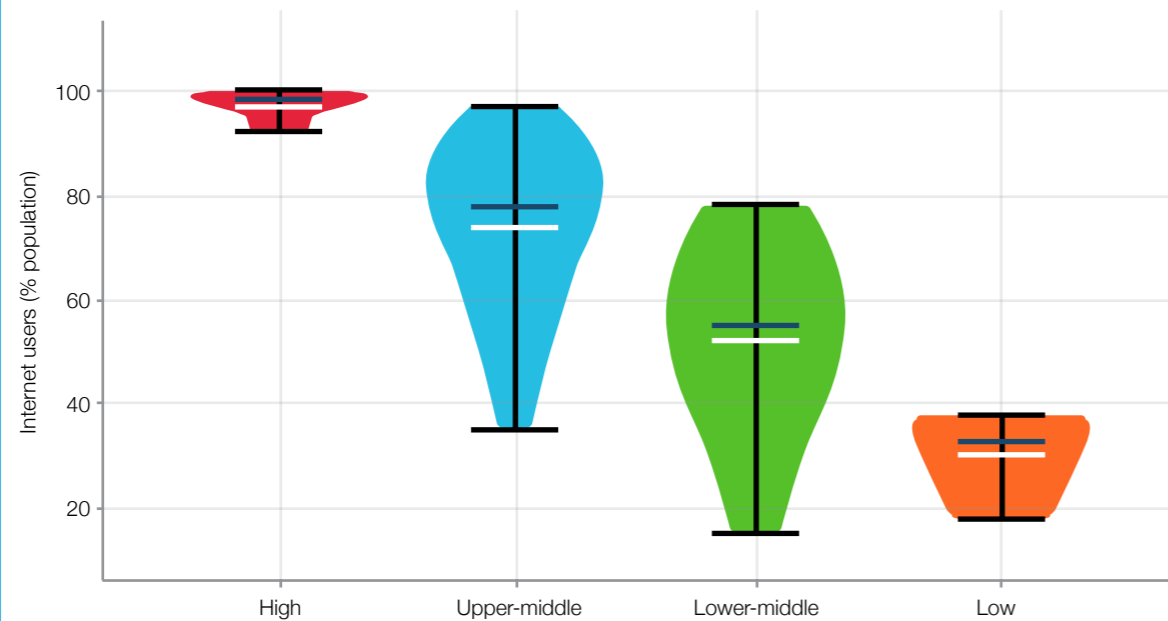


Source: UNESCO UIS [20]; WEF [28].

Gender parity at the primary level is near-universal across all sub-regions. However, significant gaps persist in tertiary education in Southern Asia (GPI = 0.92) and Central Asia (GPI = 0.91), indicating that women are substantially underrepresented in higher education (WEF, 2024 [28]). Central Asia and South-Eastern Asia have achieved above-parity tertiary enrolment for women (GPI > 1.0). Female researchers remain underrepresented across all sub-regions, particularly in Southern Asia (18.5%) and Oceania (25.0%) [20].

9.4 Digital Infrastructure for Education

Figure 20: Digital Divide – Internet Penetration by Income Group



Source: ITU [8].

The digital divide remains a critical barrier to education quality (ITU, 2024 [8]). High-income countries average 90%+ internet penetration, while low-income countries average below 25%. This 65+ percentage-point gap directly undermines the ability to deliver quality digital education, particularly during climate-related disruptions. Five countries have 5G coverage above 30%, while most Pacific Island states lack reliable broadband infrastructure.

10. GHG EMISSIONS AND RENEWABLE ENERGY

10.1 GHG Emissions Landscape

Total greenhouse gas emissions from the 55 Asia-Pacific states exceed 20,000 MtCO_{2e} annually (UNEP, 2024 [17]), representing approximately 50% of global emissions (Global Carbon Project, 2024 [5]). The distribution is highly concentrated: China alone accounts for roughly 60% of the regional total, followed by India, Japan, the Republic of Korea, and Indonesia.

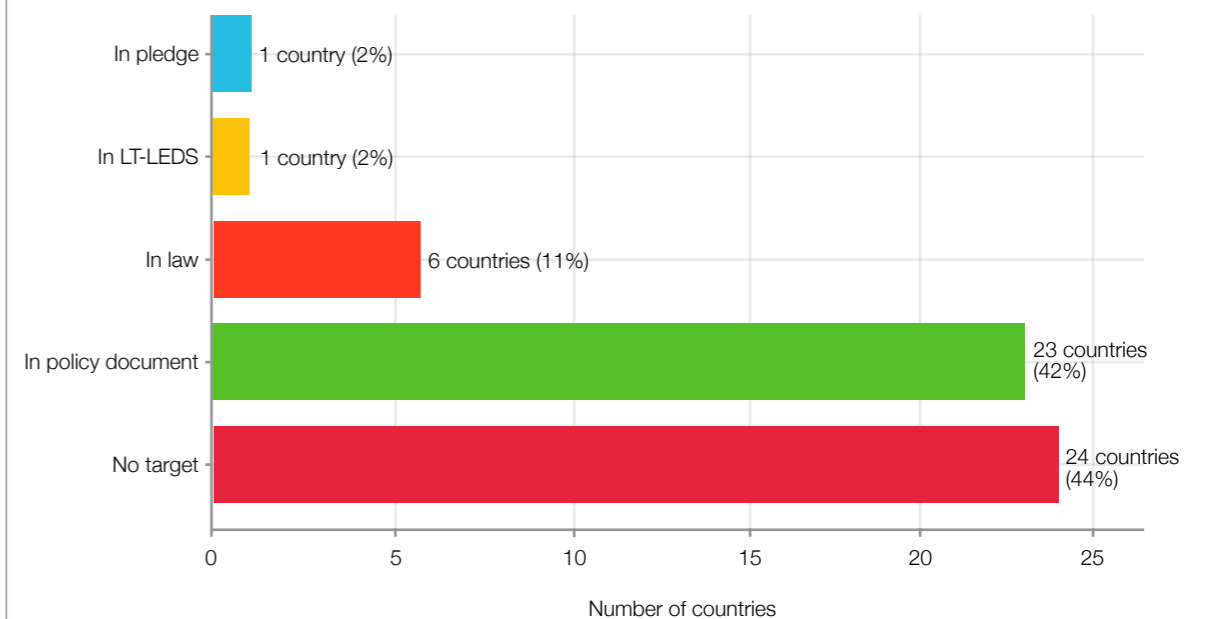
Table 8: GHG Emissions and Net-Zero Targets

Sub-Region	Total GHG (Mt)	Avg GHG/Cap	Energy%	Paris Ratified	Net-Zero	NDC 3.0(%)
Southern Asia	3,850	2.0	52%	100%	5 of 9	33%
Central Asia	480	6.1	68%	100%	2 of 5	20%
Eastern Asia	15,200	8.5	78%	80%	4 of 5	60%
South-Eastern Asia	2,400	4.2	55%	100%	6 of 11	36%
Western Asia	2,800	12.0	82%	92%	8 of 13	23%
Oceania	120	0.9	40%	100%	4 of 12	25%

Source: UNEP [17]; Global Carbon Project [5]; UNFCCC [22].

