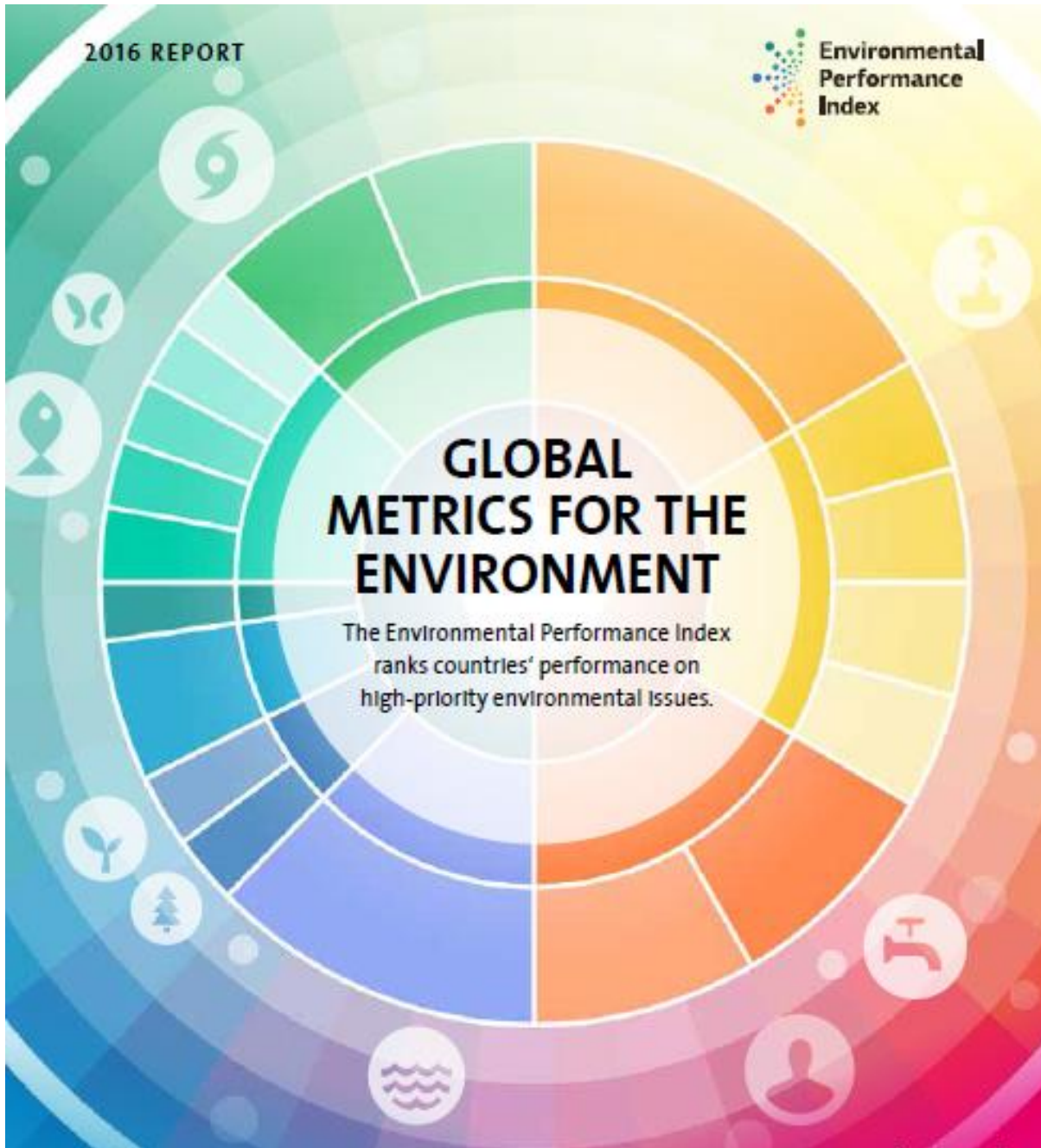


Malaysia's Performance in Environmental Performance Index

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1.0 Introduction

The 2016 Environmental Performance Index is a project lead by the Yale Center for Environmental Law & Policy (YCELP) and Yale Data-Driven Environmental Solutions Group at Yale University (Data-Driven Yale), the Center for International Earth Science Information Network (CIESIN) at Columbia University, in collaboration with the Samuel Family Foundation, McCall MacBain Foundation, and the World Economic Forum.

