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Supplemental Information

Overlooked uneven progress across sustainable development goals at the global scale: Challenges and opportunities

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1 MATERIALS AND METHODS

2 Data sources

3 All SDG scores (the score for each SDG) and SDG index scores (the average of all 17 SDG scores) over time and space were
4 based on SDG Index and Dashboards Reports from 2017 to 2021.¹⁻⁵ Briefly, SDG Index and Dashboards Reports adopt around
5 100 indicators from a mix of official and non-official data sources, generally following the official SDG indicators endorsed by
6 the UN Statistical Commission. The value for each indicator is normalized to 0-100 by range transformation with carefully
7 established upper and lower bounds for each indicator. The score for each SDG is calculated using the arithmetic mean of all
8 corresponding SDG indicators' normalized values. These scores across all 17 SDGs are later averaged to calculate the SDG
9 Index score (the mean SDG index score in the present study, MIS). More details about indicator selection, data source,
10 normalization, calculations, and sensitivity tests can be found in those reports (<https://www.sdgindex.org/reports/>).

11 In SDG Index and Dashboards Reports and other well-established SDGs assessments,^{4,6} the quantification of progress
12 toward SDGs across countries and regions was mainly based on the SDG index score, which might be biased and over-optimistic
13 when a large difference exists across 17 SDGs.⁷ Therefore, the present study further quantified the progress evenness across all
14 17 SDG scores by the SDGs progress evenness score (ES) to diminish the potential overestimation of sustainable development
15 performance by adopting the SDG index score only, then computed the sustainable development score (SDS) integrating both ES
16 and MIS to quantify the progress toward SDGs at the global scale comprehensively. We further compared the SDGs progress
17 evenness before and after the outbreak of COVID-19 based on the SDG Reports 2020 and 2021, respectively. The raw data used
18 in the SDG report was mainly before the year the report was published (mostly in June) due to the lagging update of statistical
19 data. Therefore, the SDG Report 2021, published in June 2021, reflected the first evaluation of global sustainable development
20 post-COVID-19.

22 SDGs progress evenness score and sustainable development score

23 The computation of the evenness score and sustainable development score generally follows Liu *et al.*⁷ with an improved radar
24 chart method.⁸ More details are quoted as follows:

25 The score of each SDG for a given country or region in a specific year is used as the radius of each sector, forming a radar
26 chart with 17 sectors corresponding to the 17 SDGs. The area (S) and perimeter (L) of the radar chart are expressed as follows
27 (Fig. S10):

$$28 \quad S_i = \sum_{j=1}^n S_j = \sum_{j=1}^n \pi f_j r_j^2 \quad j = 1, 2, \dots, n \quad (1)$$

$$29 \quad L_i = \sum_{j=1}^n L_j = 2|r_{max} - r_{min}| + \sum_{j=1}^n 2\pi f_j r_j \quad j = 1, 2, \dots, n \quad (2)$$

30 where n represents the number of SDGs, which is 17; r_{max} and r_{min} represent the maximum and minimum among 17 SDG scores,
31 respectively; r_j refers to the score of the j^{th} SDG; and f_j stands for the weight of the j^{th} SDG and is set as 1/17 for all SDGs
32 because there is no reason to give one SDG greater weight than another in the SDGs assessment, which focuses on the current
33 SDGs progress status rather than future policy-making.^{4,6,9} The evenness score refers to the ratio between the total area of the
34 radar chart formed by the 17 SDGs and the area of a circle with the same perimeter (the evenest distribution with the same
35 perimeter), which is calculated by S_i and L_i following equation (3). It is re-scaled to 0-100 by multiplying 100 to be comparable
36 with the SDG index score. As the area of the radar chart with a given perimeter reaches the largest (100) when it is a circle and
37 decreases with increasing uneven progress across all 17 SDGs, the evenness score (ES) is the highest when each SDG shares the
38 same score. ES depicts the progress differences across the 17 SDGs, where a low value presents an uneven status or existing
39 trade-offs among the SDGs.

$$40 \quad ES = S_i / [\pi(L_i/2\pi)^2] \times 100 = 400\pi S_i / L_i^2 \quad (3)$$

41 The sustainable development score (SDS) is the geometric mean of the evenness score and the mean SDG index score,
42 which diminishes the potential overestimation of sustainable development performance by using the mean SDG index score only
43 in case there are large differences across 17 SDGs. All scores range from 0 (worst performance) to 100 (best performance).

44 Overall, evenness scores and sustainable development scores of 169 countries were calculated annually from 2017 to 2021.
45 All countries were further grouped by geographic location, climate condition (by the aridity index), and economic status (by UN
46 income groups in 2019). Aridity is chosen to represent the climate condition because 1) drylands are fragile ecosystems with
47 limited ecosystem services and sensitive to climate changes and human activities, thus are among the most challenging regions to
48 achieve SDGs,¹⁰ and 2) dryland expansion is a representative outcome of the global climate change and is assumed to be
49 accelerated in the future.^{11,12} To be specific, six groups were defined by geographic location, i.e., Africa, Asia, Latin America and
50 Caribbean (LAC), Oceania, Europe, and North America (North A.); four groups were divided by UN income groups in 2019,³
51 namely, high-income countries (HIC), upper-middle-income countries (UMIC), lower-middle-income countries (LMIC), and
52 lower-income countries (LIC); four groups were defined by the proportion of drylands in the total area of the national territory
53 area,¹³ namely, none or slightly arid (<50%), moderately arid (50-75%), severely arid (75-99%), extremely arid (>99%). Then,
54 the differences in MIS, ES, and SDS among groups were explored.

55 Furthermore, the current development status for all countries was divided into four categories based on the quadrantal
56 diagram (MIS vs. ES in 2021).⁷ The threshold for relatively high and low MIS/ES was calculated based on the K-mean clustering
57 analysis. With both thresholds, all countries were divided into four quadrants: 1) the first quadrant for relatively sustainably status
58 with high MIS and ES; 2) the second quadrant for underdeveloped status with low MIS and high ES; 3) the third quadrant for
59 underdeveloped and uneven status with low MIS and ES; 4) the fourth quadrant for uneven status with high MIS and low ES.

60

61 **Effect of SDGs progress evenness on social and environmental indicators**

62 The economy is strongly associated with achieving SDGs, and the top ten countries approaching SDGs are all HIC.⁴ Therefore,
63 SDGs progress evenness and GDP per capita were set as independent variables in the binary regression model to distinguish their
64 partial effects on indicators related to human health, inequality, and the environment. Furthermore, we used path analysis to
65 explore the direct and indirect (via PM_{2.5}, ratio of female-to-male mean year of education received, Gini coefficient, etc.) effects
66 of SDGs progress evenness and GDP per capita on indicators related to public health, as public health could also be affected by
67 social and environmental factors. The data for the indicators were from multiple sources found in the attached Supplementary
68 Data file.

69

70 **Development pathway and the effective development score**

71 The development pathway and the effective development score were adopted to evaluate the progress toward SDGs over time.
72 Generally, we followed the method of Liu *et al.*⁷ in defining and computing the development pathway and the effective
73 development score. The development pathway of a given country from 2017 to 2021 can be visualized by creating a vector
74 within MIS-ES coordinates, starting with the pair-wise MIS (x_1) and ES (y_1) in 2017 and ending with the paired values in 2021
75 (x_2 , y_2). As a result, four types of pathways are expected (namely, progress in both MIS and ES, retrogression in either MIS or
76 ES, and retrogression in both MIS and ES). The ideal pathway was the vector with a slope of one, characterizing a simultaneous
77 improvement in all 17 SDGs. The effective development score (EDS) refers to the projected length (red line in Fig. S11) of a
78 given pathway (red vector) on the ideal pathway. EDS provides a more comprehensive estimation of progress toward SDGs over
79 time than only interpreting the change of MIS or SDS. It can help to diminish the overestimation if the achievement is either the
80 increase in mean SDG index score only (improvements only shown in a few SDGs) or the increase in evenness score only
81 (improvement in the poorly achieved SDGs while retrogression in the better-accomplished SDGs).

$$EDS = \begin{cases} \cos(\theta - 45^\circ) \times \sqrt{(x_1 - x_2)^2 + (y_1 - y_2)^2}, & -180^\circ \leq \theta < -90^\circ \\ \cos(45^\circ - \theta) \times \sqrt{(x_1 - x_2)^2 + (y_1 - y_2)^2}, & -90^\circ \leq \theta < 45^\circ \\ \cos(\theta - 45^\circ) \times \sqrt{(x_1 - x_2)^2 + (y_1 - y_2)^2}, & 45^\circ \leq \theta < 180^\circ \end{cases} \quad (4)$$

83

84 **Projections of SDGs performance in 2030**

85 Both MIS and SDS in 2030 were predicted based on curvilinear regressions and the gray forecast model using MIS or SDS in
 86 each country from 2017 to 2021. Eleven regression models, including linear, quadratic, cubic, compound, growth, logarithmic, S,
 87 exponential, inverse, power function, and Logistic models, were used in our analyses. The best model was determined based on
 88 the Akaike information criterion (AIC). All analyses were performed with SPSS v. 27 (IBM Corp., Armonk, NY, USA). The
 89 grey forecast model was performed with MATLAB R2020b software. The data matrix was constructed by the adjacent mean
 90 value and the parameters were obtained by the least square method. We compared the projections of two prediction methods in
 91 2030 and used the average values of the two methods in Figure 4.

92

93 **Urgency and potential for priority development**

94 The present study proposed a framework for the priority selection by integrating the SDGs progress evenness:

95 1) All SDGs were divided into four categories generally based on Fu *et al.*,¹⁴ namely, essential human needs (poverty, food,
 96 health, water, and energy) (SDG 1, 2, 3, 6, 7), eco-environmental protection (SDG 12, 13, 14, 15), social development (SDG 4, 5,
 97 10, 16, 17), and economic development (SDG 8, 9, 11).

98 2) The performance for each category was evaluated by the average SDG score of all SDGs included in 2021. Countries
 99 with relatively poor performance on essential human needs (lower than 61.33 based on the K-mean clustering analysis) were
 100 considered urgent for priority development.

101 3) Among these countries, whose current status was uneven were chosen for further discussion as the priority development
 102 might amplify the uneven progress across SDGs and bring expected problems. A country with the worst performance on
 103 eco-environmental protection was considered to have a low potential for priority development.

104 4) Development pathways were then considered for those unevenly progressed countries with relatively better performance
 105 on eco-environmental protection. Countries with an even pathway were treated differently from those with an uneven pathway.

106 5) For those with an even pathway, if the average score for essential human needs of a given country increased during the
 107 study period, it was considered less urgent for priority developments, while countries with decreasing average score might need
 108 to consider an adjustment in their development by addressing the essential human needs.

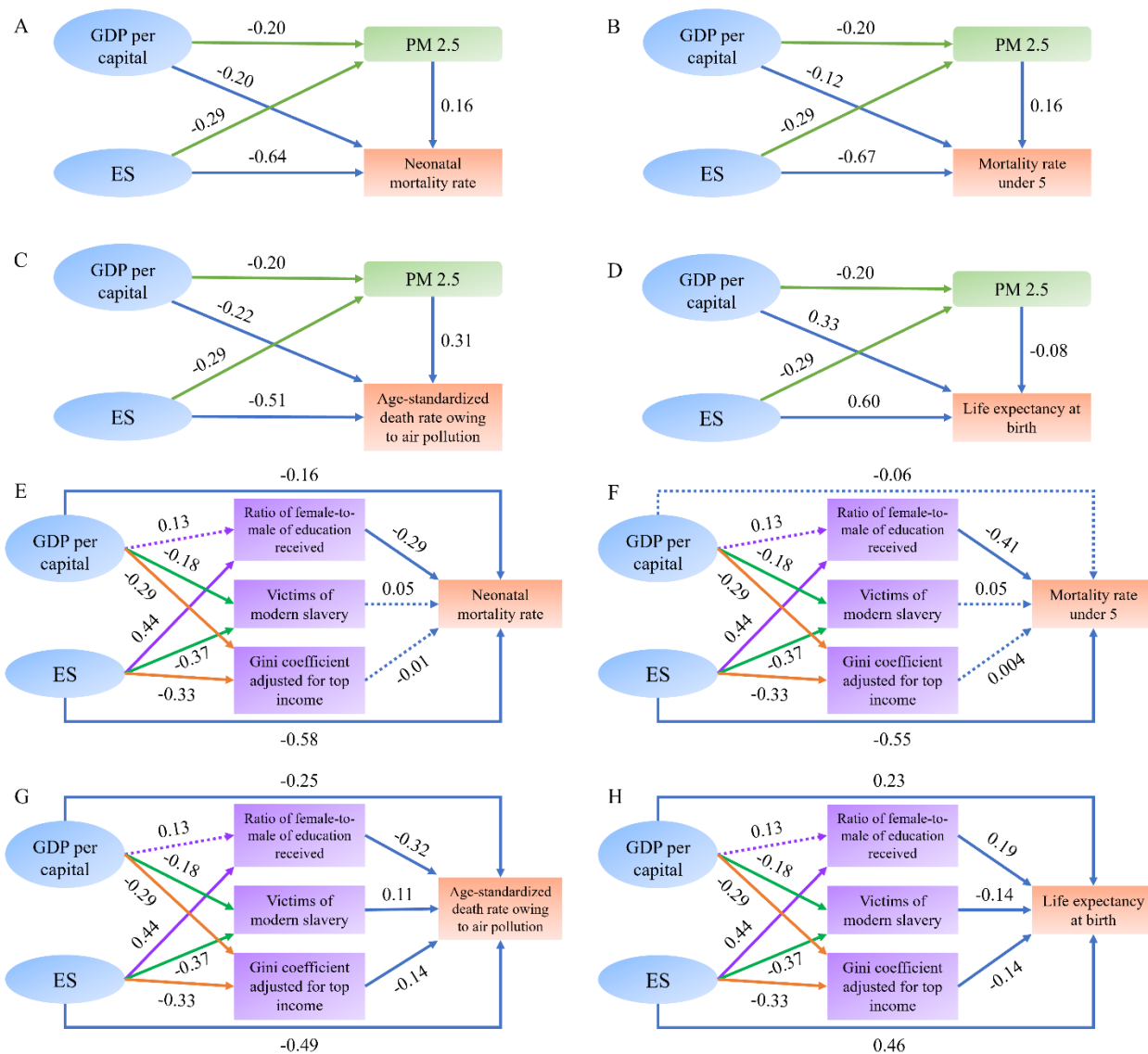
109 6) The most urgent need for priority development was identified as the countries with an uneven pathway, which reflected in
 110 a decreasing average score for essential human needs, particularly the countries currently performing the worst on essential
 111 human needs.

112

113 **Other statistical analyses**

114 The statistical differences in MIS, ES, SDS, and EDS among groups were based on one-way ANOVA, and *p* values between
 115 groups were based on the least significant differences (LSD) test. The normal distribution test was performed first, while data that
 116 failed to pass the test was transformed by square root (MIS and SDS were moderately negatively skewed in this study). The
 117 present study also explored the synergies and trade-offs among all SDGs within different geographic/environmental/economic
 118 groups. Based on the Pearson correlation matrix calculated from scores of all SDGs across countries in 2021, synergies and
 119 trade-offs between two SDGs refer to those significant positive or negative correlations at *p* < 0.05, while those non-significant
 120 relationships are defined as uncorrelated.¹⁵ The number of synergies, trade-offs, and uncorrelated relationships between a given

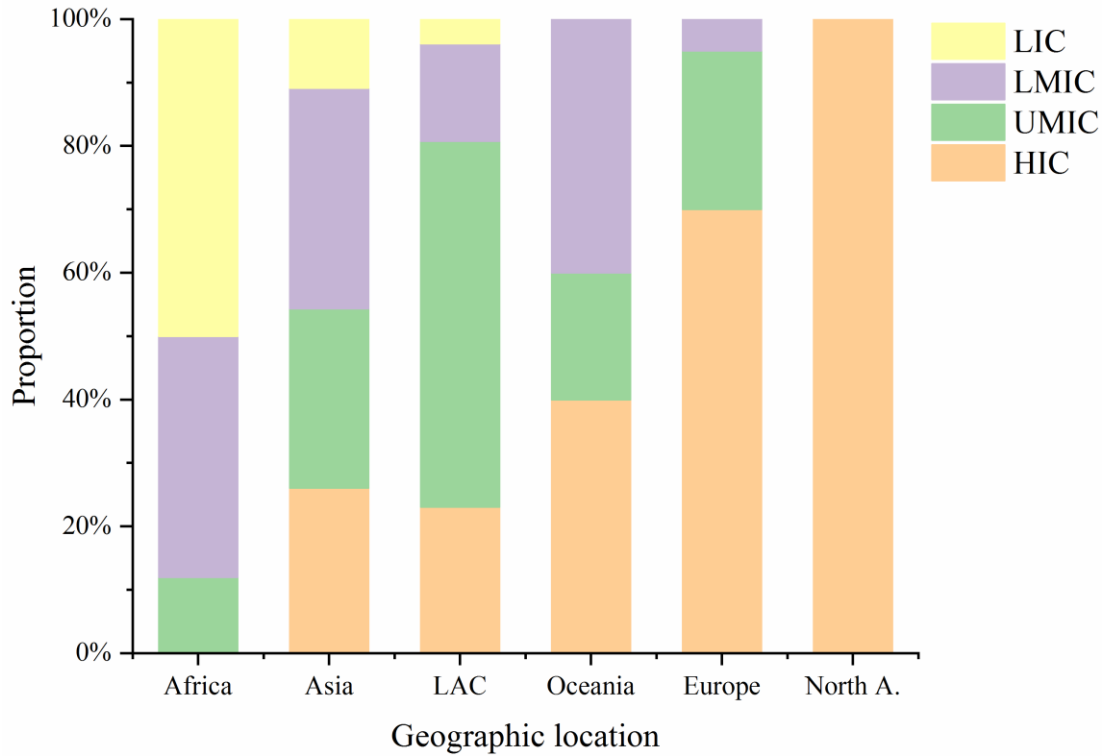
121 SDG and the other SDGs were recorded and compared to show how it interacts with other SDGs. All statistical analyses were
122 performed with SPSS v. 27 (IBM Corp., Armonk, NY, USA).