10.2 Net-Zero Commitments

Figure 21: Net-Zero Target Legal Status – 55 Asia-Pacific States

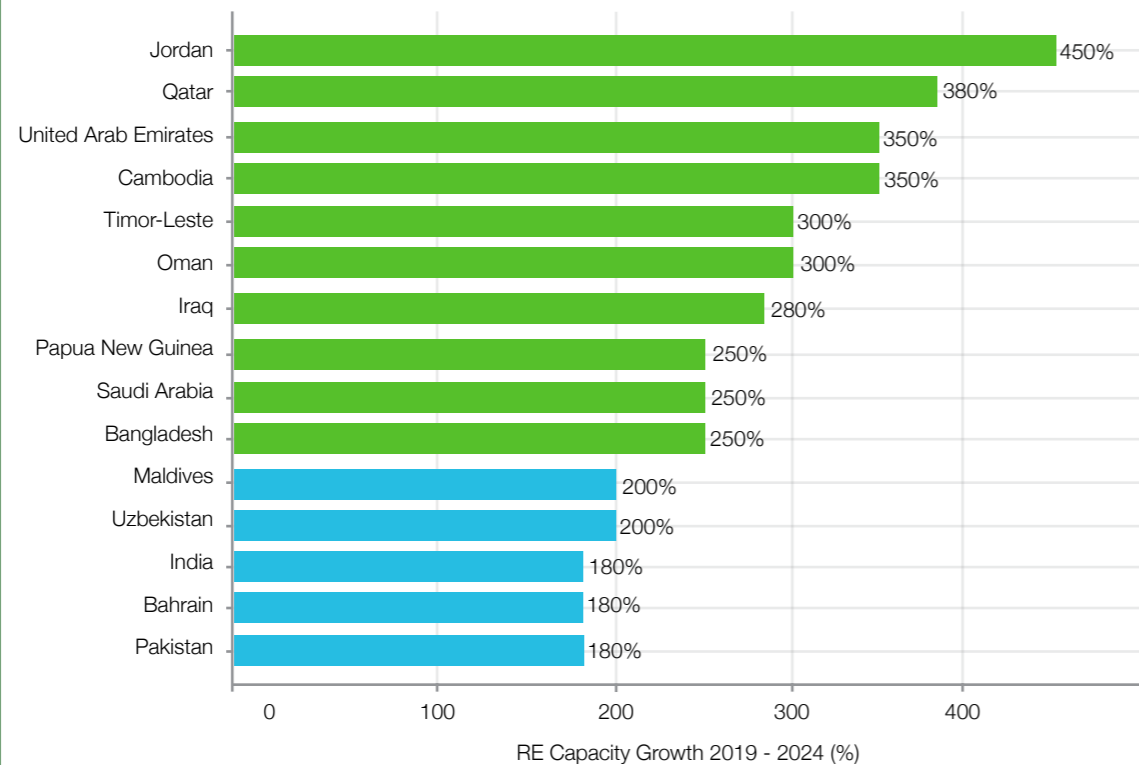


Source: UNFCCC [22]; Global Carbon Project [5].

Among the 55 states, the landscape of net-zero commitments varies widely. Some countries have enshrined net-zero targets in legislation (e.g., Japan: 2050), others have included them in policy documents (e.g., Saudi Arabia: 2060, China: 2060), while a significant proportion have made no formal net-zero commitment [22]. Only approximately 38% have submitted updated NDC 3.0 documents, indicating that climate ambition is lagging behind stated intentions.

10.3 Renewable Energy Deployment

Figure 22: Top 15 Countries by Renewable Energy Growth (2019–2024)



Source: IRENA [7].

Renewable energy deployment has accelerated across all sub-regions, with Western Asia showing the highest growth rate (200% over 2019–2024) from a low base, reflecting Gulf states’ diversification strategies (IRENA, 2025 [7]). Eastern Asia dominates in absolute terms, with China alone accounting for approximately 1,200 GW of installed RE capacity. However, the RE share of electricity generation remains below 30% for most sub-regions, indicating that the energy transition has far to go.

11. CROSS-CUTTING INDICATORS AND LONGITUDINAL TRENDS

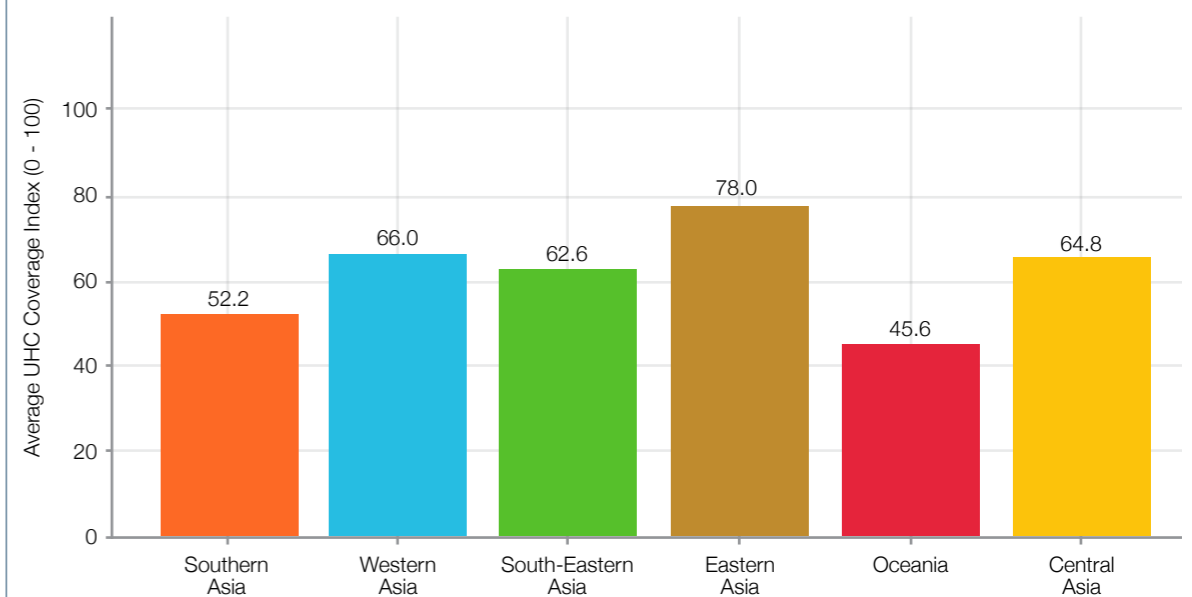
11.1 Introduction

The SDG 4–SDG 13 nexus does not exist in isolation. A range of cross-cutting indicators from health systems (WHO [24]), disaster risk (UNDRR [16]), youth employment (ILO [6]), food and water security (FAO [4]), governance quality (World Bank [26, 27], Transparency International [13], WIPO [25]), and longitudinal trend data shape the enabling environment for education and climate outcomes. This section examines these indicators to provide a holistic picture of the region’s development landscape and trajectories.