The EPI ranks countries' performance on high-priority environmental issues in two broad policy areas: protection of human **health** and protection of **ecosystems**. Within these two policy objectives the EPI scores country performance in **nine issue areas** which comprised of **20 indicators**. Indicators in the EPI measure how close countries are to meet internationally established targets or, in the absence of agreed-upon targets, how they compare relative to the best performing countries.

Figure 1: The 2016 EPI Framework includes 9 issues and 20 indicators.



2.0 Malaysia's Performance

Malaysia ranks 63rd out of 180 countries compared to 51st in 2014. The 2016 EPI ranks 3 more countries, Maldives, Samoa and Sao Tome and Principe than the last EPI release which represents three different regions, South Asia, East Asia and The Pacific and Sub-Saharan Africa. In total, the 180 countries in the Index represent 99 per cent of global population, 98 per cent of the world's total land area, and 97 per cent of global GDP. The overall performance of Malaysia versus selected countries over 2-year period is shown in Table 1. Malaysia's performance in the nine issue areas and 20 indicators is shown in Table 2.

Table 1: Malaysia vs selected countries in Environmental Performance Index

COUNTRY	EPI 2016 (n=180)		EPI 2014 (n=178)		CHANGES IN RANK	
	RANK	SCORE	RANK	SCORE		
Finland	1	90.68	18	75.72	↑	17
Iceland	2	90.51	14	76.50	↑	12
Sweden	3	90.43	9	78.09	↑	6
Denmark	4	89.21	13	76.92	↑	9
Slovenia	5	88.98	15	76.43	↑	10
Australia	13	87.22	3	82.40	↓	-10
Singapore	14	87.04	4	81.78	↓	-10
Switzerland	16	86.93	1	87.67	↓	-15
Luxembourg	20	86.58	2	83.29	↓	-18
Malaysia	63	74.23	51	59.31	↓	-12
Philippines	66	73.70	114	44.02	↑	48
South Korea	80	70.61	43	63.79	↓	-37
Thailand	91	69.54	78	52.83	↓	-13
Brunei Darussalam	98	67.86	37	66.49	↓	-61
Indonesia	107	65.85	112	44.36	↑	5
Mongolia	114	64.39	111	44.67	↓	-3
Viet Nam	131	58.50	136	38.17	↑	5
Cambodia	146	51.24	145	35.44	↓	-1
Laos	148	50.29	127	40.37	↓	-21
Myanmar	153	48.98	164	27.44	↑	11
Afghanistan	176	37.50	174	21.57	↓	-2
Niger	177	37.48	142	36.28	↓	-35
Madagascar	178	37.10	166	26.70	↓	-12
Eritrea	179	36.73	168	25.76	↓	-11
Somalia	180	27.66	178	15.47	↓	-2

	Top 10 Performer
	ASEAN
	Worst Performers

Table 2: Malaysia's Performance in the 9 issues and 20 indicators

Year	2016		2014		Changes in Rank
	Rank	Score	Rank	Score	
EPI Score	63	74.23	51	59.31	-12
Environmental Health (EH)					
EH - Health Impacts	42	86.74	34	95.38	-8
Environmental Risk Exposure	42	86.74	-	-	-
EH - Air Quality	117	74.68	55	90.54	-62
Air Pollution - Average Exposure to Nitrogen Dioxide	133	65.25	-	-	-
Air Pollution - Average Exposure to PM2.5	110	76.81	118	96.09	8
Household Air Quality	54	95.33	-	-	-
Air Pollution - PM2.5 Exceedance	155	55.03	121	75.54	-34
EH - Water and Sanitation	47	91.22	45	77.21	-2
Unsafe Sanitation	42	93.20	55	62.49	13
Drinking Water Quality	59	89.25	41	91.94	-18
Ecosystem Vitality (EV)					
EV - Water Resources	56	77.16	94	8.64	38
Wastewater Treatment	56	77.16	94	8.64	38
EV - Agriculture	142	48.33	124	57.68	-18
Nitrogen Use Efficiency	131	64.10	-	-	-
Nitrogen Balance	140	1.03	-	-	-
EV - Forests	118	0	129	1.68	11
Tree Cover Loss	118	0	-	-	-
EV - Fisheries	52	53.48	82	17.60	30
Fish Stocks	52	53.48	18	21.50	-34
EV - Biodiversity and Habitat	45	90.85	22	93.37	-23
Terrestrial Protected Areas (National Biome Weights)	33	100	1	100	-32
Terrestrial Protected Areas (Global Biome Weights)	33	100	1	100	-32
Species Protection (National)	52	89.49	-	-	-
Species Protection (Global)	62	89.28	-	-	-
Marine Protected Areas	75	75.46	61	73.49	-14
EV - Climate and Energy	89	58.95	95	40.24	6
Access to Electricity	53	100	66	99	13
Trend in CO2 Emissions per KWH	161	57.47	101	31.68	-60
Trend in Carbon Intensity	87	65.45	100	37.59	13

