

Chapter 8

Evaluation and Comparative Analysis on REC

8.1 Evaluation Results of REC

According to the evaluation indicator system and the mathematic model of REC, the evaluation and analysis are made on REC in 2012. Table 8.1 lists the rankings and scores of REC and the subordinate indicators in 2012 and Fig. 8.1 displays the REC scores of the six continents as well as the top three countries of each continent in 2012.

According to Table 8.1, the countries with REC ranking 1st–10th include Myanmar, Congo, Rep., Gabon, Bangladesh, Nicaragua, Norway, Costa Rica, Indonesia, Malaysia and Panama; the 11th–20th rankings are Philippines, New Zealand, Canada, Brazil, Cambodia, Australia, Slovenia, Peru, Vietnam and Mauritius; the 21st–30th rankings are Nepal, Honduras, Cameroon, Russian Federation, Venezuela, RB, Colombia, Angola, Bolivia, Zambia and Ecuador; and the bottom 10 countries are Mauritania, Lesotho, Uzbekistan, Israel, Oman, Syrian Arab Republic, Iraq, Yemen, Rep., Egypt, Arab Rep. and Jordan.

In 2012, the highest score of REC is 36.6 points, the lowest score is 4.0, the average score is 17.8 and the standard deviation (SD) is 6.8; the highest score and the lowest score differ greatly with the margin of 32.6 points; 65 countries score higher than the average point. Generally speaking, the overall level of REC is rather low; the difference is very large between the countries ranking both top and bottom while the difference among the other countries is not so obvious.

The scores of REC show elliptical distribution. Seven countries score above 30 points; 36 countries score 20–30; 68 countries score 10–20; and 22 countries score below 10 points.

The countries with higher REC are mainly developing countries. Among the 20 countries ranking ahead, 15 are developing countries, accounting for 75 %. Most developed countries are middle on REC. A large part of developing countries still have rather low REC.

Table 8.1 Scores and rankings of REC as well as the tertiary and individual indicators in 2012

Indicator										
	REC	Land resources	Land area per capita	Percentage of arable land to total land area	Arable land per capita	Water resources	Surface water	Annual precipitation	Groundwater	Total internal renewable water resources
Myanmar	36.6	12.5	2.4	27.9	10.4	67.5	19.1	73.4	100.0	77.4
	1	68	68	50	55	2	8	8	2	7
Congo, Rep.	34.8	8.3	14.8	2.3	5.6	41.6	26.3	55.9	51.4	32.8
	2	95	14	121	89	20	5	26	9	36
Gabon	32.5	15.7	30.3	2.0	9.9	25.1	6.8	52.2	21.8	19.5
	3	47	8	123	62	41	47	33	34	53
Bangladesh	32.3	30.6	0.1	99.5	2.4	66.0	100.0	100.0	23.3	40.7
	4	10	132	2	119	4	1	1	31	29
Nicaragua	30.9	14.0	3.7	26.7	15.2	63.8	17.3	87.8	70.6	79.5
	5	60	49	54	29	6	12	5	6	6
Norway	30.4	8.1	11.1	4.4	7.7	43.1	13.3	50.8	45.2	63.1
	6	99	22	115	71	17	22	36	12	11
Costa Rica	30.1	3.8	1.9	7.9	2.4	71.3	15.8	69.6	100.0	100.0
	7	125	80	104	117	1	16	11	1	1
Indonesia	29.7	8.5	1.3	21.9	4.5	50.2	11.8	96.3	36.3	56.2
	8	93	102	66	99	12	28	3	16	16
Malaysia	29.6	4.4	2.0	9.1	2.9	58.5	18.6	98.1	28.0	89.0
	9	124	79	103	113	10	10	2	29	3
Panama	29.1	7.3	3.7	12.2	7.1	63.6	21.0	92.6	40.7	100.0
	10	109	47	93	74	7	6	4	15	2
Philippines	29.0	10.2	0.5	30.6	2.7	66.0	16.1	80.1	87.0	81.0
	11	82	121	45	116	3	15	7	4	5
New Zealand	28.6	6.7	10.8	2.9	5.0	61.2	N/A	59.7	N/A	62.6
	12	110	24	119	94	8	N/A	21	N/A	12
Canada	28.3	38.9	47.5	7.9	58.3	11.3	3.4	20.0	5.8	15.8
	13	4	7	105	3	85	68	95	83	60
Brazil	28.2	12.5	7.7	14.3	17.1	33.9	10.5	60.8	31.9	32.3
	14	67	31	88	27	28	30	18	24	37
Cambodia	27.9	16.3	2.2	38.4	13.1	36.0	28.8	66.2	14.3	34.5
	15	45	72	36	38	26	4	16	51	32
Australia	27.4	57.9	62.0	10.4	100.0	5.9	0.6	18.2	1.3	3.2
	16	1	3	98	1	106	107	99	106	105
Slovenia	26.5	6.1	1.7	14.1	3.8	50.0	17.0	39.6	96.6	46.8
	17	118	85	90	104	13	13	47	3	21
Peru	26.3	6.3	7.8	4.7	5.8	43.3	16.1	59.2	34.1	63.7
	18	114	28	114	86	16	14	23	19	10
Vietnam	26.2	11.9	0.6	35.5	3.5	46.8	29.5	65.9	33.1	58.5
	19	72	119	38	111	14	2	17	21	15
Mauritius	25.7	20.5	0.3	65.2	2.8	53.4	12.5	69.6	63.3	68.3
	20	29	131	11	114	11	25	11	7	9