123

124 **Fig. S1. Path analysis of the impact of GDP per capita and SDGs progress evenness (ES) on health-related indicators.**

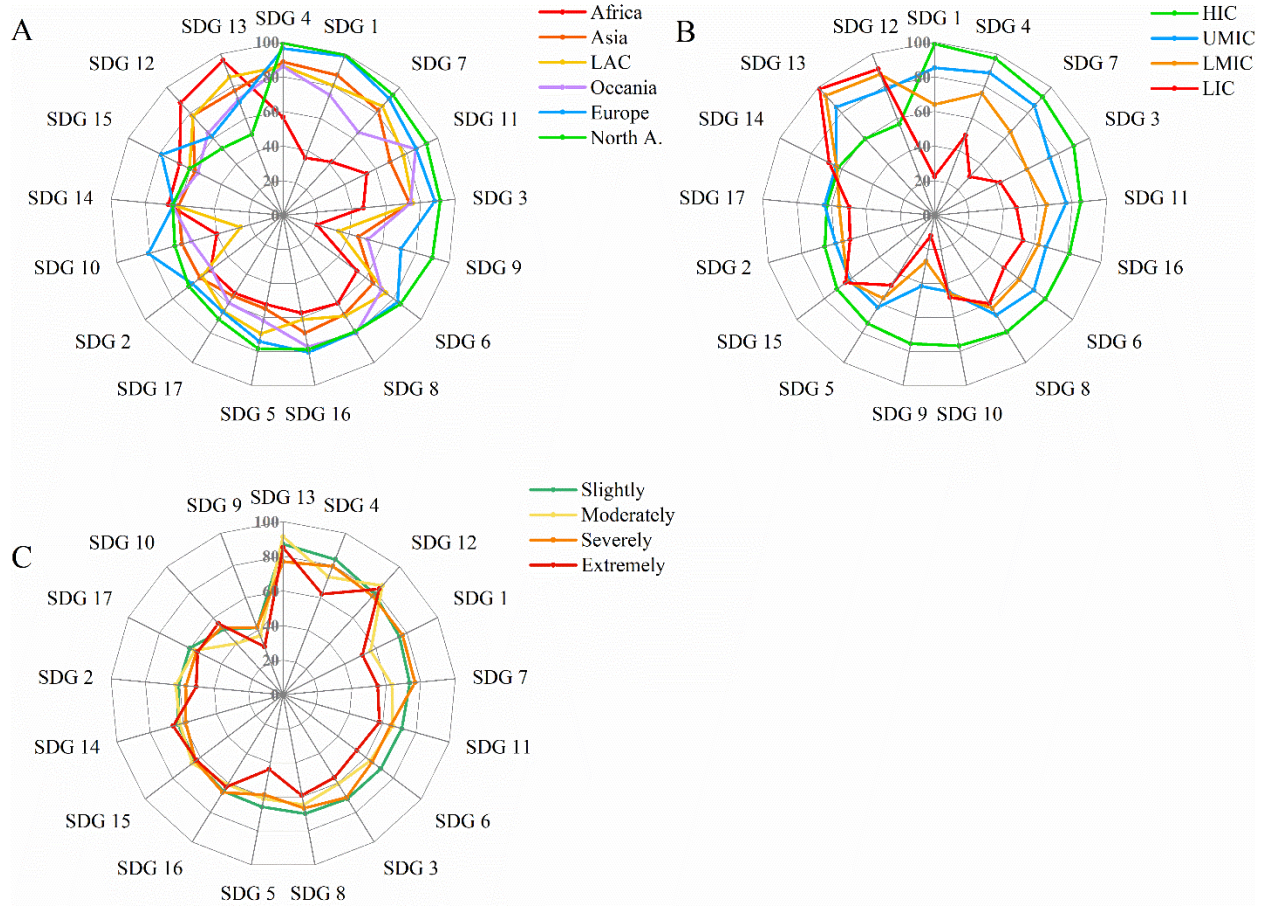
125 Solid and dashed lines represent significant and non-significant paths, respectively.



126
127

Fig. S2. The proportion of UN income groups in different regions.

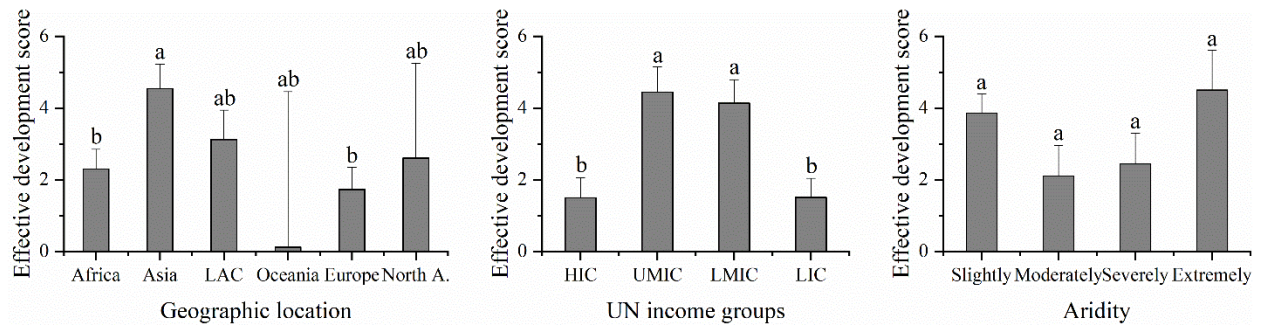
128 HIC, UMIC, LMIC, and LIC stand for high-income, upper-middle-income, lower-middle-income, and lower-income countries,
129 respectively. North A. is short for North America. LAC refers to Latin America and Caribbean.



130

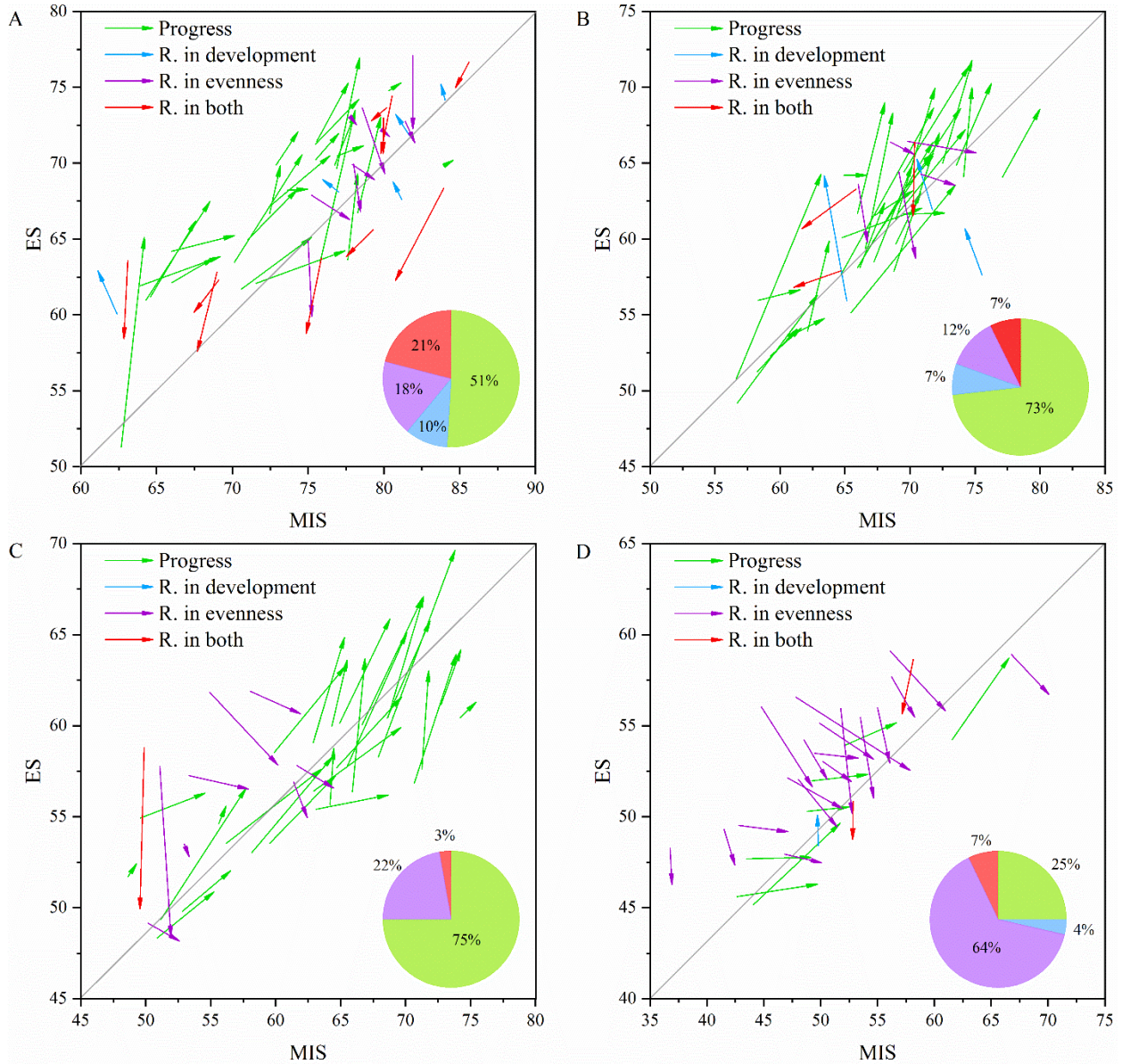
131 **Fig. S3. Average SDG scores across different geographic locations (A), UN income groups (B), and arid levels (C) in**
 132 **2021. The proportion of UN income groups in different regions.**

133 The radar chart starts from the north with the SDG with the highest score of North America (in A), high-income countries (in B),
 134 and slightly arid countries (in C), respectively. North A. is short for North America. LAC refers to Latin America and Caribbean.
 135 HIC, UMIC, LMIC, and LIC stand for high-income, upper-middle-income, lower-middle-income, and lower-income countries,
 136 respectively.



137
138 **Fig. S4. Differences in effective development score across geographic locations, UN income groups, and arid levels in 2020.**

139 HIC, UMIC, LMIC, and LIC stand for high-income, upper-middle-income, lower-middle-income, and lower-income countries,
140 respectively. North A. is short for North America. LAC refers to Latin America and Caribbean. The histogram with error bars
141 presents the mean value \pm standard error (SE). Letters a and b visualize the significant differences at $p < 0.05$. EDS is based on
142 data from 2017 to 2020.



143
144

Fig. S5. Development pathways for different UN income groups from 2017 to 2020.

145 (A) high-income countries; (B) upper-middle-income countries; (C) lower-middle-income countries; (D) low-income countries.
 146 Different colors are used to represent the four types of pathways: progress (green), retrogression in development (R. in
 147 development, blue), retrogression in evenness (R. in evenness, purple), and retrogression in both (R. in both, red). The grey
 148 diagonal stands for the ideal pathway (slope = 1). The pie chart at the bottom right corner shows the proportion of different
 149 pathways.



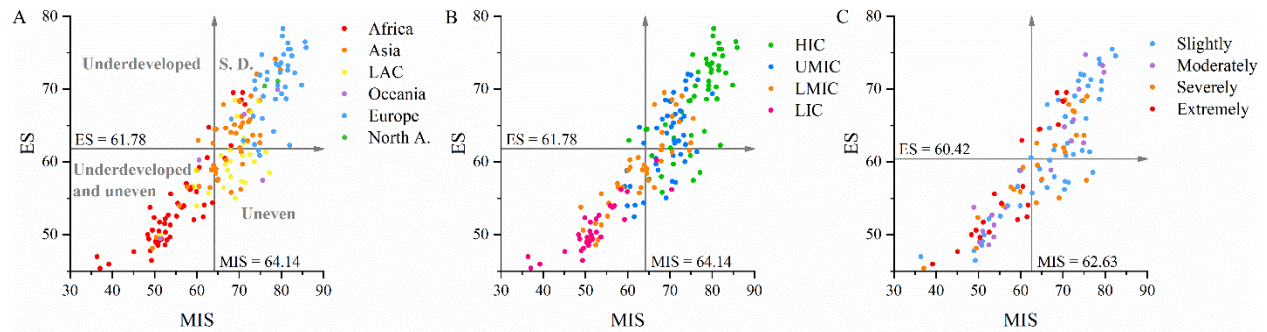
150
151 **Fig. S6. Interactions among SDGs across different UN income groups (A), arid levels (B), and geographic locations (C) in**
152 **2021.**

153 Green represents synergies with a significantly positive correlation at $p < 0.05$; red represents trade-offs with a significantly
154 negative correlation at $p < 0.05$; and yellow represents non-significant correlations. HIC, UMIC, LMIC, and LIC stand for
155 high-income, upper-middle-income, lower-middle-income, and lower-income countries, respectively. LAC refers to Latin
156 America and Caribbean. North America is not involved in this analysis because only two countries exist.



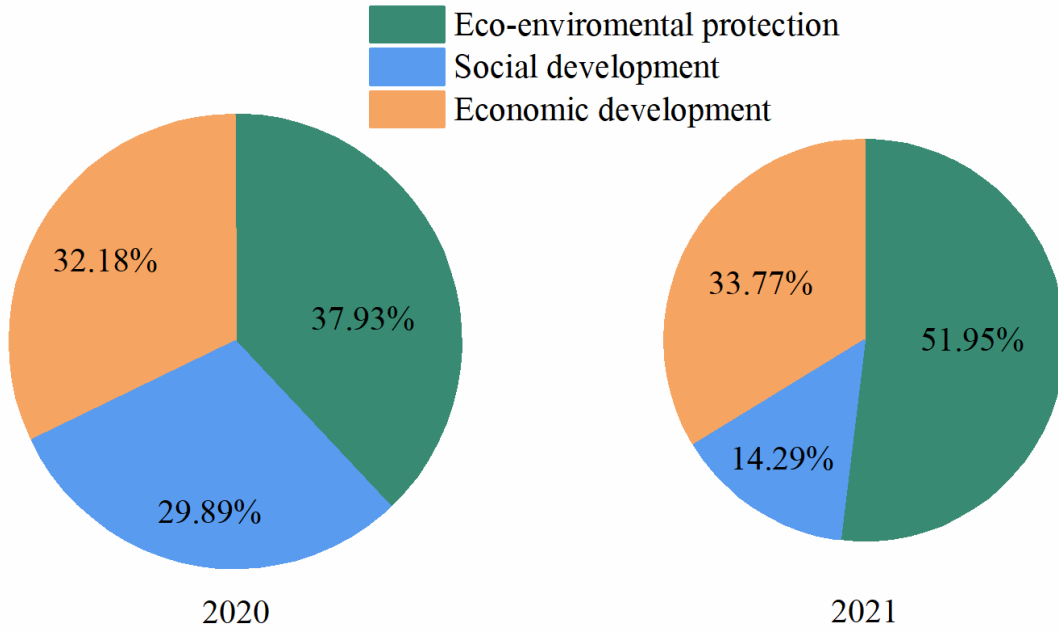
157
158 **Fig. S7. Interactions among SDGs across different UN income groups (A), arid levels (B), and geographic locations (C) in**
159 **2020.**

160 Green represents synergies with a significantly positive correlation at $p < 0.05$; red represents trade-offs with a significantly
161 negative correlation at $p < 0.05$; and yellow represents non-significant correlations. HIC, UMIC, LMIC, and LIC stand for
162 high-income, upper-middle-income, lower-middle-income, and lower-income countries, respectively. LAC refers to Latin
163 America and Caribbean. North America is not involved in this analysis because only two countries exist.