3.0 Overall Performance

The 2016 EPI's innovations have shaken up the rankings since the Index's previous iteration. Finland has taken the top spot, followed by Iceland, Sweden, Denmark and Slovenia. These top five performers share smart policies that target improvements to their natural and built environments, along with strong commitments to renewable energy.

Finland's top ranking stems from its societal commitment to achieve a carbon-neutral society that does not exceed nature's carrying capacity by 2050, a vision replete with actionable goals and measurable indicators of sustainable development. Finland's goal of consuming 38 percent of their final energy from renewable sources by 2020 is legally binding, and they already produce nearly two-thirds of their electricity from renewable or nuclear power sources.

Among countries with the largest economies, France ranks the highest in the tenth place followed by the United Kingdom in 12th, United States 26th, Italy 29th, Germany 30th, and Japan in 39th. The fastest growing economies show diversity in their performance. Russia ranks in the 32nd, better than Japan, while others such as Brazil, China and India fare worse by ranking in the 46th, 109th and 141st place respectively. The overall 2016 EPI ranking is shown in Appendix 1.

The 2016 EPI's poor performers are a familiar group to the Index's low end. Somalia again takes last place (180th) followed, in ascending order, by Eritrea, Madagascar, Niger, and Afghanistan. These African and South Asia nations all have broad governance problems with long, troubled legacies. The Index's bottom third, comprised mostly of African countries with a smattering of South and East Asian nations, is a list of troubled states whose problems extend beyond their inability to sustain environmental and human health.

For the first time, the 2016 EPI introduces human health metrics that capture health risks across all ages and genders instead of using child mortality as a proxy. The EPI also includes novel measures of agricultural sustainability that form a foundation for a comprehensive suite of agriculture indicators to be developed. Furthermore, it also includes new species protection indicators that speak to key conservation outcomes, shining a light on badly needed measures of biodiversity loss. The air quality category, moreover, has improved with the addition of an NO₂ indicator, which describes pollutants that are especially toxic to humans.

This year's EPI provides an overview of global environmental performance, identifying key trends and the status for high-priority issues. Globally, more deaths occur due to poor air quality than to unsafe water quality. In 2013, unsafe water was responsible for 2% of global deaths (~1.24 million), while poor air quality was responsible for 10% of all global deaths (~5.52 million). Half of the world's population, that is more than 3.5 billion people, are exposed to unsafe air quality. Dangerous air pollution is not confined to any one country or group of countries as it is a global issue. A third of people exposed to poor air quality (1.3 billion) live in the East Asia and Pacific region. In China and South Korea, for instance, more than 50% of the population is exposed to unsafe levels of fine particulate matter. In India and Nepal, the percentage climbs to nearly 75%.

Meanwhile, the number of people lacking access to clean water has been nearly cut in half from 960 million in 2000 to 550 million today, around 8% of the world's population. The United Nations recognize clean drinking water and sanitation as basic human rights, but 2.4 billion people lack access to sanitation. For water resources, 23% of countries have no wastewater treatment. More than 80% of the world's discharged wastewater is untreated when it's released into the environment.

On the other hand, 34% of global fish stocks are overexploited or collapsed due to poor management, while 2.52 million km² of tree cover was lost in 2014 – an area roughly twice the size of Peru. While in agriculture, only 20% of countries meet targets for nitrogen use efficiency. Nitrogen use efficiency directly enhances crop productivity while decreasing nitrogen runoff and associated environmental degradation. Excess nitrogen not taken up by crops enters the environment through nitrogen leaching, ammonia volatilization, and nitrous oxide emissions. This nitrogen pollution has negative impacts on air and water quality, leads to ozone layer depletion, and it exacerbates climate change.

With 2015 being the hottest year on record, the impetus for all countries to address climate change could not be more urgent. Around one-third of countries scored on Climate and Energy are reducing their carbon intensity. Globally, carbon emissions are starting to decline, but more substantial action from all countries in line with the 2015 Paris Climate Agreement is needed to avoid catastrophic climate change.