11.2 Health Systems (WHO)

Universal Health Coverage (UHC) is a critical enabler of educational attainment. Healthy children attend school more regularly and learn more effectively (WHO, 2024 [24]). Across the six sub-regions, UHC coverage ranges from 45.6 in Oceania to 78.0 in Eastern Asia. Under-5 mortality—an indicator of healthcare access—averages 8.8 per thousand in Eastern Asia but 27.8 in Southern Asia and 25.2 in Oceania.

Figure 23: UHC Service Coverage by Sub-Region (WHO 2023)

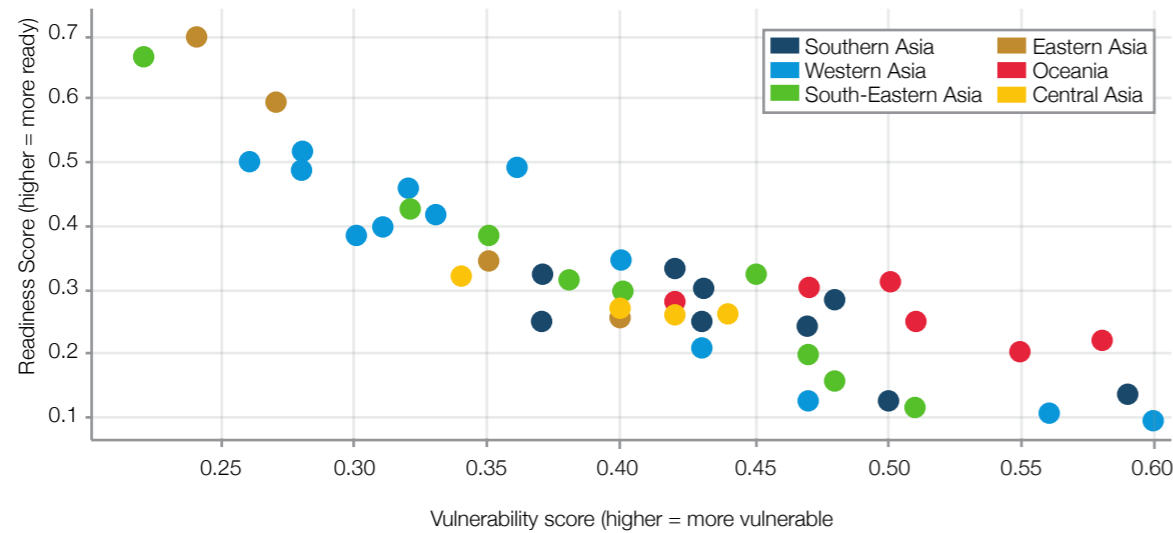


Source: WHO [24].

11.3 Climate Adaptation and Disaster Risk

The ND-GAIN Index [9] measures climate vulnerability against readiness to adapt. Southern Asian and Oceanic states cluster in the high-vulnerability, low-readiness quadrant, while Eastern Asian and Gulf states show lower vulnerability with higher readiness. The INFORM Risk Index [16] confirms Southern Asia (average 4.8) as the sub-region most exposed to compound climate–disaster–education risks.

Figure 24: Climate Vulnerability vs Readiness (ND-GAIN 2023)



Source: ND-GAIN [9].

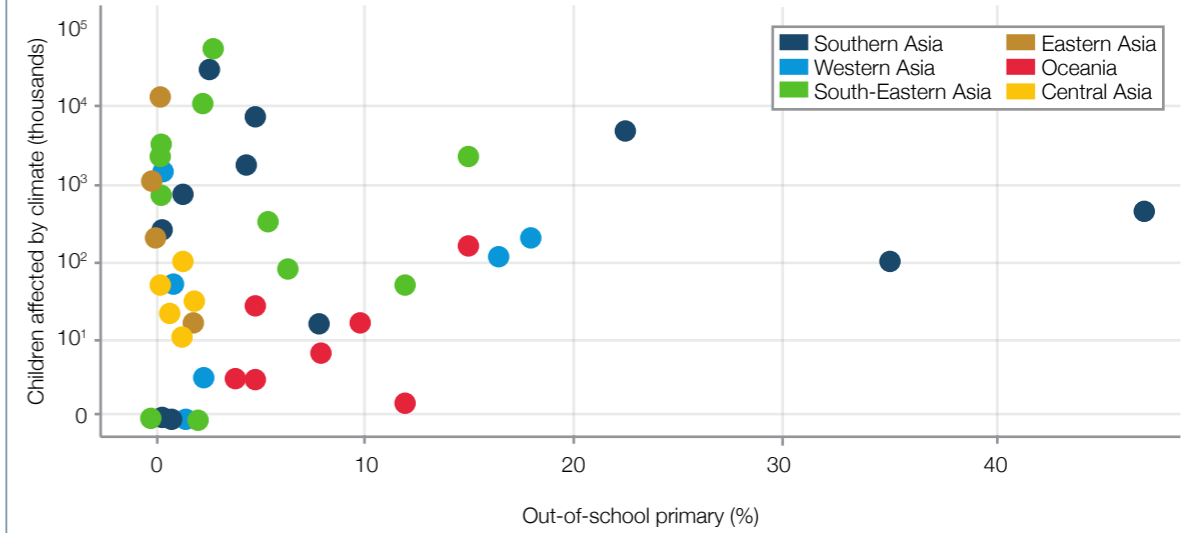
Table 9: Disaster Risk Indicators by Sub-Region

Sub-Region	INFORM Risk	Nat. Hazard Exp.	Coping Capacity	Climate Disasters	DRR Progress
Southern Asia	4.8	5.5	6.2	285	Partial
Central Asia	3.5	3.8	4.0	30	Partial
Eastern Asia	3.6	5.0	2.5	95	Good
South-Eastern Asia	3.9	5.2	4.5	310	Moderate
Western Asia	3.6	3.2	3.8	45	Moderate
Oceania	3.8	4.5	5.5	180	Partial

11.4 Children, Education Disruptions and Climate

Countries with high out-of-school rates tend to also have larger populations of children affected by climate disruptions—creating a compound vulnerability where climate change both reduces educational access and undermines the human capital needed for climate adaptation (UNICEF, 2025 [23]). This finding reinforces the urgency of integrated education–climate policy frameworks.

Figure 25: Out-of-School Rates vs Climate Disruptions (UNICEF)



Source: UNICEF [23].

11.5 Youth Employment and Green Skills (ILO)

Youth unemployment and NEET rates are critical indicators linking education to labour market outcomes and green transition readiness (ILO, 2024 [6]). Average youth unemployment ranges from 8.5% in South-Eastern Asia to 19.9% in Oceania. NEET rates are highest in Southern Asia (28.2%), reflecting both education gaps and limited formal-sector employment.