165
 166 **Fig. S8. Sustainable development status for countries across different geographic locations (A), UN income groups (B),**
 167 **and arid levels (C) in 2021.**

168 HIC, UMIC, LMIC, and LIC stand for high-income, upper-middle-income, lower-middle-income, and lower-income countries,
 169 respectively. LAC refers to Latin America and Caribbean; North A. stands for North America. S. D. refers to the relatively
 170 sustainably developed status.



171 **Fig. S9. Proportion of deficiencies in countries considered relatively sustainably developed in 2020 and 2021.**

173 87 and 77 countries are considered relatively sustainably developed in 2020 and 2021, respectively.

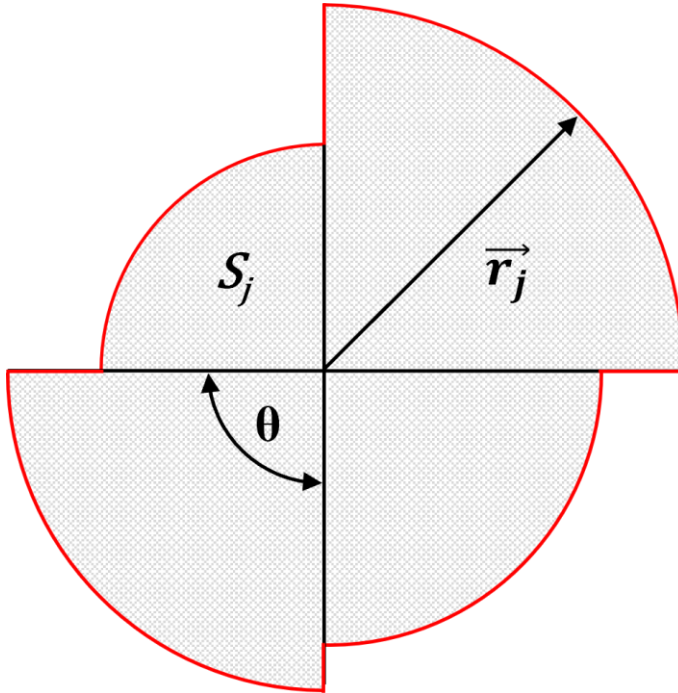
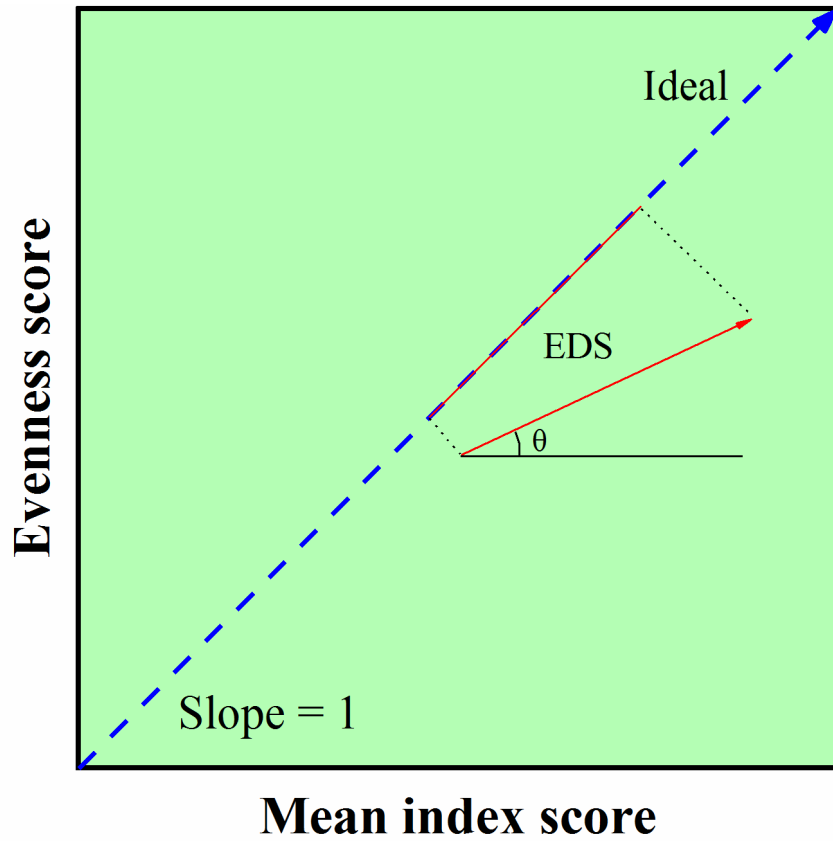
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Fig. S10. Outline of the radar chart method.

177 r_j stands for the score of the j^{th} SDG. θ represents the weight of each SDG, which refers to f_j in equations (1) and (2), and is set up
 178 to $1/17$ for all SDGs in the present study. The total area of all sectors refers to S_i in equation (1). The red line presents the total
 179 perimeter of all sectors, referring to L_i in equation (2).



180
181 **Fig. S11. Outline of the development pathway and the effective development score (EDS)⁷.**
182 θ is the angle between a given vector (marked in red) and the x-axis.

183 **Table S1. Effects of GDP per capita and the annual mean concentration of particulate matter of less than 2.5 microns in diameter (PM_{2.5}) on the indicators related to**
 184 **health.**

Factor	Neonatal mortality rate (per 1000 live births)			Mortality rate under 5 (per 1000 live births)			Age-standardized death rate due to air pollution (per 100,000 population)			Life expectancy at birth (years)			VIF
	$R^2 = 0.39, F_{2,157} = 51.55$			$R^2 = 0.32, F_{2,157} = 39.04$			$R^2 = 0.49, F_{2,157} = 77.18$			$R^2 = 0.45, F_{2,157} = 65.98$			
	β	t	p	β	t	p	β	t	p	β	t	p	
GDP per capita	-0.45	-6.90	<0.001	-0.39	-5.57	<0.001	-0.43	-7.15	<0.001	0.57	9.10	<0.001	1.125
PM _{2.5}	0.31	4.72	<0.001	0.32	4.61	<0.001	0.43	7.19	<0.001	-0.22	-3.58	<0.001	

185 All models are significant at $p < 0.05$. VIF: variance inflation factor.

Turkmenistan	Asia	UMIC	99.99	56.73	49.21	52.83	59.47	48.61	53.77	64.02	54.09	58.85	62.87	56.30	59.50	60.54	56.63	58.55	9.36	7.94
Uganda	Africa	LIC	38.9	52.86	50.84	51.84	54.93	49.86	52.33	52.45	50.46	51.45	52.80	48.76	50.74	52.55	52.14	52.34	-1.51	0.70
Ukraine	Europe	LMIC	31.76	72.73	61.15	66.69	72.34	61.24	66.56	72.81	61.29	66.81	74.24	64.16	69.02	75.51	65.95	70.57	3.19	5.35
United Arab Emirates	Asia	HIC	98.73	66.01	62.13	64.04	69.22	63.07	66.07	68.22	62.61	65.35	68.80	63.76	66.23	70.17	61.92	65.92	3.13	2.80
United Kingdom	Europe	HIC	N. A.	78.28	66.74	72.28	78.67	68.68	73.50	79.38	69.26	74.15	79.79	73.03	76.34	79.97	73.60	76.72	5.52	6.05
United States	North America	HIC	45.08	72.40	67.10	69.70	73.05	65.96	69.42	74.52	65.38	69.80	76.43	70.49	73.40	76.01	70.44	73.17	5.24	4.91
Uruguay	LAC	HIC	0.11	71.05	64.99	67.95	70.42	62.49	66.34	72.55	65.74	69.06	74.28	68.24	71.20	74.55	68.37	71.39	4.58	4.86
Uzbekistan	Asia	LMIC	97.28	71.25	57.62	64.07	70.29	60.80	65.37	73.03	62.40	67.50	71.77	63.02	67.25	70.52	61.35	65.78	4.19	2.13
Vanuatu	Oceania	LMIC	N. A.	N. A.	N. A.	N. A.	N. A.	N. A.	N. A.	59.87	61.48	60.67	60.89	56.80	58.81	60.52	60.26	60.39	N. A.	N. A.
Venezuela, RB	LAC	UMIC	15.53	65.83	63.28	64.55	64.00	60.33	62.14	63.05	62.11	62.58	61.68	60.68	61.18	59.32	56.63	57.96	-4.77	-9.31
Vietnam	Asia	LMIC	0.46	67.89	58.27	62.90	69.67	59.18	64.21	71.09	62.07	66.42	73.80	69.63	71.68	72.85	69.05	70.92	12.21	11.13
Yemen, Rep.	Asia	LIC	99.9	49.80	48.41	49.10	45.66	47.58	46.61	51.21	50.99	51.10	49.71	50.09	49.90	50.40	49.62	50.01	1.12	1.28
Zambia	Africa	LMIC	65.35	51.08	57.78	54.32	53.13	55.30	54.20	52.50	52.24	52.37	51.94	48.42	50.15	52.48	48.59	50.50	-6.01	-5.51
Zimbabwe	Africa	LIC	97.53	56.11	59.10	57.59	58.76	57.43	58.09	61.82	54.32	57.95	60.98	55.82	58.34	59.93	55.91	57.89	1.12	0.44

190 **Table S3. Statistics details for Fig. 1 and Fig. S3.**

191 **A. Statistics for the ANOVA test of the evenness scores across different regions in 2021.**

ANOVA	F	df	<i>p</i>	LSD					Average	
				<i>p</i>	Asia	LAC	Oceania	Europe		North A.
Geographic location (N=165)	43.28	5	<0.001	Africa (N=48)	<0.001	<0.001	0.008	<0.001	<0.001	53.76
				Asia (N=45)	1	0.070	0.523	<0.001	0.036	62.38
				LAC (N=26)		1	0.764	<0.001	0.008	59.91
				Oceania (N=5)			1	<0.001	0.030	60.72
				Europe (N=39)				1	0.998	70.78
				North A. (N=2)					1	70.77
UN income groups (N=165)	71.63	3	<0.001	<i>p</i>	UMIC	LMIC	LIC			
				HIC (N=50)	<0.001	<0.001	<0.001			68.74
				UMIC (N=44)	1	<0.001	<0.001			63.12
				LMIC (N=41)		1	<0.001			58.81
				LIC (N=30)			1			50.83
Aridity (N=115)	2.03	3	0.114	<i>p</i>	Moderately	Severely	Extremely			
				Slightly (N=50)	0.183	0.308	0.020			61.95
				Moderately (N=19)	1	0.709	0.412			59.07
				Severely (N=26)		1	0.208			59.97
				Extremely (N=20)			1			56.97

192

B. Statistics for the ANOVA test of the mean index score across different regions in 2021.

ANOVA	F	df	<i>p</i>	LSD					Average	
				<i>p</i>	Asia	LAC	Oceania	Europe		North A.
Geographic location (N=165)	64.18	5	<0.001	Africa (N=48)	<0.001	<0.001	<0.001	<0.001	<0.001	55.05
				Asia (N=45)	1	0.737	0.77	<0.001	0.016	67.52
				LAC (N=26)		1	0.91	<0.001	0.024	68.16
				Oceania (N=5)			1	<0.001	0.055	67.56
				Europe (N=39)				1	0.602	78.74
				North A. (N=2)					1	77.58
UN income groups (N=165)	93.21	3	<0.001	<i>p</i>	UMIC	LMIC	LIC			
				HIC (N=50)	<0.001	<0.001	<0.001			76.70
				UMIC (N=44)	1	<0.001	<0.001			69.48
				LMIC (N=41)		1	<0.001			62.63
				LIC (N=30)			1			51.88
Aridity (N=115)	5.04	3	0.003	<i>p</i>	Moderately	Severely	Extremely			
				Slightly (N=50)	0.068	0.149	<0.001			67.89
				Moderately (N=19)	1	0.632	0.114			62.94
				Severely (N=26)		1	0.03			64.98
				Extremely (N=20)			1			58.11

195 **C. Statistics for the ANOVA test of the sustainable development score across different regions in 2021.**

ANOVA	F	df	<i>p</i>	LSD					Average	
				<i>p</i>	Asia	LAC	Oceania	Europe		North A.
Geographic location (N=165)	60.86	5	<0.001	Africa (N=48)	<0.001	<0.001	0.001	<0.001	<0.001	54.37
				Asia (N=45)	1	0.397	0.874	<0.001	0.013	64.87
				LAC (N=26)		1	0.784	<0.001	0.006	63.86
				Oceania (N=5)			1	<0.001	0.025	63.98
				Europe (N=39)				1	0.702	74.62
				North A. (N=2)					1	74.09
UN income groups (N=165)	86.17	3	<0.001	<i>p</i>	UMIC	LMIC	LIC			
				HIC (N=50)	<0.001	<0.001	<0.001			72.57
				UMIC (N=44)	1	<0.001	<0.001			66.19
				LMIC (N=41)		1	<0.001			60.66
				LIC (N=30)			1			51.31
Aridity (N=115)	3.62	3	0.015	<i>p</i>	Moderately	Severely	Extremely			
				Slightly (N=50)	0.116	0.153	0.002			64.80
				Moderately (N=19)	1	0.795	0.191			60.95
				Severely (N=26)		1	0.096			62.37
				Extremely (N=20)			1			57.50

197 **D1. Statistics for the ANOVA test of the effective development score across different regions from 2017 to 2020.**

ANOVA	F	df	<i>p</i>	LSD test						Average
				<i>p</i>	Asia	LAC	Oceania	Europe	North A.	
Geographic locations (N=163)	2.49	5	0.034	Africa (N=43)	0.011	0.413	0.454	0.520	0.917	2.30
				Asia (N=43)	1	0.156	0.130	0.002	0.505	4.54
				LAC (N=26)		1	0.310	0.174	0.861	3.12
				Oceania (N=2)			1	0.583	0.537	0.12
				Europe (N=38)				1	0.763	1.72
				North A. (N=2)					1	2.60
UN income groups (N=166)	6.65	3	<0.001	<i>p</i>	UMIC	LMIC	LIC			
				HIC (N=49)	<0.001	0.002	0.991			1.50
				UMIC (N=41)	1	0.728	0.003			4.44
				LMIC (N=36)		1	0.008			4.13
				LIC (N=28)			1			1.51
Aridity (N=115)	1.77	3	0.158	<i>p</i>	Moderately	Severely	Extremely			
				Slightly (N=50)	0.112	0.162	0.559			3.86
				Moderately (N=19)	1	0.787	0.072			2.10
				Severely (N=26)		1	0.102			2.44
				Extremely (N=20)			1			4.50

199 **D2. Statistics for the ANOVA test of the effective development score across different regions from 2017 to 2021.**

ANOVA	F	df	<i>p</i>	LSD						Average	2021 vs. 2020
				<i>p</i>	Asia	LAC	Oceania	Europe	North A.		
Geographic location (N=154)	2.92	5	0.015	Africa (N=43)	0.004	0.536	0.643	0.089	0.867	1.78	-0.52
				Asia (N=43)	1	0.002	0.183	0.261	0.481	4.34	-0.2
				LAC (N=26)		1	0.805	0.037	0.708	1.16	-1.96
				Oceania (N=2)			1	0.325	0.648	0.42	0.3
				Europe (N=38)				1	0.721	3.33	1.61
				North A. (N=2)					1	2.27	-0.33
UN income groups (N=154)	3.85	3	0.011	<i>p</i>	UMIC	LMIC	LIC				
				HIC (N=49)	0.12	0.083	0.129			2.30	0.8
				UMIC (N=41)	1	0.829	0.005			3.66	-0.78
				LMIC (N=36)		1	0.004			3.86	-0.27
				LIC (N=28)			1			0.83	-0.68
Aridity (N=112)	1.56	3	0.204	<i>p</i>	Moderately	Severely	Extremely				
				Slightly (N=50)	0.125	0.168	0.663			3.32	-0.54
				Moderately (N=19)	1	0.815	0.103			1.55	-0.55
				Severely (N=24)		1	0.135			1.86	-0.58
				Extremely (N=19)			1			3.82	-0.68