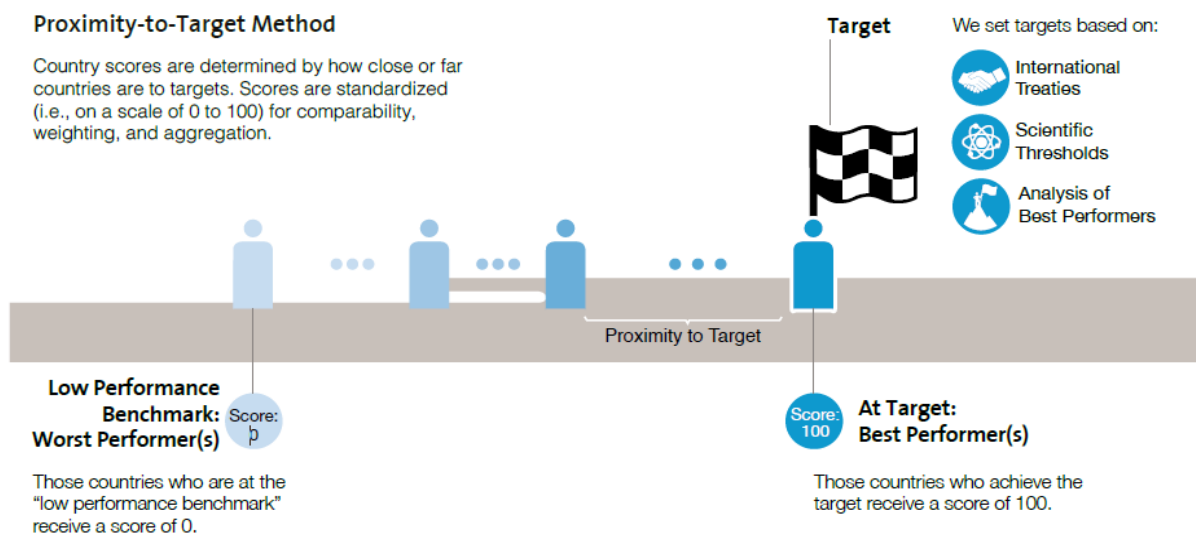
4.0 Methodology

Calculating the EPI begins with transforming raw datasets into comparable performance indicators, which requires standardizing raw values according to population, land area, gross domestic product, and other common units of measurement. Statistical transformations is then performed to normalize data distributions and ensure weights assigned in the aggregation phase affect data as intended and are not influenced by skewed numbers.

The transformed data are used to calculate performance indicators. The EPI indicators are developed using a “proximity-to-target” methodology, which assesses how close each country is to an identified policy target. The targets are high performance benchmarks defined primarily by international or national policy goals or established scientific thresholds. The benchmarks for protected areas, for example, are based on international policy targets established by the Convention on Biological Diversity (CBD).

Scores are converted to a scale of 0 to 100 by simple arithmetic calculation, with 0 being the farthest from the target (worst observed value) and 100 being closest to the target (best observed value) as shown in Figure 2 below.

Figure 2: Diagram of proximity-to-target calculation for performance indicators



Each indicator is weighted within the issue categories to create a single issue category score. These weightings are generally set according to the quality of the underlying data, as well as an indicator's relevance or fit for assessing a given policy issue. If the underlying data for a particular indicator is less reliable or relevant than others in the same issue category, the indicator will be weighted less. Policy issues are weighted approximately equally within their objective (i.e., Environmental Health or Ecosystem Vitality). Contingent on the data strength in each category, slight adjustments to this weighting can be made. Because the Fisheries indicator's data has not been fully vetted, this category affects only 5 percent of a country's score in Ecosystem Vitality.

Countries only receive scores for issues that are "material" or relevant to their environmental performance. The exclusion of certain issues for some countries proportionally increases the weight on other indicators within a policy issue and objective. The two objectives, Environmental Health and Ecosystem Vitality, are weighted equally to achieve a single value, the EPI score, for each country. The EPI methodology has been replicated and adapted at the sub-national and provincial to evaluate environmental performance in several countries, including China, Malaysia, and Viet Nam. Malaysia for instance, acknowledging the key role of cities in sustainability, integrated new indicators on urban environmental performance and governance into the second version of its state-level EPI in 2014.