Table 10: Youth Employment Indicators by Sub-Region (ILO 2024)

Sub-Region	Youth Unemp(%)	NEET(%)	Female LFP(%)	Informal(%)	Green Jobs
Southern Asia	17.5	28.2	28.5	78	Medium
Central Asia	12.5	15.4	48.0	52	Medium
Eastern Asia	11.1	12.3	55.0	35	High
South-Eastern Asia	8.5	14.9	52.0	65	Medium
Western Asia	18.1	24.1	25.0	40	Low
Oceania	19.9	—	42.0	72	Low

11.6 Governance, Innovation, and R&D

Governance quality [13] and innovation capacity [25] are enabling conditions for both education reform and climate action. CPI Score ranges from 27.6 in Central Asia to 54.0 in Eastern Asia (Transparency International, 2024 [13]). R&D expenditure is strikingly unequal: Eastern Asia averages 2.75% of GDP, while Central Asia averages just 0.12% (WIPO, 2024 [25]).

Table 11: Governance and Innovation Indicators by Sub-Region

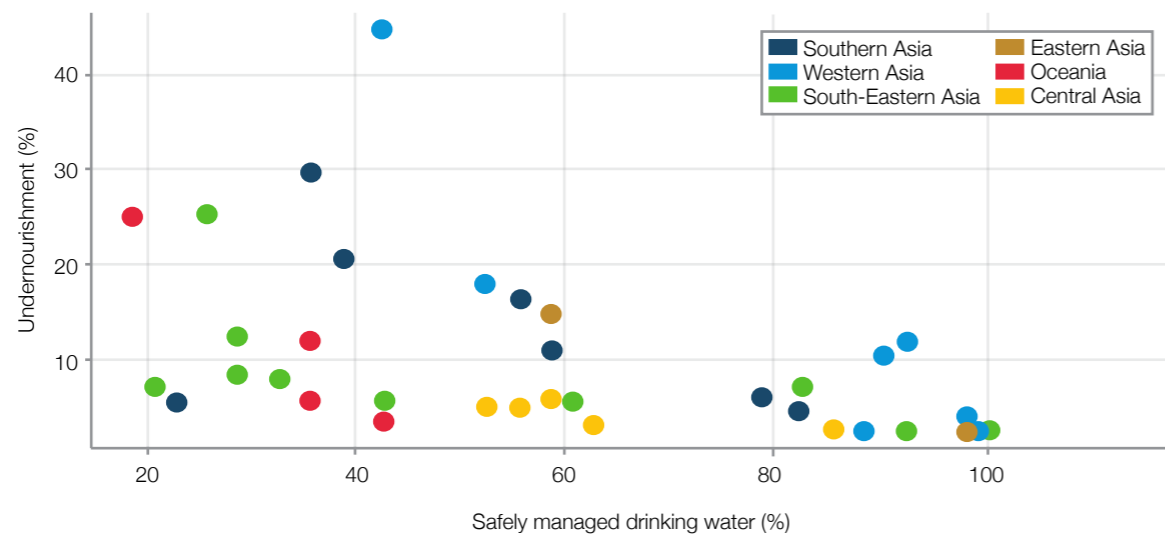
Sub-Region	CPI Score	Govt Effectiveness	Rule of Law	GII Rank (avg)	R&D (% GDP)
Southern Asia	35.6	-0.50	-0.45	95	0.33
Central Asia	27.6	-0.60	-0.70	110	0.12
Eastern Asia	54.0	0.85	0.70	18	2.75
South-Eastern Asia	38.4	0.10	-0.15	62	0.68
Western Asia	40.5	0.15	0.00	72	0.56
Oceania	33.5	-0.45	-0.35	—	—

Source: Transparency International [13]; WIPO [25].

11.7 Food Security and Water Access

Food insecurity and water access are fundamental prerequisites for educational participation (FAO, 2024 [4]). The Global Hunger Index averages 25.5 in Oceania and 19.2 in Southern Asia—both at “serious” levels. Safe water access ranges from 45% in Oceania to 92% in Eastern Asia.

Figure 26: Safe Water Access vs Undernourishment



Source: FAO [4]; WHO [24]; UNICEF [23].

Table 12: Food Security Indicators by Sub-Region

Sub-Region	GHI 2024	Undernourish(%)	Food Insecure(%)	Safe Water(%)	Sanitation(%)
Southern Asia	19.2	14.5	32.0	58.0	42.0
Central Asia	7.6	3.2	8.5	82.0	72.0
Eastern Asia	8.8	2.8	6.0	92.0	88.0
South-Eastern Asia	16.0	8.5	18.0	72.0	65.0
Western Asia	15.7	10.2	22.0	78.0	75.0
Oceania	25.5	18.0	40.0	45.0	35.0

12. THE IMPACT RANKINGS: UNIVERSITY SDG ENGAGEMENT

12.1 Growth Trends

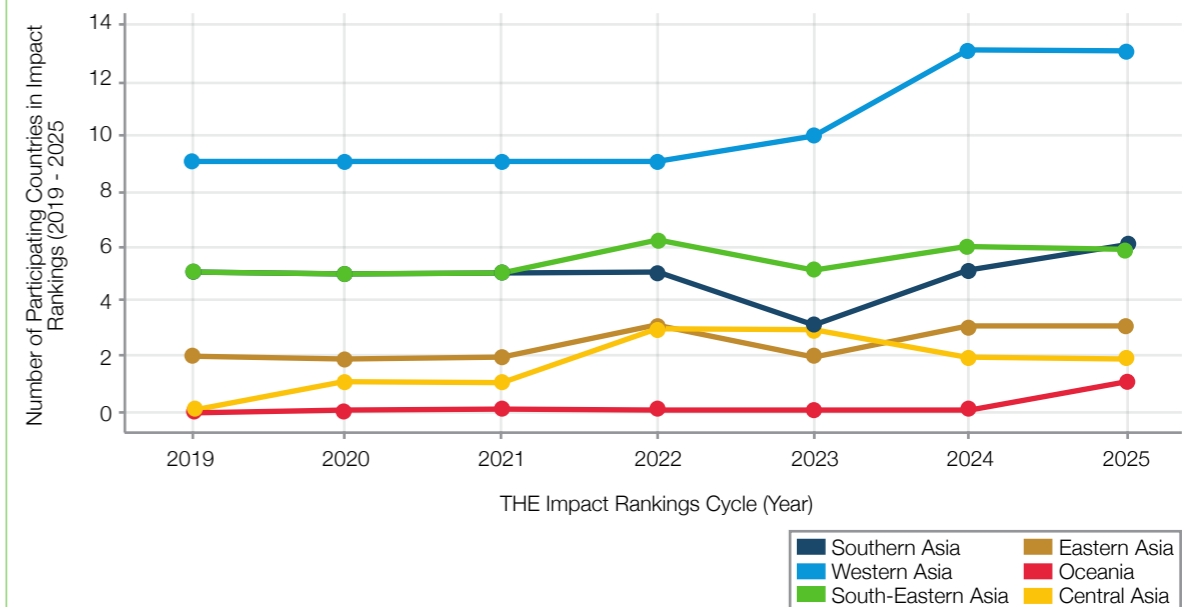
The Times Higher Education Impact Rankings [12], launched in 2019, represent the only global assessment framework evaluating universities against the SDGs. As shown in Table 13, participation in the THE Impact Rankings across the Asia-Pacific region grew substantially, rising from 166 universities in 2019 to 1,156 in 2025, reflecting growing institutional engagement with SDG aligned performance benchmarking. Between 2020 to 2021, the number of engaged Institutions doubled in a single year. This rapid expansion reflects a shift in how universities across the Asia-Pacific engage with global sustainability benchmarking to demonstrate societal impact and align with their national SDG priorities.