201 **Table S4. Spearman correlations among SDGs across different geographic locations (A), UN income groups (B), and arid levels (C) in 2021. *, $p < 0.05$; **, $p < 0.01$.**

202 **A1. Africa**

r	SDG 1	SDG 2	SDG 3	SDG 4	SDG 5	SDG 6	SDG 7	SDG 8	SDG 9	SDG 10	SDG 11	SDG 12	SDG 13	SDG 14	SDG 15	SDG 16	SDG 17
SDG 1	1	0.186	0.574**	0.509**	0.047	0.617**	0.704**	0.363*	0.748**	0.284	0.498**	-0.284	-0.674**	-0.402*	0.028	0.563**	0.300*
SDG 2		1	0.335*	0.293*	0.124	0.225	0.187	0.497**	0.430**	-0.010	0.164	0.268	-0.144	-0.262	-0.060	0.189	0.024
SDG 3			1	0.633**	0.348*	0.586**	0.570**	0.408**	0.713**	0.066	0.606**	-0.376**	-0.531**	-0.341	-0.078	0.779**	0.386**
SDG 4				1	0.542**	0.497**	0.630**	0.204	0.673**	-0.173	0.622**	-0.302*	-0.645**	-0.265	-0.017	0.568**	0.505**
SDG 5					1	0.190	0.236	0.087	0.321*	-0.465**	0.519**	-0.205	-0.332*	0.109	-0.208	0.187	0.448**
SDG 6						1	0.551**	0.267	0.679**	-0.073	0.609**	-0.318*	-0.680**	-0.284	0.138	0.615**	0.447**
SDG 7							1	0.110	0.694**	-0.078	0.527**	-0.305*	-0.801**	-0.340	0.040	0.497**	0.272
SDG 8								1	0.386**	0.199	0.301*	0.142	-0.124	-0.119	-0.056	0.451**	0.096
SDG 9									1	-0.089	0.552**	-0.326*	-0.742**	-0.388*	0.050	0.552**	0.395**
SDG 10										1	-0.100	0.144	0.283	-0.305	-0.161	0.065	-0.190
SDG 11											1	-0.382**	-0.614**	-0.244	-0.086	0.625**	0.586**
SDG 12												1	0.368*	0.102	-0.132	-0.352*	-0.203
SDG 13													1	0.248	-0.132	-0.506**	-0.542**
SDG 14														1	0.169	-0.395*	-0.280
SDG 15															1	-0.080	0.048
SDG 16																1	0.471**
SDG 17																	1

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r	SDG 1	SDG 2	SDG 3	SDG 4	SDG 5	SDG 6	SDG 7	SDG 8	SDG 9	SDG 10	SDG 11	SDG 12	SDG 13	SDG 14	SDG 15	SDG 16	SDG 17
SDG 1	1	0.061	0.772**	0.369*	0.139	0.450**	0.607**	0.359*	0.686**	0.139	0.455**	-0.740**	-0.596**	-0.138	0.032	0.447**	0.270
SDG 2		1	0.436**	0.325*	0.497**	0.043	0.224	0.230	0.494**	0.072	0.214	-0.101	-0.203	-0.276	-0.197	0.330*	-0.072
SDG 3			1	0.669**	0.308*	0.329*	0.803**	0.505**	0.836**	0.109	0.467**	-0.825**	-0.767**	-0.370*	0.008	0.659**	0.185
SDG 4				1	0.481**	0.376*	0.464**	0.631**	0.557**	0.117	0.539**	-0.568**	-0.508**	-0.255	0.250	0.492**	0.310*
SDG 5					1	0.442**	0.066	0.434**	0.362*	0.230	0.485**	-0.144	-0.237	-0.324	0.134	0.320*	0.004
SDG 6						1	0.267	0.497**	0.296*	0.032	0.483**	-0.187	-0.194	-0.324	0.062	0.213	0.323*
SDG 7							1	0.291	0.586**	0.134	0.436**	-0.684**	-0.576**	-0.311	-0.010	0.677**	0.280
SDG 8								1	0.496**	0.010	0.383**	-0.405**	-0.360*	-0.263	0.012	0.388**	0.024
SDG 9									1	0.010	0.351*	-0.678**	-0.667**	-0.228	-0.088	0.526**	0.166
SDG 10										1	0.057	-0.161	-0.173	-0.189	0.368*	0.190	0.002
SDG 11											1	-0.327*	-0.265	-0.143	0.092	0.439**	0.387**
SDG 12												1	0.890**	0.261	-0.104	-0.603**	-0.203
SDG 13													1	0.210	-0.086	-0.560**	-0.152
SDG 14														1	0.297	-0.093	-0.087
SDG 15															1	0.151	0.238
SDG 16																1	0.203
SDG 17																	1

206 **A3. Latin America and Caribbean**

r	SDG 1	SDG 2	SDG 3	SDG 4	SDG 5	SDG 6	SDG 7	SDG 8	SDG 9	SDG 10	SDG 11	SDG 12	SDG 13	SDG 14	SDG 15	SDG 16	SDG 17
SDG 1	1	0.410*	0.632**	0.605**	0.447*	0.355	0.408*	0.531**	0.528**	0.099	0.503*	-0.417*	-0.433*	-0.169	-0.045	0.434*	0.244
SDG 2		1	0.134	0.359	0.185	0.452*	0.205	0.190	0.461*	-0.009	0.136	-0.381	-0.180	0.146	-0.108	0.233	0.300
SDG 3			1	0.571**	0.525**	0.504**	0.490*	0.467*	0.565**	0.042	0.341	-0.235	-0.376	-0.137	0.019	0.666**	0.610**
SDG 4				1	0.573**	0.339	0.357	0.301	0.541**	-0.080	0.051	-0.208	-0.339	0.060	0.041	0.361	0.457*
SDG 5					1	0.175	0.192	0.279	0.383	0.206	0.241	0.026	-0.033	-0.123	0.322	0.351	0.536**
SDG 6						1	0.529**	0.184	0.763**	-0.394	0.282	-0.095	-0.142	0.067	-0.071	0.229	0.439*
SDG 7							1	0.261	0.652**	-0.098	0.394*	-0.602**	-0.524**	0.034	0.229	0.545**	0.515**
SDG 8								1	0.444*	0.116	0.168	-0.311	-0.493*	0.162	0.158	0.322	0.252
SDG 9									1	-0.317	0.405*	-0.346	-0.400*	0.094	0.024	0.516**	0.486*
SDG 10										1	-0.065	0.038	0.128	-0.112	0.195	0.059	0.008
SDG 11											1	-0.256	-0.276	0.096	0.186	0.520**	0.174
SDG 12												1	0.802**	0.297	0.128	-0.535**	-0.227
SDG 13													1	0.175	-0.052	-0.594**	-0.194
SDG 14														1	0.311	-0.029	0.043
SDG 15															1	0.106	0.188
SDG 16																1	0.581**

r	SDG 1	SDG 2	SDG 3	SDG 4	SDG 5	SDG 6	SDG 7	SDG 8	SDG 9	SDG 10	SDG 11	SDG 12	SDG 13	SDG 14	SDG 15	SDG 16	SDG 17
SDG 1	1	1.000**	0.900*	0.900*	0.900*	0.900*	1.000**	1.000**	0.900*	0.800	0.600	-0.800	-0.800	-0.600	-0.500	0.900*	0.900*
SDG 2		1	0.900*	0.900*	0.900*	0.900*	1.000**	1.000**	0.900*	0.800	0.600	-0.800	-0.800	-0.600	-0.500	0.900*	0.900*
SDG 3			1	1.000**	0.800	1.000**	0.900*	0.900*	1.000**	0.900*	0.700	-0.900*	-0.900*	-0.500	-0.300	0.700	0.800
SDG 4				1	0.800	1.000**	0.900*	0.900*	1.000**	0.900*	0.700	-0.900*	-0.900*	-0.500	-0.300	0.700	0.800
SDG 5					1	0.800	0.900*	0.900*	0.800	0.600	0.500	-0.600	-0.900*	-0.700	-0.300	0.800	0.700
SDG 6						1	0.900*	0.900*	1.000**	0.900*	0.700	-0.900*	-0.900*	-0.500	-0.300	0.700	0.800
SDG 7							1	1.000**	0.900*	0.800	0.600	-0.800	-0.800	-0.600	-0.500	0.900*	0.900*
SDG 8								1	0.900*	0.800	0.600	-0.800	-0.800	-0.600	-0.500	0.900*	0.900*
SDG 9									1	0.900*	0.700	-0.900*	-0.900*	-0.500	-0.300	0.700	0.800
SDG 10										1	0.400	-1.000**	-0.700	-0.600	-0.100	0.500	0.900*
SDG 11											1	-0.400	-0.600	0.200	-0.700	0.700	0.300
SDG 12												1	0.700	0.600	0.100	-0.500	-0.900*
SDG 13													1	0.600	0.100	-0.600	-0.600
SDG 14														1	-0.300	-0.300	-0.700
SDG 15															1	-0.800	-0.300
SDG 16																1	0.700
SDG 17																	1

210 **A5. Europe**

r	SDG 1	SDG 2	SDG 3	SDG 4	SDG 5	SDG 6	SDG 7	SDG 8	SDG 9	SDG 10	SDG 11	SDG 12	SDG 13	SDG 14	SDG 15	SDG 16	SDG 17
SDG 1	1	-0.109	0.254	0.459**	0.346*	0.185	0.284	0.353*	0.297	0.563**	0.362*	-0.241	-0.415**	0.317	-0.100	0.239	0.050
SDG 2		1	0.065	0.003	-0.025	0.246	0.109	0.197	0.128	-0.123	-0.032	-0.028	-0.029	0.139	0.220	-0.031	-0.312
SDG 3			1	0.612**	0.801**	0.524**	0.729**	0.558**	0.904**	0.471**	0.840**	-0.845**	-0.828**	0.170	0.012	0.805**	-0.024
SDG 4				1	0.574**	0.353*	0.540**	0.578**	0.625**	0.316*	0.559**	-0.633**	-0.680**	0.135	0.054	0.480**	-0.072
SDG 5					1	0.531**	0.735**	0.554**	0.820**	0.505**	0.752**	-0.612**	-0.655**	0.269	0.006	0.717**	0.157
SDG 6						1	0.441**	0.568**	0.607**	0.268	0.602**	-0.405*	-0.467**	0.474**	0.429**	0.561**	-0.322*
SDG 7							1	0.554**	0.728**	0.526**	0.583**	-0.606**	-0.575**	-0.087	-0.079	0.527**	0.011
SDG 8								1	0.644**	0.503**	0.616**	-0.574**	-0.654**	0.413*	0.490**	0.653**	-0.156
SDG 9									1	0.426**	0.870**	-0.806**	-0.839**	0.209	0.040	0.782**	0.018
SDG 10										1	0.386*	-0.352*	-0.455**	0.234	-0.014	0.439**	0.272
SDG 11											1	-0.755**	-0.835**	0.283	0.135	0.756**	-0.164
SDG 12												1	0.900**	-0.166	0.003	-0.779**	0.071
SDG 13													1	-0.338	-0.106	-0.814**	0.078
SDG 14														1	0.471**	0.418*	0.003
SDG 15															1	0.198	-0.487**
SDG 16																1	-0.058
SDG 17																	1

212 **B1. High-income countries**

HIC	SDG 1	SDG 2	SDG 3	SDG 4	SDG 5	SDG 6	SDG 7	SDG 8	SDG 9	SDG 10	SDG 11	SDG 12	SDG 13	SDG 14	SDG 15	SDG 16	SDG 17
SDG 1	1	-0.081	0.294	0.195	0.382 [*]	0.331 [*]	0.265	0.493 ^{**}	0.264	0.400 ^{**}	0.336 [*]	-0.409 ^{**}	-0.311 [*]	0.253	0.070	0.424 ^{**}	0.136
SDG 2		1	0.028	0.040	-0.096	0.095	0.061	0.113	0.197	-0.123	-0.105	0.159	0.172	-0.041	0.013	0.037	-0.102
SDG 3			1	0.566 ^{**}	0.646 ^{**}	0.347 [*]	0.555 ^{**}	0.486 ^{**}	0.825 ^{**}	0.478 ^{**}	0.602 ^{**}	-0.594 ^{**}	-0.292 [*]	-0.100	0.067	0.687 ^{**}	0.287 [*]
SDG 4				1	0.408 ^{**}	0.285 [*]	0.388 ^{**}	0.479 ^{**}	0.524 ^{**}	0.349 [*]	0.500 ^{**}	-0.488 ^{**}	-0.227	-0.003	0.185	0.407 ^{**}	0.282 [*]
SDG 5					1	0.569 ^{**}	0.591 ^{**}	0.539 ^{**}	0.617 ^{**}	0.363 [*]	0.651 ^{**}	-0.434 ^{**}	0.013	0.213	0.259	0.590 ^{**}	0.396 ^{**}
SDG 6						1	0.141	0.575 ^{**}	0.373 ^{**}	0.087	0.476 ^{**}	-0.057	0.239	0.352 [*]	0.542 ^{**}	0.430 ^{**}	0.237
SDG 7							1	0.349 [*]	0.435 ^{**}	0.343 [*]	0.348 [*]	-0.454 ^{**}	0.064	-0.248	-0.125	0.320 [*]	0.362 ^{**}
SDG 8								1	0.523 ^{**}	0.566 ^{**}	0.361 [*]	-0.142	0.049	0.230	0.536 ^{**}	0.576 ^{**}	0.194
SDG 9									1	0.399 ^{**}	0.588 ^{**}	-0.449 ^{**}	-0.271	0.046	0.083	0.616 ^{**}	0.266
SDG 10										1	0.389 [*]	-0.470 ^{**}	-0.562 ^{**}	0.184	0.373 [*]	0.583 ^{**}	0.131
SDG 11											1	-0.475 ^{**}	-0.181	0.125	0.268	0.457 ^{**}	0.299 [*]
SDG 12												1	0.565 ^{**}	0.126	0.079	-0.493 ^{**}	-0.230
SDG 13													1	0.003	0.281 [*]	-0.263	-0.026
SDG 14														1	0.410 ^{**}	0.250	0.108
SDG 15															1	0.267	-0.077
SDG 16																1	0.264
SDG 17																	1

214 **B2. Upper-middle-income countries**

r	SDG 1	SDG 2	SDG 3	SDG 4	SDG 5	SDG 6	SDG 7	SDG 8	SDG 9	SDG 10	SDG 11	SDG 12	SDG 13	SDG 14	SDG 15	SDG 16	SDG 17
SDG 1	1	0.309*	0.599**	0.431**	-0.192	0.119	0.205	0.401**	0.489**	0.611**	0.244	-0.082	-0.152	-0.167	-0.052	0.381*	-0.011
SDG 2		1	0.327*	0.193	0.106	0.162	0.050	0.100	0.228	0.127	0.091	-0.053	0.048	-0.003	0.086	0.097	0.020
SDG 3			1	0.527**	0.079	0.452**	0.319*	0.426**	0.412**	0.256	0.095	0.018	0.034	-0.206	-0.016	0.352*	0.150
SDG 4				1	0.097	0.266	-0.041	0.243	0.268	0.095	0.182	0.027	0.066	-0.141	-0.165	0.167	0.160
SDG 5					1	0.240	-0.135	0.250	0.134	-0.527**	0.206	0.027	0.020	0.109	0.189	-0.200	0.281
SDG 6						1	0.251	0.377*	0.142	-0.126	0.225	-0.074	0.238	0.073	0.014	-0.030	0.164
SDG 7							1	0.074	0.120	0.091	0.190	0.062	0.185	0.067	0.025	0.047	0.117
SDG 8								1	0.192	0.060	0.438**	-0.198	-0.097	0.064	0.003	0.265	-0.062
SDG 9									1	0.016	0.144	-0.060	-0.235	-0.176	-0.082	0.161	0.090
SDG 10										1	-0.216	0.058	-0.096	-0.150	0.140	0.455**	0.017
SDG 11											1	-0.321*	-0.193	0.102	-0.163	0.197	-0.154
SDG 12												1	0.565**	0.234	-0.022	-0.127	-0.060
SDG 13													1	0.167	-0.116	-0.128	0.082
SDG 14														1	0.402*	-0.046	-0.022
SDG 15															1	0.025	0.170
SDG 16																1	0.111
SDG 17																	1