Appendix 1

2016 ENVIRONMENTAL PERFORMANCE INDEX OVERALL RANKING

COUNTRY	EPI 2016 (n=180)		EPI 2014 (n=178)	
	RANK	SCORE	RANK	SCORE
Finland	1	90.68	18	75.72
Iceland	2	90.51	14	76.50
Sweden	3	90.43	9	78.09
Denmark	4	89.21	13	76.92
Slovenia	5	88.98	15	76.43
Spain	6	88.91	7	79.79
Portugal	7	88.63	17	75.80
Estonia	8	88.59	20	74.66
Malta	9	88.48	34	67.42
France	10	88.20	27	71.05
New Zealand	11	88.00	16	76.41
United Kingdom	12	87.38	12	77.35
Australia	13	87.22	3	82.40
Singapore	14	87.04	4	81.78
Croatia	15	86.98	45	62.23
Switzerland	16	86.93	1	87.67
Norway	17	86.90	10	78.04
Austria	18	86.64	8	78.32
Ireland	19	86.60	19	74.67
Luxembourg	20	86.58	2	83.29

COUNTRY	EPI 2016 (n=180)		EPI 2014 (n=178)	
	RANK	SCORE	RANK	SCORE
Greece	21	85.81	23	73.28
Latvia	22	85.71	40	64.05
Lithuania	23	85.49	49	61.26
Slovakia	24	85.42	21	74.45
Canada	25	85.06	24	73.14
United States of America	26	84.72	33	67.52
Czech Republic	27	84.67	5	81.47
Hungary	28	84.60	28	70.28
Italy	29	84.48	22	74.36
Germany	30	84.26	6	80.47
Azerbaijan	31	83.78	63	55.47
Russia	32	83.52	73	53.45
Bulgaria	33	83.40	41	64.01
Romania	34	83.24	86	50.52
Belarus	35	82.30	32	67.69
Netherlands	36	82.03	11	77.75
Armenia	37	81.60	48	61.67
Poland	38	81.26	30	69.53
Japan	39	80.59	26	72.35
Cyprus	40	80.24	38	66.23
Belgium	41	80.15	36	66.61
Costa Rica	42	80.03	54	58.53
Argentina	43	79.84	93	49.55
Ukraine	44	79.69	95	49.01

COUNTRY	EPI 2016 (n=180)		EPI 2014 (n=178)	
	RANK	SCORE	RANK	SCORE
Cuba	45	79.04	64	55.07
Brazil	46	78.90	77	52.97
Montenegro	47	78.89	62	55.52
Serbia	48	78.67	31	69.13
Israel	49	78.14	39	65.78
Macedonia	50	78.02	89	50.41
Panama	51	78.00	58	56.84
Chile	52	77.67	29	69.93
Tunisia	53	77.28	52	58.99
Jamaica	54	77.02	55	58.26
Moldova	55	76.69	74	53.36
Venezuela	56	76.23	57	57.80
Colombia	57	75.93	85	50.77
Dominican Republic	58	75.32	75	53.24
Fiji	59	75.29	76	53.08
Taiwan	60	74.88	46	62.18
Albania	61	74.38	67	54.73
Trinidad and Tobago	62	74.34	79	52.28
Malaysia	63	74.23	51	59.31
Morocco	64	74.18	81	51.89
Uruguay	65	73.98	70	53.61
Philippines	66	73.70	114	44.02
Mexico	67	73.59	65	55.03
Belize	68	73.55	88	50.46

COUNTRY	EPI 2016 (n=180)		EPI 2014 (n=178)	
	RANK	SCORE	RANK	SCORE
Kazakhstan	69	73.29	84	51.07
Dominica	70	73.25	102	47.08
Kyrgyz Republic	71	73.13	125	40.63
Tajikistan	72	73.05	154	31.34
Peru	73	72.95	110	45.05
Jordan	74	72.24	60	55.78
Guyana	75	71.14	137	38.07
Bolivia	76	71.09	87	50.48
Mauritius	77	70.85	56	58.09
Namibia	78	70.84	116	43.71
Botswana	79	70.72	100	47.60
South Korea	80	70.61	43	63.79
South Africa	81	70.52	72	53.51
Paraguay	82	70.36	133	39.25
Algeria	83	70.28	92	50.08
Turkmenistan	84	70.24	109	45.07
*Samoa	85	70.20	-	-
Bahrain	86	70.07	82	51.83
Qatar	87	69.94	44	63.03
Honduras	88	69.64	97	48.87
Guatemala	89	69.64	98	48.06
Equatorial Guinea	90	69.59	123	41.06
Thailand	91	69.54	78	52.83
United Arab Emirates	92	69.35	25	72.91