Table 13: Annual Participation of the 55 Asia-Pacific Institutions in THE Impact Rankings (2019–2025)

Total Number of Participating Institutions within the 55 Asia-Pacific Regions between 2019-2025							
Participating Year	2019	2020	2021	2022	2023	2024	2025
Number of Institutions	166	292	603	611	608	912	1,156

Source: THE [12].

Figure 27: THE Impact Rankings Participation by Sub-Region (2019–2025)



Source: THE [12].

Figure 27 shows a marked increase in Asia Pacific participation in the THE Impact Rankings from 2019 to 2025, with growth evident across all subregions.

Western and South Eastern Asia lead in engagement, while participation from Oceania remains limited, highlighting ongoing disparities in institutional capacity and reporting readiness. Overall, the figure signals growing regional recognition of the Impact Rankings as a framework for evidencing societal impact and engagement with the SDGs.

Table 14: Participation of 37 Asia-Pacific UN Member States in THE Impact Rankings (2019-2025)

#	Country	Impact Rank 2019	Impact Rank 2020	Impact Rank 2021	Impact Rank 2022	Impact Rank 2023	Impact Rank 2024	Impact Rank 2025
Southern Asia (7 countries)								
1	Afghanistan	0	1	2	2	3	2	3
2	Bangladesh	2	5	7	12	0	19	20
3	India	12	26	49	61	66	96	135
4	Iran	12	17	27	27	20	29	34
5	Maldives	0	0	0	0	0	0	1
6	Pakistan	10	23	36	63	0	89	120
7	Sri Lanka	1	2	3	6	6	7	8
Central Asia (4 Countries)								
8	Kazakhstan	2	2	7	10	15	26	36
9	Kyrgyzstan	0	0	0	1	1	0	0
10	Turkmenistan	0	0	0	2	8	9	14
11	Uzbekistan	0	1	12	30	47	53	59
Eastern Asia (4 Countries)								
12	China	3	9	13	13	7	6	8
13	Japan	41	63	75	76	78	74	68
14	Mongolia	0	0	0	1	0	1	2
15	Republic of Korea	7	16	17	18	20	24	28
South-Eastern Asia (7 Countries)								
16	Brunei Darussalam	0	0	0	0	1	2	2
17	Cambodia	0	0	1	1	1	1	1
18	Indonesia	7	9	18	28	32	45	71
19	Malaysia	9	13	19	23	24	28	31
20	Philippines	1	4	0	15	0	56	113
21	Thailand	7	19	25	51	65	77	83
22	Vietnam	1	2	4	7	9	13	16

#	Country	Impact Rank 2019	Impact Rank 2020	Impact Rank 2021	Impact Rank 2022	Impact Rank 2023	Impact Rank 2024	Impact Rank 2025
Western Asia (13 Countries)								
23	Bahrain	3	3	3	2	2	3	3
24	Cyprus	2	3	4	4	3	3	5
25	Iraq	3	18	37	47	56	71	88
26	Jordan	1	5	11	13	16	18	17
27	Kuwait	1	1	1	0	3	4	5
28	Lebanon	2	4	6	6	7	9	10
29	Oman	0	0	0	1	1	4	6
30	Qatar	1	1	1	1	1	1	1
31	Saudi Arabia	3	5	12	22	25	32	34
32	Syria	0	0	0	0	0	4	6
33	United Arab Emirates	2	3	4	8	10	12	13
34	Türkiye	23	37	50	58	79	91	109
35	Yemen	0	0	0	0	0	1	3
Oceania (2 Countries)								
36	Fiji	0	0	0	2	2	2	2
37	Papua New Guinea	0	0	0	0	0	0	1

Participation in the THE Impact Rankings has expanded significantly across the Asia Pacific region, with 37 of 55 UN member states participating at least once between 2019 and 2025. This reflects growing institutional commitment to sustainability benchmarking. Growth has been driven primarily by large and expanding higher education systems. India recorded the largest increase, rising from 12 institutions in 2019 to 135 in 2025.

In Western Asia, participation increased steadily, led by Türkiye (from 23 to 109 institutions) and supported by sustained growth across the GCC, particularly Saudi Arabia (from three to 34 institutions), aligning with major investments in accreditation and quality assurance. The UAE and Iraq also demonstrate strong upward trajectories. By contrast, participation in some countries, such as Bangladesh, fluctuates, reflecting reporting capacity rather than declining engagement.

Overall, participation patterns indicate that system scale, data reporting capacity, and national prioritisation of SDG aligned performance strongly shape engagement with global sustainability benchmarking, without diminishing the significance of contributions from smaller HEIs.

Source: THE [12].

Table 15: List of 18 Non-Participating Asia-Pacific UN Member States in THE Impact Rankings (2019- 2025)

#	List of Non-Participating Asia-Pacific Member States
Southern Asia (2 countries)	
1	Bhutan
2	Nepal
Central Asia (1 Country)	
3	Tajikistan
Eastern Asia (1 Country)	
4	Democratic People's Republic of Korea
South-Eastern Asia (4 Countries)	
5	Lao People's Democratic Republic
6	Myanmar
7	Singapore
8	Timor-Leste
Oceania (10 Countries)	
9	Kiribati
10	Marshall Islands
11	Micronesia
12	Nauru
13	Palau
14	Samoa
15	Solomon Islands
16	Tonga
17	Tuvalu
18	Vanuatu

Overall, 18 of the 55 Asia-Pacific UN Member states did not participate in the THE Impact Rankings between 2019-2025. Oceania totals 12 UN states; Fiji and Papua New Guinea participate, leaving 10 non-participating Asia-Pacific member states. 4 South East Asia, 1 Central Asia, and 2 Southern Asia Member states did not participate in the Impact Rankings. These patterns suggest that participation may remain uneven until underlying structural barriers are addressed, rather than indicating disengagement from the sustainability agenda.

Source: THE [12].