216 **B3. Lower-middle-income countries**

r	SDG 1	SDG 2	SDG 3	SDG 4	SDG 5	SDG 6	SDG 7	SDG 8	SDG 9	SDG 10	SDG 11	SDG 12	SDG 13	SDG 14	SDG 15	SDG 16	SDG 17
SDG 1	1	0.239	0.786**	0.708**	0.295	0.675**	0.730**	0.401**	0.586**	0.680**	0.454**	-0.350*	-0.474**	-0.613**	-0.122	0.555**	0.570**
SDG 2		1	0.194	0.422**	0.211	0.262	0.352*	0.155	0.429**	0.175	0.067	0.476**	0.019	-0.258	-0.156	0.142	-0.092
SDG 3			1	0.720**	0.366*	0.653**	0.778**	0.432**	0.489**	0.411**	0.675**	-0.459**	-0.457**	-0.383*	-0.142	0.600**	0.587**
SDG 4				1	0.387*	0.574**	0.691**	0.541**	0.659**	0.396*	0.451**	-0.332*	-0.610**	-0.288	-0.114	0.624**	0.481**
SDG 5					1	0.505**	0.337*	0.248	-0.088	-0.066	0.472**	-0.120	-0.393*	-0.197	-0.137	0.017	0.477**
SDG 6						1	0.648**	0.323*	0.386*	0.333*	0.476**	-0.189	-0.489**	-0.410*	-0.093	0.339*	0.506**
SDG 7							1	0.214	0.549**	0.394*	0.518**	-0.267	-0.567**	-0.517**	-0.013	0.499**	0.601**
SDG 8								1	0.443**	0.197	0.426**	-0.336*	-0.272	-0.011	-0.260	0.353*	0.154
SDG 9									1	0.397*	0.185	-0.122	-0.307	-0.381*	-0.124	0.574**	0.318*
SDG 10										1	0.153	-0.171	-0.186	-0.435*	-0.241	0.422**	0.178
SDG 11											1	-0.432**	-0.578**	-0.281	-0.171	0.380*	0.515**
SDG 12												1	0.552**	-0.063	-0.060	-0.475**	-0.573**
SDG 13													1	0.316	-0.071	-0.324*	-0.660**
SDG 14														1	0.050	-0.234	-0.357*
SDG 15															1	-0.017	0.213
SDG 16																1	0.291
SDG 17																	1

218 **B4. Low-income countries**

r	SDG 1	SDG 2	SDG 3	SDG 4	SDG 5	SDG 6	SDG 7	SDG 8	SDG 9	SDG 10	SDG 11	SDG 12	SDG 13	SDG 14	SDG 15	SDG 16	SDG 17
SDG 1	1	0.256	0.315	0.168	-0.082	0.359	0.490*	0.607**	0.415*	0.646**	0.254	0.201	-0.547**	0.072	0.049	0.343	0.169
SDG 2		1	0.552**	0.208	0.463**	0.301	-0.014	0.621**	0.625**	0.043	0.432*	0.265	-0.215	-0.036	0.106	0.523**	0.213
SDG 3			1	0.477**	0.389*	0.509**	0.283	0.515**	0.688**	0.091	0.466**	-0.076	-0.528**	-0.121	0.049	0.459*	0.429*
SDG 4				1	0.427*	0.310	0.350	0.131	0.435*	0.042	0.170	0.053	-0.410*	0.095	-0.179	0.194	0.261
SDG 5					1	0.276	0.002	0.362*	0.427*	-0.177	0.442*	0.179	-0.042	0.207	0.038	0.306	0.345
SDG 6						1	0.214	0.499**	0.458*	0.168	0.436*	0.013	-0.436*	-0.250	0.007	0.644**	0.350
SDG 7							1	0.161	0.344	0.189	0.205	0.032	-0.684**	0.039	-0.143	-0.017	-0.022
SDG 8								1	0.700**	0.298	0.512**	0.233	-0.449*	-0.264	0.202	0.670**	0.358
SDG 9									1	-0.055	0.383*	0.098	-0.605**	-0.064	0.110	0.362*	0.351
SDG 10										1	0.243	0.068	-0.030	0.061	-0.062	0.251	0.023
SDG 11											1	0.140	-0.292	-0.354	0.091	0.589**	0.297
SDG 12												1	-0.210	0.050	-0.235	0.139	0.283
SDG 13													1	0.232	0.088	-0.289	-0.384*
SDG 14														1	-0.143	-0.429	-0.225
SDG 15															1	0.149	0.117
SDG 16																1	0.543**
SDG 17																	1

220 C1. Slightly arid

r	SDG 1	SDG 2	SDG 3	SDG 4	SDG 5	SDG 6	SDG 7	SDG 8	SDG 9	SDG 10	SDG 11	SDG 12	SDG 13	SDG 14	SDG 15	SDG 16	SDG 17
SDG 1	1	0.568**	0.799**	0.746**	0.477**	0.701**	0.759**	0.725**	0.791**	0.527**	0.748**	-0.655**	-0.777**	-0.217	-0.023	0.678**	0.596**
SDG 2		1	0.564**	0.565**	0.368**	0.494**	0.503**	0.506**	0.679**	0.335*	0.463**	-0.413**	-0.491**	-0.227	-0.104	0.559**	0.419**
SDG 3			1	0.764**	0.644**	0.873**	0.860**	0.785**	0.838**	0.323*	0.796**	-0.723**	-0.831**	-0.130	0.017	0.681**	0.682**
SDG 4				1	0.528**	0.729**	0.761**	0.697**	0.777**	0.428**	0.685**	-0.537**	-0.776**	-0.121	0.033	0.660**	0.609**
SDG 5					1	0.599**	0.558**	0.605**	0.477**	0.124	0.604**	-0.478**	-0.459**	-0.096	-0.020	0.422**	0.651**
SDG 6						1	0.854**	0.714**	0.814**	0.171	0.753**	-0.630**	-0.748**	-0.011	0.031	0.625**	0.698**
SDG 7							1	0.673**	0.808**	0.275	0.755**	-0.714**	-0.838**	-0.165	0.059	0.589**	0.645**
SDG 8								1	0.773**	0.409**	0.640**	-0.583**	-0.694**	-0.101	0.176	0.693**	0.557**
SDG 9									1	0.368*	0.709**	-0.668**	-0.826**	-0.266	0.000	0.696**	0.530**
SDG 10										1	0.213	-0.268	-0.360*	-0.412*	0.116	0.471**	0.195
SDG 11											1	-0.661**	-0.764**	-0.106	0.004	0.663**	0.557**
SDG 12												1	0.787**	0.236	-0.129	-0.604**	-0.527**
SDG 13													1	0.254	-0.017	-0.649**	-0.548**
SDG 14														1	0.138	-0.292	-0.049
SDG 15															1	0.035	-0.077
SDG 16																1	0.428**
SDG 17																	1

222 C2. Moderately arid

r	SDG 1	SDG 2	SDG 3	SDG 4	SDG 5	SDG 6	SDG 7	SDG 8	SDG 9	SDG 10	SDG 11	SDG 12	SDG 13	SDG 14	SDG 15	SDG 16	SDG 17
SDG 1	1	0.668**	0.826**	0.747**	0.139	0.846**	0.805**	0.667**	0.867**	0.619**	0.723**	-0.846**	-0.854**	-0.918**	0.098	0.642**	0.132
SDG 2		1	0.774**	0.537*	0.358	0.663**	0.511*	0.593**	0.584**	0.419	0.646**	-0.614**	-0.586**	-0.645*	0.044	0.488*	-0.074
SDG 3			1	0.784**	0.263	0.782**	0.835**	0.716**	0.811**	0.668**	0.761**	-0.811**	-0.782**	-0.782**	0.042	0.863**	0.135
SDG 4				1	0.218	0.670**	0.693**	0.563*	0.746**	0.539*	0.721**	-0.772**	-0.730**	-0.691*	-0.012	0.753**	0.319
SDG 5					1	0.228	0.137	0.312	0.233	0.056	0.609**	-0.316	-0.246	-0.218	-0.046	0.333	0.130
SDG 6						1	0.800**	0.551*	0.839**	0.425	0.763**	-0.923**	-0.932**	-0.873**	0.284	0.658**	0.251
SDG 7							1	0.640**	0.707**	0.633**	0.782**	-0.835**	-0.849**	-0.827**	0.168	0.782**	0.300
SDG 8								1	0.663**	0.602**	0.686**	-0.649**	-0.549*	-0.382	-0.019	0.686**	-0.079
SDG 9									1	0.463*	0.647**	-0.823**	-0.847**	-0.855**	0.128	0.737**	0.093
SDG 10										1	0.551*	-0.505*	-0.426	-0.500	0.268	0.642**	0.037
SDG 11											1	-0.839**	-0.770**	-0.645*	0.151	0.726**	0.389
SDG 12												1	0.949**	0.745**	-0.293	-0.719**	-0.333
SDG 13													1	0.873**	-0.291	-0.704**	-0.370
SDG 14														1	0.045	-0.727*	-0.345
SDG 15															1	0.086	0.347
SDG 16																1	0.325
SDG 17																	1

224 C3. Severely arid

r	SDG 1	SDG 2	SDG 3	SDG 4	SDG 5	SDG 6	SDG 7	SDG 8	SDG 9	SDG 10	SDG 11	SDG 12	SDG 13	SDG 14	SDG 15	SDG 16	SDG 17
SDG 1	1	0.301	0.814**	0.723**	0.301	0.647**	0.781**	0.435*	0.701**	0.755**	0.661**	-0.634**	-0.755**	-0.459	-0.004	0.717**	0.100
SDG 2		1	0.629**	0.454*	0.190	0.227	0.580**	0.448*	0.605**	0.222	0.336	-0.242	-0.426*	-0.177	-0.121	0.546**	-0.203
SDG 3			1	0.830**	0.440*	0.700**	0.883**	0.681**	0.853**	0.614**	0.618**	-0.725**	-0.796**	-0.456*	-0.150	0.816**	-0.026
SDG 4				1	0.608**	0.653**	0.696**	0.649**	0.784**	0.470*	0.598**	-0.672**	-0.770**	-0.405	-0.041	0.644**	0.176
SDG 5					1	0.427*	0.253	0.428*	0.604**	-0.106	0.615**	-0.424*	-0.480*	-0.032	-0.035	0.305	0.316
SDG 6						1	0.644**	0.557**	0.540**	0.297	0.685**	-0.544**	-0.606**	-0.618**	-0.160	0.456*	0.395*
SDG 7							1	0.458*	0.748**	0.621**	0.563**	-0.625**	-0.655**	-0.549*	-0.164	0.701**	0.065
SDG 8								1	0.611**	0.188	0.459*	-0.559**	-0.531**	-0.472*	0.119	0.612**	-0.012
SDG 9									1	0.452*	0.640**	-0.729**	-0.818**	-0.079	-0.154	0.715**	0.078
SDG 10										1	0.280	-0.509*	-0.635**	-0.152	0.056	0.657**	-0.153
SDG 11											1	-0.386	-0.403*	-0.270	0.019	0.507**	0.493*
SDG 12												1	0.797**	0.260	0.074	-0.596**	0.118
SDG 13													1	0.126	0.231	-0.670**	-0.061
SDG 14														1	0.058	-0.004	0.089
SDG 15															1	0.080	0.030
SDG 16																1	0.020
SDG 17																	1

226 C4. Extremely arid

r	SDG 1	SDG 2	SDG 3	SDG 4	SDG 5	SDG 6	SDG 7	SDG 8	SDG 9	SDG 10	SDG 11	SDG 12	SDG 13	SDG 14	SDG 15	SDG 16	SDG 17
SDG 1	1	0.479	0.788**	0.700**	0.459	0.579*	0.809**	-0.215	0.824**	0.029	0.485	-0.350	-0.671**	-0.018	-0.115	0.644**	0.512*
SDG 2		1	0.624**	0.384	0.338	0.326	0.577**	0.414	0.651**	0.188	0.427	-0.320	-0.526*	-0.143	0.146	0.645**	0.496*
SDG 3			1	0.825**	0.541*	0.322	0.866**	0.212	0.890**	-0.256	0.529*	-0.764**	-0.851**	-0.099	-0.277	0.901**	0.549*
SDG 4				1	0.484*	0.358	0.767**	0.191	0.763**	-0.332	0.623**	-0.763**	-0.856**	-0.077	-0.165	0.740**	0.484*
SDG 5					1	0.738**	0.459*	0.256	0.514*	-0.368	0.620**	-0.564**	-0.629**	-0.152	0.047	0.665**	0.498*
SDG 6						1	0.280	0.182	0.421	-0.247	0.714**	-0.206	-0.365	-0.002	0.226	0.394	0.417
SDG 7							1	-0.039	0.794**	-0.188	0.448*	-0.708**	-0.823**	-0.112	-0.346	0.820**	0.469*
SDG 8								1	0.179	0.206	0.370	-0.086	-0.226	-0.015	0.152	0.347	0.200
SDG 9									1	-0.256	0.439	-0.750**	-0.776**	-0.051	-0.117	0.785**	0.657**
SDG 10										1	-0.350	0.444	0.385	-0.536	-0.082	-0.197	-0.159
SDG 11											1	-0.403	-0.544*	0.398	0.183	0.632**	0.326
SDG 12												1	0.844**	0.116	0.122	-0.771**	-0.487*
SDG 13													1	-0.020	0.086	-0.814**	-0.555*
SDG 14														1	0.240	-0.165	0.059
SDG 15															1	-0.114	0.191
SDG 16																1	0.531*
SDG 17																	1

228 **Table S5. Projections of the mean index score (MIS) and sustainable development score (SDS) in 2030.** N.A. is short for not available, because the amount of data in these
229 countries is insufficient for regression analysis (less than 3). The value of SD ratio test below 0.35 is good for gray forecast model, 0.35~0.5 is qualified, 0.5~0.65 is barely
230 qualified, and above 0.65 is not qualified.

Countries	Curvilinear regressions			Gray forecast model		average MIS	Curvilinear regressions			Gray forecast model		average SDS
	Model	MIS	p-value	MIS	SD ratio test		Model	SDS	p-value	SDS	SD ratio test	
Afghanistan	Logistic	58.96	<0.001	65.47	0.548	62.22	Compound/Logistic	52.45	<0.001	54.58	0.704	53.52
Albania	Linear	76.75	0.013	77.84	0.292	77.29	Compound/Logistic	75.01	<0.001	75.00	0.358	75.01
Algeria	Logistic	80.29	<0.001	81.80	0.648	81.05	Compound/Logistic	92.46	<0.001	93.97	0.195	93.22
Angola	Logistic	54.47	<0.001	54.67	0.902	54.57	Compound/Logistic	50.69	<0.001	51.10	0.896	50.89
Argentina	Logistic	76.27	<0.001	81.42	0.546	78.84	Compound/Logistic	74.36	<0.001	77.10	0.799	75.73
Armenia	Logistic	74.33	<0.001	82.08	0.326	78.21	Compound/Logistic	76.18	<0.001	81.08	0.362	78.63
Australia	Logistic	76.18	<0.001	84.42	0.068	80.30	Compound/Logistic	59.78	<0.001	61.77	0.734	60.77
Austria	Logistic	88.48	<0.001	92.00	0.611	90.24	Compound/Logistic	78.48	<0.001	81.40	0.400	79.94
Azerbaijan	Logistic	80.52	<0.001	83.75	0.499	82.13	Compound/Logistic	70.04	<0.001	74.35	0.878	72.19
Bahrain	Logistic	67.03	<0.001	61.97	0.805	64.50	Compound/Logistic	72.36	<0.001	66.91	0.807	69.64
Bangladesh	Logistic	85.27	<0.001	79.53	0.193	82.40	Compound/Logistic	79.16	<0.001	78.87	0.198	79.01
Barbados	N. A.	N. A.	N. A.	N. A.	N. A.	N. A.	N. A.	N. A.	N. A.	N. A.	N. A.	N. A.
Belarus	Logistic	90.28	<0.001	93.06	0.527	91.67	Compound/Logistic	88.08	<0.001	91.43	0.371	89.75
Belgium	Compound/Logistic	86.11	<0.001	92.05	0.437	89.08	Compound/Logistic	81.17	<0.001	95.08	0.692	88.12
Belize	Logistic	71.88	<0.001	83.68	0.319	77.78	Compound/Logistic	61.52	<0.001	69.19	0.351	65.35
Benin	Logistic	56.40	<0.001	56.30	0.882	56.35	Compound/Logistic	53.97	<0.001	56.59	0.881	55.28
Bhutan	Compound/Logistic	86.50	<0.001	88.47	0.321	87.49	Compound/Logistic	89.33	<0.001	91.38	0.168	90.35
Bolivia	Logistic	77.53	<0.001	68.61	0.392	73.07	Compound/Logistic	75.29	<0.001	70.15	0.340	72.72
Bosnia and Herzegovina	Compound/Logistic	99.80	<0.001	99.88	0.225	99.84	Compound/Logistic	94.31	<0.001	99.03	0.352	96.67
Botswana	Linear	70.24	<0.001	72.26	0.230	71.25	Compound/Logistic	63.47	<0.001	61.80	0.410	62.64
Brazil	Compound/Logistic	78.46	<0.001	78.78	0.587	78.62	Compound/Logistic	64.17	<0.001	63.31	0.980	63.74
Brunei Darussalam	N. A.	N. A.	N. A.	N. A.	N. A.	N. A.	N. A.	N. A.	N. A.	N. A.	N. A.	N. A.
Bulgaria	Compound/Logistic	78.59	<0.001	76.51	0.622	77.55	Compound/Logistic	83.41	<0.001	83.29	0.488	83.35
Burkina Faso	Logistic	63.19	<0.001	60.99	0.583	62.09	Compound/Logistic	52.71	<0.001	52.64	0.999	52.68
Burundi	Logistic	52.39	<0.001	55.84	0.869	54.12	Compound/Logistic	42.91	<0.001	45.56	0.330	44.24
Cabo Verde	Logistic	80.79	<0.001	84.12	0.169	82.45	Compound/Logistic	68.38	<0.001	74.23	0.168	71.30
Cambodia	Linear	80.27	0.004	80.67	0.194	80.47	Linear	76.49	0.003	76.03	0.139	76.26
Cameroon	Compound/Logistic	61.93	<0.001	54.81	0.306	58.37	Compound/Logistic	60.79	<0.001	57.12	0.233	58.96
Canada	Compound/Logistic	82.14	<0.001	86.15	0.197	84.14	Compound/Logistic	75.11	<0.001	77.13	0.530	76.12
Central African Republic	Compound/Logistic	35.64	<0.001	32.47	0.513	34.05	Compound/Logistic	38.92	<0.001	35.40	0.619	37.16
Chad	Compound/Logistic	36.37	<0.001	32.13	0.585	34.25	Compound/Logistic	37.93	<0.001	35.73	0.471	36.83
Chile	Compound/Logistic	94.47	<0.001	92.85	0.306	93.66	Compound/Logistic	73.30	<0.001	71.10	0.867	72.20
China	Compound/Logistic	88.31	<0.001	79.59	0.457	83.95	Compound/Logistic	83.84	<0.001	76.19	0.621	80.02
Colombia	Compound/Logistic	88.41	<0.001	84.54	0.315	86.48	Compound/Logistic	70.99	<0.001	67.88	0.806	69.43
Comoros	N. A.	N. A.	N. A.	N. A.	N. A.	N. A.	N. A.	N. A.	N. A.	N. A.	N. A.	N. A.
Congo, Dem. Rep.	Logistic	73.31	<0.001	77.08	0.328	75.19	Compound/Logistic	59.19	<0.001	59.66	0.294	59.42