Forest resources	Growing stock in forest and other wooded land	Proportion of land area covered by forest	Forest area per capita	Energy resources	Fossil energy	Energy production	Proportion of combustible renewables and waste to total energy consumption	Net energy imports of the energy consumption
40.2	54.3	56.4	4.5	19.4	0.0	0.5	80.6	20.5
25	32	21	40	18	62	86	10	27
61.2	63.8	76.8	37.7	28.0	1.5	4.3	55.4	100.0
5	10	6	7	5	29	21	22	1
87.1	56.9	100.0	100.0	14.9	6.5	9.6	26.1	29.2
1	24	1	1	31	16	12	35	18
20.3	50.2	13.0	0.1	7.7	0.0	0.2	30.1	10.5
100	95	93	126	53	63	115	31	55
28.4	51.4	29.6	3.6	10.8	0.0	0.3	48.4	6.9
73	64	70	50	42	64	101	26	82
35.8	53.0	39.0	14.3	29.1	3.2	42.5	5.5	81.2
39	41	50	17	3	21	4	78	4
39.5	50.8	57.9	3.8	0.0	0.0	0.5	18.3	6.5
27	76	18	47	125	64	82	45	84
50.4	84.4	60.6	2.7	9.8	0.4	1.6	27.9	23.4
13	6	17	57	45	43	47	32	25
49.4	62.8	72.6	4.9	4.5	0.6	3.1	5.0	15.0
14	13	9	35	77	36	31	82	39
37.9	52.0	51.0	6.3	3.2	0.0	0.2	13.7	2.7
32	50	29	29	93	64	110	55	110
28.5	53.9	30.3	0.6	4.8	0.0	0.3	18.3	7.3
72	37	68	102	74	64	109	46	78
36.9	60.9	36.7	13.1	5.0	1.8	3.9	6.9	11.7
35	14	56	18	70	28	26	70	47
64.8	100.0	39.9	62.7	13.8	18.8	11.8	5.1	20.1
3	1	48	2	33	8	10	81	29
64.2	100.0	71.6	18.3	8.9	0.5	1.3	32.8	11.8
4	1	10	15	47	38	54	30	46
43.8	52.9	66.1	4.9	16.9	0.0	0.3	77.2	9.1
20	43	11	36	26	64	107	12	67
32.8	N/A	22.6	46.4	25.0	47.7	14.2	4.5	31.8
54	N/A	79	3	6	2	8	87	16
45.9	51.3	73.0	4.3	3.6	0.0	1.8	10.0	6.4
16	67	8	42	85	64	39	62	86
52.1	74.7	62.1	16.1	5.7	0.1	0.7	17.4	12.7
11	7	13	16	65	56	73	47	43
37.2	52.6	52.7	1.1	7.8	0.2	0.8	26.6	14.1
34	45	25	82	52	52	70	33	40
23.1	50.0	20.2	0.2	3.1	3.1	N/A	N/A	N/A
87	118	81	117	98	22	N/A	N/A	N/A