Table 16: Asia-Pacific Subregions (2025): Highest and Lowest Impact Rank, SDG13 and SDG4 Scores

Asia-Pacific Subregions (2025): Highest and Lowest Impact Rank, SDG13 and SDG4 Scores

Subregion	Impact Highest 2025 Score	Impact Lowest 2025 Score	SDG13 Highest Score	SDG13 Lowest Score	SDG 4 Highest Score	SDG4 Lowest Score
Southern Asia	41	2315	81.80	5.80	96.20	8.50
Central Asia	243	2314	76.40	1.20	89.20	7.90
Eastern Asia	3	2260	80.40	5.80	81.70	6.10
South-Eastern Asia	9	2292	81.30	3.80	91.10	3.90
Western Asia	25	2257	94.70	2.20	97.60	6.80
Oceania	817	2175	55.90	35.80	55.20	27.80

This table outlines the 2025 SDG 13 and SDG 4 highest scores and lowest scores performance of Asia Pacific Regions featured in the THE Impact Rankings, revealing significant variation in both climate action and education outcomes across the region. Western Asia stands out as the top-performing subregion for both SDG 13 (94.70) and SDG 4 (97.60), while Central Asia records the lowest SDG 13 performance (1.20) and South-Eastern Asia shows the lowest SDG 4 result (3.90). Southern Asia shows a widespread, with SDG 13 scores ranging from 81.80 to 5.80. Central Asia exhibits a similarly broad range, with SDG 13 values between 76.40 and 1.20, and SDG 4 scores spanning 89.20 to 7.90. Eastern Asia records SDG 13 scores from 80.40 to 5.80, alongside SDG 4 scores from 81.70 to 6.10. South Eastern Asia also presents substantial variation, with SDG 13 results from 81.30 to 3.80, and SDG 4 from 91.10 to 3.90, highlighting both high achievers and considerable challenges. Western Asia displays some of the region's widest performance gaps, with SDG 13 ranging from 94.70 to 2.20, and SDG 4 from 97.60 to 6.80, underscoring stark contrasts between top and bottom ranked universities. Meanwhile, Oceania shows SDG 13 scores between 55.90 and 35.80, and SDG 4 between 55.20 and 27.80.

Source: THE [12].



13. POLICY RECOMMENDATIONS

Based on the comprehensive analysis of Sections 3–12, incorporating SDG Index performance [10], education indicators [20], climate metrics [17], research productivity [11], accreditation landscapes [1, 2], education financing [20], GHG trajectories [5, 17], renewable energy [7], health [24], disaster risk [16], youth employment [6], food security [4], governance [13, 25, 26, 27], gender parity [28], and digital infrastructure [8], the following 17 evidence-based policy recommendations are proposed:

13.1 Addressing Critical Data Gaps

A review of the comprehensive analysis reveals significant data gaps that constitute structural barriers to evidence-based policymaking. No internationally comparable indicator currently tracks green skills acquisition or climate literacy levels across Asia-Pacific education systems. Institutional-level carbon footprint reporting for HEIs remains absent across the region. Current UNESCO and World Bank databases capture public education expenditure but lack granularity on private sector investment in climate education and corporate-sponsored green skills programmes. Many SIDS and LDCs—particularly in Oceania (SDG Index: 60.2; zero international accreditations) and Southern Asia—lack disaggregated data on tertiary enrolment by field, climate research output, and green economy employment outcomes. No longitudinal system exists to quantify the cumulative impact of climate events on learning outcomes, and gender-disaggregated data

on female participation in climate-specific STEM research remains insufficient. These gaps are addressed within the recommendations below.

13.2 Short-Term Actions (2026–2027)

Recommendation 1: Establish National SDG 4–SDG 13 Integration Frameworks. The negative correlation ($r = -0.343$, $p = 0.016$) demonstrates that pursuing education and climate goals independently is suboptimal. Governments should convene inter-ministerial task forces linking education and environment ministries, issue joint declarations on SDG 4–13 integration, and embed climate education targets within NDC processes. All 55 member states should have operational integration frameworks by end of 2027. Malaysia offers an early regional model: the National Education Plan 2026–2035, jointly launched by the Ministry of Education and the Ministry of Higher Education, embeds sustainability education and planetary wellbeing as core thrusts aligned with SDG 4–SDG 13 integration (MOE & MOHE Malaysia, 2026 [29]).

Recommendation 2: Launch the Asia-Pacific Green Skills and Climate Literacy Assessment. UNESCO and UNESCAP should jointly develop a standardised green skills and climate literacy assessment tool, pilot it across 10 representative countries spanning all six sub-regions, and publish baseline country benchmarks by Q4 2027. This directly addresses the absence of comparable climate literacy metrics across the region.

Recommendation 3: Increase Education Expenditure in Climate-Vulnerable LDCs and SIDS. Education expenditure averages only 3.6% of GDP—below the UNESCO-recommended 4–6% threshold. Only 29% of low-income states meet the minimum benchmark. A dedicated Climate-Education Emergency Fund should be established for LDCs and SIDS, mobilising concessional financing for the 16 most climate-vulnerable states where INFORM risk is highest (Southern Asia: 4.8) and UHC coverage is lowest (Oceania: 45.6). Education resilience criteria should be integrated into GCF and GEF allocation frameworks.

Recommendation 4: Accelerate NDC 3.0 Submissions with Education-Integrated Climate Targets. Only 38% of Asia-Pacific states have submitted updated NDCs. A regional NDC technical support facility should provide direct assistance to the 34 states without updated submissions, ensuring all 55 states submit ambitious, education-integrated NDCs before the 2028 Global Stocktake cycle.

Recommendation 5: Bridge the Digital Divide for Climate Education Delivery. A 65+ percentage-point internet penetration gap exists between high-income and low-income states. Oceania averages approximately 44% access compared to 85% in Eastern Asia. Emergency broadband expansion, satellite-based and offline-capable digital learning platforms, and community digital learning centres should be deployed in climate-vulnerable coastal and rural zones across Oceania and Southern Asia.

13.3 Medium-Term Actions (2027–2028)

Recommendation 6: Scale Climate Education, ESD, and Green Skills Training Across HEIs. HEIs should mandate integration of ESD and climate modules across all accredited programmes. One hundred new UNESCO Chairs

in ESD and Climate Action should be established in underserved sub-regions, and a regional Green Skills Certification Framework should be developed and linked to national employment recognition systems. The UNESCO Chair framework at PSU offers an institutional model. Youth NEET rates of 28.2% in Southern Asia underscore the urgency of connecting education to labour market demands.

Recommendation 7: Close the International Accreditation Gap. Accreditation is heavily concentrated: Western Asia holds 136 AACSB/ABET accreditations while Oceania has zero and Central Asia has only two. An Asia-Pacific Accreditation Support Programme should provide technical assistance and mentorship to 50 HEIs in the most underserved sub-regions, supported by a regional accreditation readiness assessment tool.

Recommendation 8: Leverage University Research for Climate Solutions. The strong correlation ($r = 0.548$, $p < 0.001$) between research productivity and SDG 4 confirms the education–research nexus. R&D expenditure—averaging just 0.12% of GDP in Central Asia and 0.33% in Southern Asia versus 2.75% in Eastern Asia—must be raised to a minimum of 1% across all sub-regions, with competitive regional climate research grants and cross-border university research consortia established.

Recommendation 9: Strengthen Gender Parity in STEM and Climate Research. Tertiary GPI stands at 0.80 in Southern Asia and 0.85 in Oceania; female researcher shares are lowest in Southern Asia (18.5%). Gender-targeted STEM and climate research scholarships, mandatory institutional gender action plans, and a regional women-in-climate-science mentorship network are required. Programmes should incorporate systematic data collection on female participation in climate-specific research to address current data limitations.