Congo, Rep.	Compound/Logistic	61.46	<0.001	56.58	0.638	59.02	S-function	53.18	0.173	48.20	0.465	50.69
Costa Rica	Logistic	84.58	<0.001	75.55	0.393	80.07	Compound/Logistic	66.66	<0.001	62.26	0.852	64.46
Cote d'Ivoire	Compound/Logistic	69.73	<0.001	67.27	0.281	68.50	Compound/Logistic	62.97	<0.001	63.40	0.214	63.18
Croatia	Compound/Logistic	88.32	<0.001	92.18	0.185	90.25	Compound/Logistic	95.68	<0.001	100.00	0.223	97.84
Cuba	Compound/Logistic	79.07	<0.001	93.69	0.125	86.38	Compound/Logistic	75.57	<0.001	86.81	0.274	81.19
Cyprus	Compound/Logistic	88.40	<0.001	94.96	0.467	91.68	Compound/Logistic	87.60	<0.001	98.20	0.245	92.90
Czech Republic	Compound/Logistic	86.56	<0.001	93.37	0.652	89.97	Compound/Logistic	77.78	<0.001	87.15	0.628	82.46
Denmark	Logistic	86.17	<0.001	84.92	0.670	85.55	Compound/Logistic	77.23	<0.001	71.94	0.443	74.59
Djibouti	Logistic	67.39	<0.001	67.51	0.392	67.45	Compound/Logistic	63.01	<0.001	65.45	0.512	64.23
Dominican Republic	Logistic	81.85	<0.001	84.73	0.407	83.29	Compound/Logistic	77.33	<0.001	75.56	0.605	76.45
Ecuador	Logistic	84.35	<0.001	80.45	0.476	82.40	Compound/Logistic	75.00	<0.001	70.44	0.799	72.72
Egypt, Arab Rep.	Logistic	81.99	<0.001	88.50	0.343	85.24	Compound/Logistic	88.19	<0.001	95.37	0.108	91.78
El Salvador	Logistic	85.83	<0.001	83.77	0.446	84.80	Compound/Logistic	78.80	<0.001	77.81	0.461	78.30
Estonia	Logistic	88.76	<0.001	90.79	0.322	89.77	Compound/Logistic	78.28	<0.001	80.84	0.924	79.56
Eswatini	Compound/Logistic	56.93	0.005	49.77	0.001	53.35	Compound/Logistic	58.16	0.01	45.31	0.001	51.74
Ethiopia	Compound/Logistic	55.64	<0.001	56.72	0.840	56.18	Compound/Logistic	46.42	<0.001	48.41	0.509	47.42
Fiji	Compound	76.51	0.004	84.05	0.002	80.28	Compound/Logistic	82.15	0.005	93.50	0.003	87.82
Finland	Compound/Logistic	88.99	<0.001	94.71	0.466	91.85	Compound/Logistic	84.14	<0.001	89.61	0.501	86.88
Former Yugoslav Republic of Macedonia (FYROM)	N. A.	N. A.	N. A.	N. A.	N. A.	N. A.	N. A.	N. A.	N. A.	N. A.	N. A.	N. A.
France	Logistic	84.11	<0.001	82.44	0.355	83.27	Compound/Logistic	80.89	<0.001	82.27	0.337	81.58
Gabon	Compound/Logistic	59.47	<0.001	61.99	0.711	60.73	Compound/Logistic	74.72	<0.001	75.15	0.420	74.94
Gambia, The	Compound/Logistic	98.50	<0.001	90.51	0.123	94.50	Compound/Logistic	66.40	<0.001	69.79	0.209	68.09
Georgia	Compound/Logistic	80.47	<0.001	79.54	0.581	80.00	Compound/Logistic	80.11	<0.001	78.42	0.412	79.26
Germany	Compound/Logistic	81.75	<0.001	81.97	0.999	81.86	Compound/Logistic	81.83	<0.001	88.57	0.589	85.20
Ghana	Compound/Logistic	72.10	<0.001	64.26	0.558	68.18	Compound/Logistic	70.03	<0.001	63.89	0.617	66.96
Greece	Compound/Logistic	83.09	<0.001	93.44	0.228	88.27	Compound/Logistic	84.42	<0.001	95.96	0.392	90.19
Guatemala	Compound/Logistic	67.11	<0.001	67.48	0.653	67.29	Compound/Logistic	58.78	<0.001	58.21	0.972	58.49
Guinea	S-function	52.99	0.109	48.26	0.338	50.63	Compound/Logistic	51.82	<0.001	46.04	0.400	48.93
Guyana	Compound/Logistic	51.40	<0.001	53.36	0.377	52.38	Compound/Logistic	56.19	<0.001	60.41	0.678	58.30
Haiti	Compound/Logistic	72.25	<0.001	61.62	0.279	66.94	Compound/Logistic	67.28	<0.001	59.68	0.205	63.48
Honduras	S-function	64.10	0.155	61.96	0.548	63.03	Compound/Logistic	58.44	<0.001	56.65	0.806	57.55
Hungary	Compound/Logistic	86.00	<0.001	94.38	0.443	90.19	Compound/Logistic	78.19	<0.001	81.55	0.860	79.87
Iceland	Compound/Logistic	74.00	<0.001	72.18	0.535	73.09	Compound/Logistic	67.12	<0.001	65.43	0.719	66.27
India	Compound/Logistic	68.14	<0.001	64.73	0.639	66.43	Compound/Logistic	61.04	<0.001	60.52	0.984	60.78
Indonesia	Compound/Logistic	75.47	<0.001	78.08	0.060	76.77	Compound/Logistic	84.71	<0.001	89.41	0.172	87.06
Iran, Islamic Rep.	Compound/Logistic	90.06	<0.001	86.44	0.536	88.25	Compound/Logistic	98.35	<0.001	92.48	0.416	95.42
Iraq	Compound/Logistic	92.37	<0.001	100	0.396	96.18	Linear	92.79	0.043	100	0.431	96.40
Ireland	Compound/Logistic	88.04	<0.001	92.25	0.143	90.14	Compound/Logistic	80.63	<0.001	92.89	0.160	86.76
Israel	Compound/Logistic	87.78	<0.001	87.81	0.331	87.79	Compound/Logistic	78.53	<0.001	79.22	0.875	78.87
Italy	Compound/Logistic	87.14	<0.001	93.72	0.059	90.43	Compound/Logistic	85.07	<0.001	95.13	0.163	90.10
Jamaica	Compound/Logistic	76.65	<0.001	78.24	0.530	77.45	Compound/Logistic	88.11	<0.001	92.80	0.262	90.46
Japan	Compound/Logistic	79.31	<0.001	83.69	0.141	81.50	S-function	75.97	0.035	74.66	0.416	75.32
Jordan	Compound/Logistic	81.90	<0.001	88.34	0.355	85.12	Compound/Logistic	86.92	<0.001	94.78	0.217	90.85
Kazakhstan	Compound/Logistic	77.75	<0.001	89.25	0.294	83.50	Compound/Logistic	74.00	<0.001	82.90	0.457	78.45
Kenya	Compound/Logistic	76.49	<0.001	75.96	0.263	76.23	Compound/Logistic	60.56	<0.001	59.50	0.985	60.03
Korea, Rep.	S-function	79.17	<0.001	82.00	0.166	80.59	Power function	78.76	0.005	82.78	0.288	80.77

Kuwait	S-function	60.39	0.022	58.45	0.291	59.42	Compound/Logistic	64.15	<0.001	70.61	0.636	67.38
Kyrgyz Republic	Compound/Logistic	87.30	<0.001	89.56	0.332	88.43	Compound/Logistic	86.27	<0.001	86.43	0.476	86.35
Lao PDR	Compound/Logistic	68.32	<0.001	70.07	0.581	69.19	Compound/Logistic	60.59	<0.001	63.10	0.550	61.84
Latvia	Linear	88.72	0.016	93.08	0.213	90.90	Compound/Logistic	79.84	<0.001	78.54	0.774	79.19
Lebanon	Compound/Logistic	72.36	<0.001	73.93	0.224	73.14	Compound/Logistic	69.44	<0.001	73.56	0.251	71.50
Lesotho	Compound/Logistic	56.28	<0.001	63.14	0.540	59.71	Compound/Logistic	53.63	<0.001	64.51	0.499	59.07
Liberia	S-function	49.70	0.037	48.05	0.236	48.87	Compound/Logistic	53.05	<0.001	43.79	0.325	48.42
Lithuania	Compound/Logistic	84.21	<0.001	87.69	0.335	85.95	Compound/Logistic	80.59	<0.001	81.90	0.558	81.24
Luxembourg	Compound/Logistic	74.33	<0.001	70.93	0.378	72.63	Compound/Logistic	60.60	<0.001	58.61	0.435	59.61
Madagascar	Logistic	65.99	<0.001	62.88	0.230	64.43	Compound/Logistic	55.42	<0.001	52.37	0.268	53.89
Malawi	S-function	51.69	0.028	52.16	0.431	51.92	Compound/Logistic	48.89	<0.001	46.37	0.364	47.63
Malaysia	Compound/Logistic	75.09	<0.001	75.81	0.698	75.45	Compound/Logistic	71.71	<0.001	67.36	0.181	69.54
Maldives	Compound/Logistic	56.92	0.016	86.41	0.001	71.66	S-function	62.47	0.578	100	0.005	81.24
Mali	Power function	52.63	0.002	55.86	0.105	54.24	Compound/Logistic	52.14	<0.001	53.30	0.498	52.72
Malta	Compound/Logistic	74.99	<0.001	80.35	0.564	77.67	Compound/Logistic	73.46	<0.001	76.28	0.732	74.87
Mauritania	Compound/Logistic	72.91	<0.001	74.11	0.525	73.51	Compound/Logistic	73.00	<0.001	71.78	0.505	72.39
Mauritius	Compound/Logistic	74.07	<0.001	72.30	0.583	73.18	Compound/Logistic	75.05	<0.001	68.47	0.281	71.76
Mexico	Compound/Logistic	74.51	<0.001	84.06	0.604	79.28	Compound/Logistic	57.07	<0.001	67.79	0.587	62.43
Moldova	S-function	75.61	0.376	74.40	0.859	75.01	Compound/Logistic	70.00	<0.001	67.42	0.690	68.71
Mongolia	Compound/Logistic	64.70	<0.001	63.50	0.970	64.10	Compound/Logistic	67.42	<0.001	66.99	0.529	67.20
Montenegro	Compound/Logistic	73.08	<0.001	73.36	0.823	73.22	Compound/Logistic	74.15	<0.001	77.21	0.339	75.68
Morocco	Compound/Logistic	84.33	<0.001	86.75	0.421	85.54	Compound/Logistic	89.34	<0.001	92.14	0.229	90.74
Mozambique	Compound/Logistic	60.09	<0.001	54.62	0.718	57.36	S-function	52.43	0.4	48.64	0.714	50.53
Myanmar	Compound/Logistic	82.89	<0.001	87.53	0.270	85.21	Compound/Logistic	75.00	<0.001	74.65	0.250	74.83
Namibia	Compound/Logistic	69.36	<0.001	72.33	0.260	70.84	Compound/Logistic	64.49	<0.001	67.06	0.288	65.77
Nepal	Compound/Exponential/Logistic	82.58	<0.001	81.53	0.215	82.05	Compound/Logistic	79.89	<0.001	80.82	0.126	80.35
Netherlands	Compound/Logistic	85.01	<0.001	87.29	0.317	86.15	Compound/Logistic	80.47	<0.001	88.77	0.064	84.62
New Zealand	Compound/Logistic	82.39	<0.001	81.17	0.781	81.78	Compound/Logistic	85.77	<0.001	82.18	0.599	83.97
Nicaragua	Compound/Logistic	76.83	<0.001	67.77	0.474	72.30	S-function	62.50	0.041	61.18	0.355	61.84
Niger	S-function	50.11	0.023	48.52	0.207	49.31	Compound/Logistic	47.64	<0.001	43.92	0.379	45.78
Nigeria	Compound/Logistic	50.78	<0.001	56.25	0.692	53.52	Compound/Logistic	54.81	<0.001	61.91	0.486	58.36
North Macedonia	Compound/Logistic	84.17	<0.001	85.19	0.001	84.68	Compound/Logistic	76.13	0.003	70.82	0.001	73.47
Norway	Compound/Logistic	77.12	<0.001	83.84	0.323	80.48	Power function	68.08	0.005	63.93	0.263	66.00
Oman	Compound/Logistic	83.37	<0.001	87.91	0.229	85.64	Compound/Logistic	83.97	<0.001	88.31	0.458	86.14
Pakistan	Compound/Logistic	62.29	<0.001	66.55	0.224	64.42	Compound/Logistic	61.39	<0.001	66.63	0.493	64.01
Panama	Compound	81.59	<0.001	81.02	0.423	81.30	Compound/Logistic	68.12	<0.001	67.81	0.933	67.97
Papua New Guinea	Compound/Logistic	50.13	0.001	48.45	0.001	49.29	Compound/Logistic	48.70	<0.001	48.86	0.001	48.78
Paraguay	S-function	68.22	0.107	67.34	0.591	67.78	Compound/Logistic	68.62	<0.001	66.08	0.808	67.35
Peru	Compound/Logistic	86.48	<0.001	80.02	0.353	83.25	S-function	69.24	0.032	74.41	0.506	71.82
Philippines	S-function	65.16	0.331	63.94	0.724	64.55	Compound/Logistic	63.36	<0.001	59.66	0.890	61.51
Poland	Compound/Logistic	92.71	<0.001	100	0.026	96.36	Compound/Logistic	100	<0.001	100	0.136	100.00
Portugal	Compound/Logistic	87.96	<0.001	94.17	0.212	91.06	Compound/Logistic	77.78	<0.001	76.82	0.924	77.30
Qatar	Compound/Logistic	70.04	<0.001	76.19	0.613	73.12	Compound/Logistic	58.31	<0.001	60.86	0.950	59.58
Romania	Compound/Logistic	79.57	<0.001	88.75	0.275	84.16	Compound/Logistic	86.81	<0.001	98.99	0.348	92.90
Russian Federation	Compound/Logistic	86.21	<0.001	89.65	0.108	87.93	Compound/Exponential/Logistic	93.78	<0.001	94.22	0.099	94.00
Rwanda	Power function	57.71	0.032	58.94	0.344	58.32	Compound/Logistic	54.31	<0.001	55.43	0.846	54.87
Sao Tome and Principe	Compound/Logistic	36.29	<0.001	33.53	0.003	34.91	Power function	53.07	0.03	45.02	0.001	49.04