COUNTRY	EPI 2016 (n=180)		EPI 2014 (n=178)	
	RANK	SCORE	RANK	SCORE
The Bahamas	93	69.34	105	46.58
Lebanon	94	69.14	91	50.15
Saudi Arabia	95	68.63	35	66.66
Suriname	96	68.58	71	53.57
El Salvador	97	68.07	115	43.79
Brunei Darussalam	98	67.86	37	66.49
Turkey	99	67.68	66	54.91
Gabon	100	67.37	104	46.60
Syria	101	66.91	68	54.50
Tonga	102	66.86	47	61.68
Ecuador	103	66.58	53	58.54
Egypt	104	66.45	50	61.11
Iran	105	66.32	83	51.08
Zambia	106	66.06	121	41.72
Indonesia	107	65.85	112	44.36
Sri Lanka	108	65.55	69	53.88
China	109	65.10	118	43.00
Bhutan	110	64.99	103	46.86
Georgia	111	64.96	101	47.23
Seychelles	112	64.92	61	55.56
Kuwait	113	64.41	42	63.94
Mongolia	114	64.39	111	44.67
Nicaragua	115	64.19	90	50.32
Iraq	116	63.97	149	33.39

COUNTRY	EPI 2016 (n=180)		EPI 2014 (n=178)	
	RANK	SCORE	RANK	SCORE
Senegal	117	63.73	124	40.83
Uzbekistan	118	63.67	117	43.23
Libya	119	63.29	120	42.72
Grenada	120	63.28	147	35.24
Bosnia and Herzegovina	121	63.28	107	45.79
Antigua and Barbuda	122	62.55	96	48.89
Kenya	123	62.49	140	36.99
Swaziland	124	60.63	138	37.35
Kiribati	125	60.48	59	55.82
Oman	126	60.13	99	47.75
Cote d'Ivoire	127	59.89	129	39.72
Congo	128	59.56	130	39.44
Zimbabwe	129	59.25	94	49.54
Ghana	130	58.89	151	32.07
Viet Nam	131	58.50	136	38.17
Tanzania	132	58.34	143	36.19
Nigeria	133	58.27	134	39.20
Vanuatu	134	57.74	106	45.88
Uganda	135	57.56	135	39.18
Cameroon	136	57.13	141	36.68
*Maldives	137	57.10	-	-
Timor-Leste	138	55.79	132	39.41
Guinea	139	55.40	162	28.03
Barbados	140	54.96	108	45.50

COUNTRY	EPI 2016 (n=180)		EPI 2014 (n=178)	
	RANK	SCORE	RANK	SCORE
India	141	53.58	155	31.23
The Gambia	142	52.09	159	29.30
Cape Verde	143	51.98	113	44.07
Pakistan	144	51.42	148	34.58
Angola	145	51.32	160	28.69
Cambodia	146	51.24	145	35.44
Rwanda	147	50.34	146	35.41
Laos	148	50.29	127	40.37
Nepal	149	50.21	139	37.00
Yemen	150	49.79	157	30.16
Malawi	151	49.69	128	40.06
Comoros	152	49.20	153	31.39
Myanmar	153	48.98	164	27.44
*Sao Tome and Principe	154	48.28	-	-
Guinea-Bissau	155	48.20	144	35.98
Papua New Guinea	156	48.02	122	41.09
Lesotho	157	47.17	175	20.81
Solomon Islands	158	46.92	152	31.63
Central African Republic	159	46.46	119	42.94
Mauritania	160	46.31	165	27.19
Togo	161	46.10	163	27.91
Sierra Leone	162	45.98	173	21.74
Ethiopia	163	45.83	131	39.43
Djibouti	164	45.29	161	28.52

COUNTRY	EPI 2016 (n=180)		EPI 2014 (n=178)	
	RANK	SCORE	RANK	SCORE
Burkina Faso	165	43.71	126	40.52
Benin	166	43.66	150	32.42
Liberia	167	43.42	172	23.95
Burundi	168	43.37	167	25.78
Haiti	169	43.28	176	19.01
Sudan	170	42.25	171	24.64
Dem. Rep. Congo	171	42.05	170	25.01
Mozambique	172	41.82	158	29.97
Bangladesh	173	41.77	169	25.61
Mali	174	41.48	177	18.43
Chad	175	37.83	156	31.02
Afghanistan	176	37.50	174	21.57
Niger	177	37.48	142	36.28
Madagascar	178	37.10	166	26.70
Eritrea	179	36.73	168	25.76
Somalia	180	27.66	178	15.47

*New entrants