Recommendation 10: Establish Standardised HEI-Level Carbon Footprint Reporting. No standardised database of institutional carbon footprints exists despite regional GHG emissions exceeding 20,000 MtCO_{2e}. A standardised HEI carbon reporting protocol should be developed, piloted across 200 institutions in high-income states, and linked to annual Asia-Pacific University Carbon Footprint Reports. All HEIs participating in THE Impact Rankings should report Scope 1–3 emissions.

13.4 Long-Term Actions (2029–2030)

Recommendation 11: Create a Regional SDG 4–13 Live Monitoring Dashboard. UNESCAP, SDSN, and THE should develop a live digital dashboard integrating all 15 international databases, tracking SDG 4, SDG 13, and cross-cutting indicators at country and institutional levels. The dashboard should be embedded into UNESCAP’s annual SDG progress review cycle by 2030, creating a transparent, centralised data architecture for ongoing accountability.

Recommendation 12: Invest in Integrated Health–Education–Climate Resilience Systems. Regions with the lowest UHC (Oceania: 45.6) have the lowest SDG 4 scores (66.3) and highest climate vulnerability. Integrated Health–Education–Climate National Resilience Plans should be developed in the 20 most vulnerable states, with a minimum of 2% of national budgets allocated to cross-sectoral resilience programming and climate-resilient school infrastructure standards adopted for all new educational facilities.



Recommendation 13: Address Youth Unemployment through Green Economy Transition Pathways. Youth unemployment reaches 19.9% in Oceania and 18.1% in Western Asia. Indigenous youth face disproportionately higher unemployment rates across the region, particularly in Oceania and Southern Asia, and require tailored green-economy pathways that integrate local and indigenous knowledge systems (UNESCO-LINKS, 2025 [30]). National green jobs strategies should be established in all 55 states aligned with ILO guidelines, targeting 5 million green apprenticeships by 2030, supported by public–private partnerships for green enterprise incubation in climate-vulnerable zones.

Recommendation 14: Establish Longitudinal Climate–Education Disruption Tracking Systems. A standardised climate–education disruption reporting protocol should be developed and deployed across the 30 most climate-affected states, with annual longitudinal impact assessments linking climate events to learning outcomes. This addresses the absence of systematic tracking of the cumulative educational impact of climate disasters.

Recommendation 15: Strengthen Governance and Transparency for Education–Climate Finance. CPI scores range from 27.6 (Central Asia) to 54.0 (Eastern Asia). Independent audit mechanisms for education and climate finance, annual transparency reports on budget allocations, and whistleblower protection frameworks are preconditions for the effective implementation of all

other recommendations. Reporting requirements should encompass private sector climate education contributions.

Recommendation 16: Develop a Post-2030 Asia-Pacific Education–Climate Sustainability Compact. A high-level negotiating panel under UNESCAP auspices should draft a successor framework with binding education–climate targets and accountability mechanisms, securing formal adoption by all 55 member states at the 2030 High-Level Political Forum.

Recommendation 17: Recognise Indigenous Communities as Agents of Climate Action and Integrate Traditional Ecological Knowledge (TEK). The Asia-Pacific is home to one of the world’s largest indigenous populations, concentrated in Oceania, Southern Asia, and South-Eastern Asia — the sub-regions with the highest climate vulnerability (ND-GAIN, 2023 [9]; INFORM risk 4.8 in Southern Asia [16]). Asia-Pacific states should formally recognise indigenous peoples as agents of change in NDCs, National Adaptation Plans, and tertiary ESD curricula, and systematically integrate traditional and ecological knowledge as a mitigation and adaptation solution through HEI-led research and community partnerships (UNDP, 2024 [31]; UNESCO, 2024 [32]). By 2030, at least 50% of Asia-Pacific states should embed indigenous and traditional ecological knowledge into national climate policies and HEI curricula.

Table 17: 16 Policy Recommendations Matrix by Time Horizon

Time Horizon	No.	Policy Recommendation	Lead Agency
Short-Term (2026–2027)	1	Establish National SDG 4–13 Integration Frameworks	National Governments
	2	Launch Green Skills & Climate Literacy Assessment	UNESCO / UNESCAP
	3	Increase Education Expenditure in Climate-Vulnerable LDCs/SIDS	World Bank / MDBs
	4	Accelerate NDC 3.0 with Education-Integrated Targets	UNFCCC / UNDP
	5	Bridge the Digital Divide for Climate Education	ITU / World Bank
Medium-Term (2027–2028)	6	Scale ESD and Green Skills Training Across HEIs	UNESCO / ILO
	7	Close the International Accreditation Gap	AACSB / ABET / UNESCO
	8	Leverage University Research for Climate Solutions	National Govts / WIPO
	9	Strengthen Gender Parity in STEM & Climate Research	UNESCO / UN Women
	10	Establish HEI-Level Carbon Footprint Reporting	THE / SDSN
Long-Term (2029–2030)	11	Create Regional SDG 4–13 Live Monitoring Dashboard	UNESCAP / SDSN
	12	Invest in Health–Education–Climate Resilience Systems	WHO / UNESCO / UNICEF
	13	Address Youth Unemployment via Green Economy Pathways	ILO / National Govts
	14	Establish Climate–Education Disruption Tracking Systems	UNICEF / UNESCO
	15	Strengthen Governance & Transparency for Finance	TI / National Govts
	16	Develop Post-2030 Education–Climate Sustainability Compact	UNESCAP / UNFCCC

Source: Author’s synthesis based on analysis of Sections 4–13; data from [1–28].

14. CONCLUSION

T

This policy paper has presented the most comprehensive data-driven analysis to date of the SDG 4–SDG 13 nexus across the 55 UN Asia-Pacific member states, integrating 15 authoritative international databases covering education, climate, research, accreditation, financing, governance, health, disaster risk, employment, food security, gender, digital infrastructure, and renewable energy.

The findings paint a picture of a region at a crossroads. The statistically significant negative correlation between education quality and climate performance ($r = -0.343$, $p = 0.016$ [10]) encapsulates the central policy challenge—a “development paradox” broadly consistent with development–emissions trade-offs discussed in the EKC literature, wherein countries with higher development levels tend to generate greater carbon emissions. The positive correlation between research productivity and education quality ($r = 0.548$, $p < 0.001$ [11]) confirms that investment in university research capacity is a powerful lever for SDG 4 progress (Chankseliani & McCowan, 2021 [3]).

Government education expenditure has stagnated at approximately 3.6% of GDP over the decade—below UNESCO’s recommended minimum [20]—while total GHG emissions from the region exceed 20,000 MtCO_{2e} annually [17]. Only 38% of states have submitted updated NDC 3.0 documents [22]. The digital divide remains stark, with a 65+ percentage-point internet penetration gap between high- and low-income countries [8]. Gender parity in tertiary education remains elusive in Southern Asia and Oceania [20, 28]. Cross-cutting analysis reveals that UHC coverage [24], disaster risk [16], youth employment [6], and governance quality [13] are all deeply interconnected with education and climate outcomes.