Saudi Arabia	Compound/Logistic	69.20	<0.001	70.89	0.429	70.04	Power function	71.22	0.024	70.46	0.102	70.84
Senegal	Compound/Logistic	63.85	<0.001	63.01	0.205	63.43	Compound/Logistic	57.24	<0.001	58.93	0.930	58.08
Serbia	Compound/Logistic	86.73	<0.001	92.63	0.274	89.68	Compound/Logistic	88.96	<0.001	95.02	0.207	91.99
Sierra Leone	Compound/Logistic	64.89	<0.001	62.68	0.306	63.78	Compound/Logistic	53.98	<0.001	55.10	0.680	54.54
Singapore	Compound/Logistic	69.85	<0.001	66.04	0.905	67.95	Compound/Logistic	60.22	<0.001	61.81	0.834	61.02
Slovak Republic	Compound	90.08	<0.001	96.65	0.145	93.37	Compound/Logistic	85.63	<0.001	89.68	0.344	87.66
Slovenia	Compound/Logistic	82.40	<0.001	85.94	0.698	84.17	Compound/Logistic	78.18	<0.001	89.63	0.782	83.91
Somalia	N. A.	N. A.	N. A.	N. A.	N. A.	N. A.	N. A.	N. A.	N. A.	N. A.	N. A.	N. A.
South Africa	Compound/Logistic	71.01	<0.001	74.61	0.249	72.81	Compound/Logistic	63.12	<0.001	65.80	0.542	64.46
South Sudan	N. A.	N. A.	N. A.	N. A.	N. A.	N. A.	N. A.	N. A.	N. A.	N. A.	N. A.	N. A.
Spain	Compound	86.94	<0.001	91.80	0.300	89.37	Compound/Logistic	85.35	<0.001	86.50	0.501	85.92
Sri Lanka	Compound/Logistic	74.00	<0.001	79.76	0.041	76.88	Compound/Logistic	81.41	<0.001	88.99	0.262	85.20
Sudan	Compound/Logistic	49.10	<0.001	47.87	0.953	48.48	Power function	47.09	0.006	41.65	0.255	44.37
Suriname	Compound/Logistic	69.83	<0.001	75.31	0.527	72.57	Compound/Logistic	65.57	<0.001	73.20	0.447	69.39
Swaziland	N. A.	N. A.	N. A.	N. A.	N. A.	N. A.	N. A.	N. A.	N. A.	N. A.	N. A.	N. A.
Sweden	Compound/Logistic	84.91	<0.001	86.80	0.675	85.86	Compound/Logistic	79.37	<0.001	85.53	0.788	82.45
Switzerland	Compound/Logistic	81.19	<0.001	84.02	0.227	82.61	Compound/Logistic	76.01	<0.001	80.15	0.771	78.08
Syrian Arab Republic	Compound/Logistic	53.87	<0.001	60.06	0.517	56.97	Compound/Logistic	50.27	<0.001	57.21	0.424	53.74
Tajikistan	Compound/Logistic	81.40	<0.001	79.50	0.560	80.45	Compound/Logistic	65.05	<0.001	67.44	0.776	66.24
Tanzania	Compound/Logistic	67.84	<0.001	61.12	0.139	64.48	Compound/Logistic	60.52	<0.001	56.51	0.423	58.52
Thailand	Compound/Logistic	90.11	<0.001	91.88	0.412	90.99	Compound/Logistic	92.77	<0.001	95.69	0.247	94.23
Timor-Leste	N. A.	N. A.	N. A.	N. A.	N. A.	N. A.	N. A.	N. A.	N. A.	N. A.	N. A.	N. A.
Togo	Power function	54.93	0.018	57.67	0.281	56.30	Compound/Logistic	55.63	<0.001	55.17	0.299	55.40
Trinidad and Tobago	Compound/Logistic	60.69	<0.001	60.30	0.694	60.50	Compound/Logistic	58.94	<0.001	59.51	0.616	59.23
Tunisia	Compound/Logistic	82.45	<0.001	90.14	0.440	86.30	Compound/Logistic	86.70	<0.001	93.63	0.242	90.16
Turkey	Compound/Logistic	78.26	<0.001	86.41	0.355	82.33	Compound/Logistic	70.79	<0.001	81.61	0.430	76.20
Turkmenistan	Compound/Logistic	74.43	<0.001	63.89	0.624	69.16	Power function	64.73	0.036	75.32	0.496	70.03
Uganda	Compound/Logistic	50.20	<0.001	46.46	0.654	48.33	Compound/Logistic	51.09	<0.001	51.00	0.990	51.04
Ukraine	Compound/Logistic	82.16	<0.001	86.18	0.172	84.17	Compound/Logistic	80.03	<0.001	85.00	0.238	82.52
United Arab Emirates	Compound/Logistic	77.82	<0.001	72.84	0.384	75.33	Compound/Logistic	70.01	<0.001	66.33	0.367	68.17
United Kingdom	Compound/Exponential/Logistic	84.34	<0.001	84.12	0.182	84.23	Compound/Logistic	88.65	<0.001	88.68	0.202	88.67
United States	Compound/Exponential/Logistic	87.10	<0.001	87.15	0.323	87.12	Compound/Logistic	84.10	<0.001	88.83	0.401	86.46
Uruguay	Linear	84.51	0.024	89.27	0.266	86.89	Compound/Logistic	83.33	<0.001	90.05	0.311	86.69
Uzbekistan	Compound/Logistic	71.39	<0.001	70.82	0.996	71.10	Compound/Logistic	72.12	<0.001	67.48	0.645	69.80
Vanuatu	Compound/Logistic	63.78	<0.001	57.37	0.001	60.57	Compound/Logistic	58.59	0.011	76.74	0.002	67.67
Venezuela, RB	Linear	45.91	0.001	47.82	0.154	46.87	Compound/Logistic	47.82	<0.001	48.07	0.386	47.95
Vietnam	Compound/Logistic	88.36	<0.001	85.82	0.344	87.09	Compound/Logistic	98.70	<0.001	100.00	0.327	99.35
Yemen, Rep.	Compound/Logistic	55.58	<0.001	64.21	0.747	59.90	Compound/Logistic	55.35	<0.001	59.60	0.802	57.47
Zambia	Compound/Logistic	54.06	<0.001	49.93	0.409	51.99	Compound/Logistic	40.87	<0.001	39.42	0.316	40.15
Zimbabwe	Compound/Logistic	71.61	<0.001	63.20	0.498	67.40	Compound/Logistic	58.91	<0.001	57.83	0.626	58.37

231 **Table S6. Details for priority selections. EHN, EP, SD, and ED refer to SDGs related to essential human needs, eco-environmental protection, social development, and**
 232 **economic development, respectively.** UD, UE, and SS stand for relatively underdeveloped, uneven, and sustainable status. N.A. is short for not available.

Countries	2017				2021				Development status in 2021	Development pathway	Best performance in 2021	Worst performance in 2021	Change in EHN
	EHN	EP	SD	ED	EHN	EP	SD	ED					
Afghanistan	45.52	69.10	48.27	24.25	49.59	80.96	44.10	25.35	UD & UE	Progression	EP	ED	4.08
Albania	77.58	65.83	70.53	55.82	79.62	74.05	70.11	54.17	SS	Progression	EHN	ED	2.04
Algeria	74.51	69.37	72.68	53.16	75.37	70.42	76.14	55.11	SS	Progression	SD	ED	0.86
Angola	44.50	68.25	49.60	36.54	42.43	80.11	43.14	35.57	UD & UE	Retgression in ES	EP	ED	-2.07
Argentina	86.16	65.85	66.09	69.01	83.14	70.15	68.87	65.65	SS	Progression	EHN	ED	-3.02
Armenia	79.85	75.24	71.72	54.64	79.17	81.18	69.02	59.04	SS	Progression	EP	ED	-0.68
Australia	87.15	48.93	78.68	88.33	88.05	44.22	81.62	86.52	UE	Retgression in both	EHN	EP	0.90
Austria	90.98	65.62	78.65	85.88	89.93	58.45	87.02	90.63	SS	Retgression in ES	ED	EP	-1.05
Azerbaijan	78.31	73.66	68.55	59.22	78.80	79.56	70.56	62.20	SS	Retgression in ES	EP	ED	0.48
Bahrain	78.15	48.80	62.20	66.25	81.43	52.93	63.56	57.60	SS	Retgression in MIS	EHN	EP	3.28
Bangladesh	63.97	63.62	58.51	29.54	62.33	77.65	61.52	49.64	UD & UE	Progression	EP	ED	-1.65
Barbados	80.85	47.64	61.69	72.81	77.04	60.66	80.85	61.49	SS	Retgression in ES	SD	EP	-3.81
Belarus	82.11	75.14	77.09	70.86	83.79	84.62	83.81	63.08	SS	Progression	EP	ED	1.68
Belgium	89.01	62.85	82.56	83.34	86.96	66.01	86.11	89.29	SS	Progression	ED	EP	-2.05
Belize	81.01	54.00	63.40	60.59	71.05	71.36	66.60	53.43	UE	Retgression in ES	EP	ED	-9.96
Benin	43.31	66.15	48.19	39.60	37.85	80.18	41.53	43.39	UD & UE	Retgression in ES	EP	EHN	-5.46
Bhutan	75.16	76.31	59.98	47.82	71.58	78.84	69.41	62.52	SS	Progression	EP	ED	-3.58
Bolivia	72.04	78.49	57.21	51.13	71.05	81.75	63.81	55.62	UE	Progression	EP	ED	-0.99
Bosnia and Herzegovina	79.25	57.42	68.17	48.65	80.17	77.34	73.41	58.55	SS	Progression	EHN	ED	0.93
Botswana	58.58	59.87	58.04	56.47	56.01	75.40	59.05	61.07	UD & UE	Progression	EP	EHN	-2.58
Brazil	84.31	69.09	56.07	67.77	83.15	72.12	61.53	66.96	UE	Retgression in ES	EHN	SD	-1.16
Brunei Darussalam	N. A.	N. A.	N. A.	N. A.	77.03	46.21	73.86	77.97	UE	N. A.	ED	EP	N. A.
Bulgaria	80.43	73.14	70.17	62.37	81.05	76.32	66.86	70.00	SS	Progression	EHN	SD	0.62
Burkina Faso	43.98	82.81	48.54	29.13	35.76	90.58	50.74	45.80	UD & UE	Retgression in ES	EP	EHN	-8.22
Burundi	33.60	78.17	65.44	32.83	31.10	86.61	58.36	35.14	UD & UE	Retgression in both	EP	EHN	-2.50
Cabo Verde	N. A.	N. A.	N. A.	N. A.	69.86	76.48	64.69	59.93	SS	N. A.	EP	ED	N. A.
Cambodia	63.25	54.56	61.92	48.28	66.54	73.02	63.45	51.72	UE	Progression	EP	ED	3.28
Cameroon	56.97	70.87	53.01	21.55	51.33	83.00	46.45	39.51	UD & UE	Progression	EP	ED	-5.64
Canada	87.50	56.21	81.10	86.14	88.33	55.53	84.43	86.58	SS	Retgression in ES	EHN	EP	0.83
Central African Republic	24.68	78.62	32.28	22.44	23.60	87.44	26.36	23.49	UD & UE	Retgression in both	EP	ED	-1.08
Chad	30.16	80.48	39.00	25.58	23.30	87.42	31.57	30.26	UD & UE	Retgression in both	EP	EHN	-6.86
Chile	87.19	66.07	62.29	68.31	88.16	75.24	68.69	75.35	UE	Retgression in ES	EHN	SD	0.97
China	80.34	55.78	64.99	63.75	81.64	69.47	63.28	74.19	SS	Progression	EHN	SD	1.29
Colombia	80.09	62.69	55.36	57.87	80.02	77.30	61.22	61.34	UE	Retgression in ES	EHN	SD	-0.07
Congo, Dem. Rep.	34.67	61.54	45.89	25.39	33.04	85.49	45.15	35.05	UD & UE	Progression	EP	EHN	-1.63
Congo, Rep.	43.86	73.05	53.32	28.97	41.04	86.71	46.54	38.45	UD & UE	Progression	EP	ED	-2.82
Costa Rica	81.14	67.97	64.74	65.63	81.53	71.10	68.64	71.71	UE	Retgression in ES	EHN	SD	0.39
Cote d'Ivoire	56.32	67.49	46.22	41.36	51.00	86.00	46.27	49.40	UD & UE	Retgression in ES	EP	SD	-5.32
Croatia	87.30	76.04	71.73	69.23	87.82	78.83	78.16	73.72	SS	Progression	EHN	ED	0.52

Cuba	84.45	65.24	84.64	62.32	75.96	80.07	85.31	60.00	UE	Progression	SD	ED	-8.50
Cyprus	84.71	58.25	67.48	68.73	83.98	62.81	75.29	75.05	SS	Progression	EHN	EP	-0.73
Czech Republic	87.89	79.84	78.34	79.90	85.81	76.01	81.04	85.98	SS	Retrogression in ES	ED	EP	-2.08
Denmark	90.22	65.11	90.06	89.65	87.49	67.03	91.92	92.49	SS	Progression	ED	EP	-2.73
Djibouti	59.10	46.65	49.24	38.24	49.19	72.87	46.12	48.66	UD & UE	Progression	EP	SD	-9.91
Dominican Republic	76.24	72.82	60.15	56.53	76.23	84.11	59.12	63.24	UE	Progression	EP	SD	0.00
Ecuador	78.02	67.83	65.87	60.98	77.63	79.51	67.69	62.84	UE	Retrogression in ES	EP	ED	-0.39
Egypt, Arab Rep.	76.63	66.51	64.81	43.44	73.74	75.46	65.32	56.63	SS	Progression	EP	ED	-2.89
El Salvador	78.00	60.77	58.05	48.78	77.36	68.71	65.00	56.02	UE	Progression	EHN	ED	-0.64
Estonia	85.57	72.28	75.97	79.57	85.76	75.95	80.30	84.24	SS	Retrogression in ES	EHN	EP	0.19
Eswatini	N. A.	N. A.	N. A.	N. A.	45.55	73.50	50.39	46.14	UD & UE	N. A.	EP	EHN	N. A.
Ethiopia	51.50	69.57	54.91	38.39	43.45	84.53	52.11	42.48	UD & UE	Retrogression in ES	EP	ED	-8.05
Fiji	N. A.	N. A.	N. A.	N. A.	73.14	71.89	68.86	71.20	SS	N. A.	EHN	SD	N. A.
Finland	90.37	66.45	89.20	88.22	89.94	71.21	90.44	91.19	SS	Progression	ED	EP	-0.43
France	90.88	66.92	78.00	84.43	89.93	65.58	83.47	86.38	SS	Progression	EHN	EP	-0.96
Gabon	70.77	73.87	64.41	45.32	66.69	80.99	52.48	49.34	UD	Retrogression in MIS	EP	ED	-4.07
Gambia, The	44.91	66.32	47.91	27.84	51.13	86.74	53.14	46.39	UD & UE	Retrogression in ES	EP	ED	6.22
Georgia	77.33	64.99	70.95	54.83	76.28	75.99	71.57	61.59	SS	Progression	EHN	ED	-1.05
Germany	90.13	66.48	82.07	87.20	88.81	64.49	85.71	90.55	SS	Progression	ED	EP	-1.32
Ghana	62.22	70.73	58.65	43.67	60.25	79.10	57.24	52.85	UD & UE	Progression	EP	ED	-1.97
Greece	86.83	62.12	69.69	69.34	86.06	67.38	73.40	71.71	SS	Progression	EHN	EP	-0.77
Guatemala	67.61	59.70	51.81	51.87	65.19	72.54	48.11	53.96	UD & UE	Retrogression in ES	EP	SD	-2.42
Guinea	39.60	74.32	47.08	32.87	36.29	81.94	47.02	40.69	UD & UE	Retrogression in ES	EP	EHN	-3.31
Guyana	79.07	56.74	63.72	52.78	71.29	42.68	70.53	49.00	UD & UE	Retrogression in MIS	EHN	EP	-7.78
Haiti	38.25	60.83	46.13	28.06	39.37	78.46	51.60	34.75	UD & UE	Progression	EP	ED	1.12
Honduras	70.91	66.32	57.26	47.33	66.68	77.75	51.52	55.04	UD & UE	Retrogression in ES	EP	SD	-4.22
Hungary	86.48	80.36	71.94	71.60	87.13	79.76	72.89	78.82	SS	Progression	EHN	SD	0.65
Iceland	92.65	51.08	87.75	80.54	85.63	49.28	89.45	85.47	SS	Retrogression in both	SD	EP	-7.03
India	62.63	61.52	58.46	45.21	59.21	75.18	51.61	55.49	UD & UE	Retrogression in ES	EP	SD	-3.42
Indonesia	69.74	64.12	62.42	50.59	69.11	71.90	63.27	59.45	SS	Progression	EP	ED	-0.63
Iran, Islamic Rep.	75.02	62.71	60.21	57.64	77.23	76.69	62.48	61.65	SS	Progression	EHN	ED	2.21
Iraq	67.16	53.55	58.66	39.81	70.83	68.96	63.41	45.94	UD	Progression	EHN	ED	3.67
Ireland	88.78	63.83	75.13	83.26	89.93	66.09	80.86	86.03	SS	Progression	EHN	EP	1.15
Israel	84.02	49.15	66.44	81.14	84.81	54.01	74.12	88.33	SS	Progression	ED	EP	0.79
Italy	87.51	64.54	71.25	77.15	87.82	68.55	76.60	80.84	SS	Progression	EHN	EP	0.31
Jamaica	78.61	59.22	65.42	58.22	75.68	68.78	66.55	62.07	SS	Progression	EHN	ED	-2.93
Japan	90.06	64.85	75.78	91.50	89.40	62.15	79.93	87.39	SS	Retrogression in both	EHN	EP	-0.66
Jordan	75.34	58.85	68.81	55.05	76.21	77.76	63.36	61.16	SS	Progression	EP	ED	0.86
Kazakhstan	77.92	58.75	74.28	66.74	80.64	64.32	72.99	65.98	SS	Progression	EHN	EP	2.71
Kenya	51.78	61.92	55.91	49.22	52.03	78.50	57.65	55.93	UD & UE	Retrogression in ES	EP	EHN	0.25
Korea, Rep.	87.86	60.63	69.06	83.21	88.29	61.23	76.84	88.51	SS	Progression	ED	EP	0.43
Kuwait	77.00	39.92	72.93	53.99	73.58	40.78	71.48	53.80	UD	Retrogression in MIS	EHN	EP	-3.42
Kyrgyz Republic	80.60	71.97	74.50	46.43	75.30	83.36	77.80	61.19	SS	Progression	EP	ED	-5.30
Lao PDR	62.15	70.63	62.61	48.76	60.99	79.79	59.35	56.50	UD & UE	Retrogression in ES	EP	ED	-1.17
Latvia	84.31	71.55	70.61	72.69	86.57	77.02	73.70	78.71	SS	Progression	EHN	SD	2.27
Lebanon	77.71	59.59	58.78	60.99	77.74	71.52	61.42	51.44	SS	Progression	EHN	ED	0.03
Lesotho	43.34	73.11	58.32	39.96	40.31	85.95	54.21	43.16	UD & UE	Retrogression in ES	EP	EHN	-3.03
Liberia	28.80	64.49	44.11	35.16	32.79	82.49	48.19	30.71	UD & UE	Retrogression in ES	EP	ED	3.99

Lithuania	81.44	67.28	70.55	74.18	81.93	76.65	72.31	75.37	SS	Progression	EHN	SD	0.49
Luxembourg	83.04	52.66	75.16	83.65	80.22	42.90	82.64	85.06	UE	Retgression in both	ED	EP	-2.82
Madagascar	23.76	67.19	51.06	32.22	30.76	76.16	50.07	41.44	UD & UE	Progression	EP	EHN	7.00
Malawi	37.10	71.46	53.72	33.28	34.23	82.81	52.01	41.90	UD & UE	Retgression in ES	EP	EHN	-2.87
Malaysia	81.92	57.40	63.78	75.49	79.02	63.85	64.40	77.52	SS	Progression	EHN	EP	-2.90
Maldives	N. A.	N. A.	N. A.	N. A.	79.64	66.96	63.01	65.51	SS	N. A.	EHN	SD	N. A.
Mali	42.64	75.94	46.76	33.95	39.92	82.63	46.57	46.13	UD & UE	Retgression in ES	EP	EHN	-2.72
Malta	83.81	70.78	75.67	76.28	85.84	59.86	76.01	79.66	SS	Retgression in MIS	EHN	EP	2.03
Mauritania	57.60	64.94	49.15	25.30	51.26	81.70	51.52	34.29	UD & UE	Progression	EP	ED	-6.34
Mauritius	74.99	37.49	67.76	64.13	80.39	53.49	63.35	67.13	UE	Progression	EHN	EP	5.40
Mexico	80.42	65.34	62.70	66.11	78.86	69.62	61.46	65.05	UE	Retgression in both	EHN	SD	-1.56
Moldova	80.00	79.06	77.25	54.67	79.42	78.64	78.82	55.51	UE	Progression	EHN	ED	-0.58
Mongolia	65.27	66.57	70.49	49.46	65.77	58.95	73.72	49.79	UD & UE	Retgression in MIS	SD	ED	0.50
Montenegro	79.90	46.30	78.17	56.16	75.27	58.78	71.98	62.71	SS	Progression	EHN	EP	-4.62
Morocco	75.49	68.33	61.44	58.42	76.94	80.22	62.53	60.25	SS	Progression	EP	ED	1.45
Mozambique	35.15	72.65	55.70	30.74	35.91	79.02	49.14	42.21	UD & UE	Retgression in ES	EP	EHN	0.76
Myanmar	63.55	62.24	73.32	30.87	64.96	77.05	65.03	48.65	UE	Progression	EP	ED	1.41
Namibia	54.87	69.36	63.23	46.56	50.64	81.28	62.92	52.40	UD & UE	Progression	EP	EHN	-4.23
Nepal	66.58	80.19	64.82	29.17	61.68	86.88	70.83	48.97	UE	Progression	EP	ED	-4.89
Netherlands	89.23	60.53	80.99	88.59	88.68	61.10	84.66	91.79	SS	Progression	ED	EP	-0.55
New Zealand	88.99	54.75	82.12	83.16	89.58	54.78	83.24	87.34	SS	Progression	EHN	EP	0.59
Nicaragua	72.31	67.73	59.52	47.59	70.88	79.28	59.58	52.50	UE	Progression	EP	ED	-1.43
Niger	34.57	70.19	49.66	28.36	32.94	86.95	46.49	38.65	UD & UE	Retgression in ES	EP	EHN	-1.63
Nigeria	44.89	69.39	45.89	31.84	40.20	82.73	36.79	38.61	UD & UE	Progression	EP	SD	-4.69
North Macedonia	N. A.	N. A.	N. A.	N. A.	78.44	81.70	71.90	59.11	SS	N. A.	EP	ED	N. A.
Norway	89.63	62.63	91.30	90.59	87.21	53.01	94.64	90.78	SS	Retgression in both	SD	EP	-2.42
Oman	73.26	57.12	62.96	60.75	70.88	65.77	70.99	67.75	SS	Progression	SD	EP	-2.38
Pakistan	63.34	67.77	49.91	36.13	56.62	79.20	50.74	42.56	UD & UE	Progression	EP	ED	-6.72
Panama	77.61	61.29	51.84	64.85	78.69	71.89	54.99	66.58	UE	Retgression in ES	EHN	SD	1.08
Papua New Guinea	N. A.	N. A.	N. A.	N. A.	35.69	77.61	46.18	50.95	UD & UE	N. A.	EP	EHN	N. A.
Paraguay	83.55	66.81	57.24	51.27	81.15	71.45	54.12	61.52	UE	Progression	EHN	SD	-2.40
Peru	78.74	66.35	61.40	51.79	80.54	78.78	63.14	58.33	SS	Progression	EHN	ED	1.80
Philippines	70.81	68.21	62.70	51.08	65.95	78.86	58.54	52.90	UE	Retgression in ES	EP	ED	-4.85
Poland	85.13	67.64	74.10	73.88	85.41	77.10	77.95	79.53	SS	Progression	EHN	EP	0.29
Portugal	87.62	60.21	74.57	77.62	86.72	63.65	80.54	82.00	SS	Retgression in ES	EHN	EP	-0.90
Qatar	74.94	48.65	65.16	59.21	75.97	54.14	67.70	61.57	UE	Retgression in ES	EHN	EP	1.03
Romania	80.74	75.33	71.75	65.48	83.23	78.22	65.34	72.95	SS	Progression	EHN	SD	2.49
Russian Federation	75.80	69.94	61.01	69.34	79.80	67.15	71.42	76.34	SS	Progression	EHN	EP	4.00
Rwanda	47.42	76.25	60.80	36.76	42.40	80.83	61.10	50.27	UD & UE	Retgression in ES	EP	EHN	-5.02
Sao Tome and Principe	N. A.	N. A.	N. A.	N. A.	48.83	83.55	56.21	46.68	UD & UE	N. A.	EP	ED	N. A.
Saudi Arabia	72.61	53.18	75.24	42.03	69.06	57.84	66.85	64.56	SS	Progression	EHN	EP	-3.56
Senegal	57.64	65.67	53.40	46.06	53.26	81.64	48.59	52.51	UD & UE	Retgression in ES	EP	SD	-4.38
Serbia	83.14	68.97	76.02	58.18	82.33	74.00	77.12	68.98	SS	Progression	EHN	ED	-0.80
Sierra Leone	29.33	69.49	57.42	29.73	31.28	79.07	60.35	34.79	UD & UE	Retgression in ES	EP	EHN	1.95
Singapore	88.66	34.69	63.35	91.24	85.64	36.71	75.79	85.04	UE	Retgression in ES	EHN	EP	-3.03
Slovak Republic	88.04	69.80	74.37	69.83	86.95	76.33	78.75	77.30	SS	Progression	EHN	EP	-1.09
Slovenia	88.35	71.27	83.82	74.44	87.41	68.25	85.09	83.90	SS	Progression	EHN	EP	-0.93

Somalia	N. A.	N. A.	N. A.	N. A.	25.53	75.75	44.80	37.31	UD & UE	N. A.	EP	EHN	N. A.
South Africa	64.25	63.45	60.40	54.71	60.00	71.11	59.64	66.99	UD & UE	Progression	EP	SD	-4.25
South Sudan	N. A.	N. A.	N. A.	N. A.	23.30	82.97	32.35	22.04	UD & UE	N. A.	EP	ED	N. A.
Spain	87.19	62.32	74.76	81.90	87.64	64.68	79.87	84.86	SS	Progression	EHN	EP	0.45
Sri Lanka	74.24	66.46	62.44	57.08	71.01	77.04	60.22	64.45	SS	Progression	EP	SD	-3.22
Sudan	47.44	59.51	53.24	35.46	40.55	75.32	49.57	29.78	UD & UE	Retrogression in both	EP	ED	-6.88
Suriname	75.46	71.36	71.13	59.45	69.48	76.69	65.65	64.66	SS	Retrogression in both	EP	ED	-5.98
Sweden	91.96	65.19	90.76	93.65	90.21	67.02	92.06	92.00	SS	Retrogression in ES	SD	EP	-1.75
Switzerland	91.54	61.71	76.10	91.86	90.73	54.97	80.46	92.46	SS	Retrogression in MIS	ED	EP	-0.80
Syrian Arab Republic	63.64	59.99	58.17	48.32	63.29	71.50	46.88	40.10	UD & UE	Retrogression in both	EP	ED	-0.36
Tajikistan	70.81	72.44	74.21	41.98	73.76	82.98	70.13	52.87	UE	Retrogression in ES	EP	ED	2.95
Tanzania	43.79	66.77	59.76	33.49	41.52	81.75	54.47	50.80	UD & UE	Retrogression in ES	EP	EHN	-2.27
Thailand	80.65	62.88	65.45	66.70	79.59	74.70	70.44	70.76	SS	Progression	EHN	SD	-1.06
Togo	44.32	66.45	55.30	29.71	39.81	84.29	50.22	39.21	UD & UE	Retrogression in ES	EP	ED	-4.51
Trinidad and Tobago	77.05	54.31	77.44	64.50	79.48	50.04	68.22	60.38	UE	Retrogression in both	EHN	EP	2.42
Tunisia	78.09	69.03	68.61	52.54	76.80	77.38	69.84	57.28	SS	Progression	EP	ED	-1.29
Turkey	83.18	61.67	61.19	65.25	82.38	68.01	63.83	64.45	SS	Retrogression in ES	EHN	SD	-0.80
Turkmenistan	67.33	65.05	51.94	38.71	58.41	64.95	65.80	52.68	UD & UE	Progression	SD	ED	-8.92
Uganda	45.92	78.72	55.49	34.17	39.88	83.77	51.12	44.82	UD & UE	Retrogression in MIS	EP	EHN	-6.05
Ukraine	81.95	67.51	74.84	60.82	81.98	72.50	79.52	62.06	SS	Progression	EHN	ED	0.03
United Arab Emirates	76.58	42.50	81.54	59.01	80.07	53.88	73.37	70.07	SS	Retrogression in ES	EHN	EP	3.48
United Kingdom	89.21	60.94	75.86	87.20	89.17	65.24	77.81	87.88	SS	Progression	EHN	EP	-0.04
United States	88.62	45.70	67.36	89.39	86.97	57.87	72.54	87.71	SS	Progression	ED	EP	-1.65
Uruguay	87.47	55.03	69.33	67.90	85.10	67.08	72.60	70.17	SS	Progression	EHN	EP	-2.37
Uzbekistan	74.51	73.70	81.38	46.47	72.96	81.74	70.47	55.33	UE	Retrogression in MIS	EP	ED	-1.56
Vanuatu	N. A.	N. A.	N. A.	N. A.	49.83	70.86	60.02	65.39	UD & UE	N. A.	EP	EHN	N. A.
Venezuela, RB	77.12	65.94	57.22	61.22	58.40	75.20	53.01	50.22	UD & UE	Retrogression in both	EP	ED	-18.72
Vietnam	79.76	60.75	72.04	50.72	79.00	70.44	73.09	65.41	SS	Progression	EHN	ED	-0.77
Yemen, Rep.	40.95	66.52	54.86	33.84	46.18	78.57	41.25	33.71	UD & UE	Progression	EP	ED	5.23
Zambia	43.80	75.08	53.77	34.71	43.40	86.84	46.48	43.24	UD & UE	Retrogression in ES	EP	ED	-0.40
Zimbabwe	47.49	73.89	60.26	45.78	46.90	89.78	60.80	46.00	UD & UE	Retrogression in ES	EP	ED	-0.60

Table S7. Major existing literatures related to SDGs assessment at multiple scales

References	Scales	Major contributions	Innovations of our study
Schmidt-Traub et al., 2017 ⁹	global	Build up the indicator system and assessment methods for global SDGs assessment (the mean SDG index score, MIS).	Our study develops a new dimension for global SDGs assessment – the SDGs progress evenness, which expands the implications of sustainable development assessment and could reduce the potential overestimation of SDGs performance when large progress differences exists.
Sachs et al., 2016-2022 ^{1-5,16,17}	global	Present the average SDGs performance of each country.	Hidden challenges are revealed by integrating SDGs progress evenness. For instance, the progress of many high-income countries becomes stagnant, despite they generally show the best average performance toward SDGs.
Xu et al., 2020 ⁶	provincial (China)	First national SDGs assessment over time and space.	Not related to our study.
Fu et al., 2019 and 2020 ^{14,18}	N.A.*	Clarify the logic and categorization of the SDGs to facilitate management.	Based on these categories, our study proposes a framework for the priority selection by integrating the SDGs progress evenness, which could help with future SDGs policymaking.
Liu et al., 2021 ⁷	provincial (China)	First adopt SDGs progress evenness in national SDGs assessment, with hidden challenges disclosed for China.	Our study improves the methodology and first applies it in global SDGs assessment.
Zhu et al., 2023 ¹⁹	municipal (Inner Mongolia, China)	Reveal the challenges for the achievement of SDGs in drylands.	Hidden challenges and future opportunities are identified for different categories of countries. For instances, low-, middle-, and high-income countries; slightly, moderately, severely, and extremely arid countries.

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