As delegates gather at GSDC 2026 in Jakarta (UNESCAP, 2025 [18]), these 17 evidence-based recommendations—organised across short-term (2026–2027), medium-term (2027–2028), and long-term (2029–2030) horizons—offer a concrete agenda for bridging the education–climate nexus. The culminating call for a Post-2030 Asia-Pacific Education–Climate Sustainability Compact (Recommendation 16) underscores that the work must extend beyond the current SDG cycle. The path to 2030 is narrow but navigable, provided that governments, universities, and international organisations act with the urgency, coordination, and ambition that the data demand (UN DESA, 2015 [14]). The stakes could not be higher: the Asia-Pacific region’s 4.3 billion people depend on getting this right.

15. REFERENCES

- [1] AACSB International. (2026). Accredited Institutions. Available at: <https://aacsb.edu/accredited>
- [2] ABET. (2026). Accredited Programs Database. Available at: <https://amspub.abet.org/aps/category-search>
- [3] Chankseliani, M., & McCowan, T. (2021). Higher education and the Sustainable Development Goals. *Higher Education*, 81(1), 1–8. <https://doi.org/10.1007/s10734-020-00652-w>
- [4] FAO. (2024). *The State of Food Security and Nutrition in the World 2024*. FAO, Rome.
- [5] Global Carbon Project. (2024). *Global Carbon Budget 2024*. Available at: <https://globalcarbonbudget.org/gcb-2024/>
- [6] ILO. (2024). *Global Employment Trends for Youth 2024*. International Labour Organization, Geneva.
- [7] IRENA. (2025). *Renewable Capacity Statistics 2025*. International Renewable Energy Agency, Abu Dhabi.
- [8] ITU. (2024). *ICT Development Index 2024*. International Telecommunication Union, Geneva.
- [9] Notre Dame Global Adaptation Initiative. (2023). *ND-GAIN Country Index*. Available at: <https://gain.nd.edu>
- [10] Sachs, J.D., Lafortune, G., Fuller, G., Iablouovski, G. (2025). *Financing Sustainable Development to 2030 and Mid-Century*. Sustainable Development Report 2025. Paris: SDSN, Dublin: Dublin University Press. DOI: <https://doi.org/10.25546/111909>
- [11] SCImago. (2025). *SCImago Journal & Country Rank*. Available at: <https://scimagojr.com>
- [12] Times Higher Education. (2025). *THE Impact Rankings 2025*. Available at: <https://timeshighereducation.com/impactrankings>
- [13] Transparency International. (2024). *Corruption Perceptions Index 2024*. Available at: <https://transparency.org/en/cpi>
- [14] UN DESA. (2015). *Transforming Our World: The 2030 Agenda for Sustainable Development*. United Nations, New York.
- [15] UNDP. (2025). *Human Development Report 2025*. United Nations Development Programme, New York.
- [16] UNDRR. (2025). *INFORM Risk Index 2025*. Available at: <https://drmkc.jrc.ec.europa.eu/inform-index>










- [17] UNEP. (2024). *Emissions Gap Report 2024*. United Nations Environment Programme, Nairobi.
- [18] UNESCAP. (2025). *Asia and the Pacific SDG Progress Report 2025*. Bangkok.
- [19] UNESCO. (2021). *Reimagining Our Futures Together: A New Social Contract for Education*. UNESCO, Paris.
- [20] UNESCO Institute for Statistics. (2025). *Education Data*. Available at: <https://databrowser.uis.unesco.org>
- [21] UNESCO. (2025). *SDG 4 Scorecard 2025*. ISBN 978-92-9189-337-9.
- [22] UNFCCC. (2025). *NDC Registry*. Available at: <https://unfccc.int/NDCREG>.
- [23] UNICEF. (2025). **Learning Interrupted: Global Snapshot of Climate-Related School Disruptions in 2024**. UNICEF, New York.
- [24] WHO. (2024). *World Health Statistics 2024*. World Health Organization, Geneva.
- [25] WIPO. (2024). *Global Innovation Index 2024*. World Intellectual Property Organization, Geneva.
- [26] World Bank. (2025). *World Development Indicators*. Available at: <https://databank.worldbank.org/source/world-development-indicators>
- [27] World Bank. (2023). *Worldwide Governance Indicators*. <https://www.worldbank.org/en/publication/worldwide-governance-indicators>
- [28] World Economic Forum. (2024). *Global Gender Gap Report 2024*. WEF, Geneva. <https://www.weforum.org/publications/global-gender-gap-report-2024/>
- [29] Ministry of Education Malaysia & Ministry of Higher Education Malaysia. (2026). *National Education Plan 2026–2035*. Kuala Lumpur: MOE & MOHE. Executive Summary available at: <https://www.mohe.gov.my/muat-turun/penerbitan-jurnal-dan-laporan/malaysia-higher-education-blueprint/1820-executivesummary-malaysiahighereducationblueprint-pdf/file>
- [30] UNESCO. (2025). *Local and Indigenous Knowledge Systems (LINKS) Programme*. United Nations Educational, Scientific and Cultural Organization, Paris. Available at: <https://www.unesco.org/en/links>
- [31] UNDP. (2024). *Indigenous knowledge is crucial in the fight against climate change*. UNDP Climate Promise. July 31. <https://climatepromise.undp.org/news-and-stories/indigenous-knowledge-crucial-fight-against-climate-change-heres-why>
- [32] UNESCO. (2024). *Greening Communities: A Guidance Document*. UNESCO, Paris. <https://unesdoc.unesco.org/ark:/48223/pf0000396434>

APPENDICES

Appendix A. List of 55 Asia-Pacific Member States

The following table lists all 55 United Nations Asia-Pacific member states analysed in this policy paper, organised by sub-region. Country classifications follow UN DESA designations: LDC = Least Developed Country; LLDC = Landlocked Developing Country; SIDS = Small Island Developing State.

Southern Asia (9 countries)

 Afghanistan	 Maldives
 Bangladesh	 Nepal
 Bhutan	 Pakistan
 India	 Sri Lanka
 Iran (Islamic Republic of)	

Central Asia (5 countries)

 Kazakhstan	 Turkmenistan
 Kyrgyzstan	 Uzbekistan
 Tajikistan	

Eastern Asia (5 countries)

 China	 Japan
 Democratic People's Republic of Korea	 Mongolia
	 Republic of Korea

South-Eastern Asia (11 countries)

 Brunei Darussalam	 Myanmar
 Cambodia	 Philippines
 Indonesia	 Singapore
 Lao People's Democratic Republic	 Thailand
	 Timor-Leste
 Malaysia	 Vietnam



Western Asia (13 countries)

 Bahrain	 Qatar
 Cyprus	 Saudi Arabia
 Iraq	 Syrian Arab Republic
 Jordan	 Türkiye*
 Kuwait	 United Arab Emirates
 Lebanon	 Yemen
 Oman	

Oceania (12 countries)

 Fiji	 Papua New Guinea
 Kiribati	 Samoa
 Marshall Islands	 Solomon Islands
 Micronesia (Federated States of)	 Tonga
	 Tuvalu
 Nauru	 Vanuatu
 Palau	

Source: SDSN Sustainable Development Report 2025 [10]; World Bank [26]; UN DESA (2015) [14].



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