(continued)

Table 8.1 (continued)

Indicator										
	Country	REC	Land resources			Water resources	Surface water	Annual precipitation	Groundwater	Total internal renewable water resources
Land area per capita			Percentage of arable land to total land area	Arable land per capita						
Nepal	25.3	9.7	0.8	27.8	3.6	39.5	15.8	52.2	20.1	69.7
	21	87	114	51	107	23	17	33	39	8
Honduras	24.9	7.5	2.6	15.3	6.2	42.3	8.4	67.4	50.2	43.2
	22	106	62	85	81	19	41	14	10	24
Cameroon	24.7	12.7	4.2	22.1	14.5	30.2	6.4	54.7	30.4	29.1
	23	66	43	63	32	34	51	29	27	42
Russian Federation	24.3	23.9	20.6	12.4	39.8	9.8	2.8	16.3	6.9	13.3
	24	20	10	91	6	94	77	103	76	68
Venezuela, RB	23.9	4.9	5.4	4.8	4.2	33.2	14.8	55.2	31.5	31.3
	25	122	37	112	102	30	19	27	25	38
Colombia	23.1	3.2	4.2	2.9	2.1	41.2	19.1	60.8	34.1	50.9
	26	127	42	118	121	21	7	18	19	17
Angola	23.0	9.1	11.4	5.4	9.8	12.0	1.3	34.2	6.7	6.0
	27	89	21	110	63	77	98	60	78	91
Bolivia	22.8	14.8	19.3	5.8	17.8	19.2	5.9	39.4	17.3	14.1
	28	53	12	109	25	55	55	49	45	66
Zambia	22.8	9.8	9.9	7.6	11.8	12.8	1.5	35.0	9.1	5.4
	29	86	26	107	47	72	96	57	69	92
Ecuador	22.8	4.5	2.8	7.6	3.6	60.2	18.6	70.6	70.6	81.0
	30	123	54	106	106	9	9	9	5	4
Japan	22.5	6.6	0.5	19.7	1.6	35.3	12.4	58.6	10.6	59.5
	31	111	123	70	125	27	26	24	63	14
Sri Lanka	21.3	10.7	0.5	32.4	2.7	32.5	9.0	60.7	17.9	42.5
	32	78	122	42	115	31	39	20	44	27
Jamaica	21.2	6.5	0.7	18.7	2.1	42.9	5.5	70.6	51.7	43.8
	33	113	117	72	122	18	56	10	8	23
Guatemala	21.2	8.9	1.2	23.6	4.6	43.4	10.2	67.4	45.2	50.9
	34	91	105	60	97	15	31	13	11	17
Albania	21.1	14.9	1.5	38.4	9.1	37.5	14.9	52.8	32.6	49.5
	35	52	97	35	68	25	18	31	23	20
India	21.1	28.9	0.4	89.8	5.9	23.4	7.4	40.6	20.9	24.5
	36	13	128	5	85	45	45	46	38	43
Nigeria	20.9	23.6	1.0	67.1	10.4	17.2	3.3	39.5	13.7	12.2
	37	21	109	9	57	58	69	48	52	72
Sudan	20.8	15.9	12.5	14.3	22.2	4.2	0.7	15.0	0.4	0.6
	38	46	18	89	15	111	104	107	117	118
United States	20.4	18.2	5.3	29.6	24.1	16.7	3.4	26.1	21.7	15.5
	39	36	38	47	13	61	67	70	36	61
Ukraine	20.3	39.5	2.3	95.2	33.3	19.6	2.5	66.3	4.9	4.6
	40	3	71	3	8	52	83	15	88	98

Forest resources	Growing stock in forest and other wooded land	Proportion of land area covered by forest	Forest area per capita	Energy resources	Fossil energy	Energy production	Proportion of combustible renewables and waste to total energy consumption	Net energy imports of the energy consumption
27.7	52.0	29.7	0.8	20.0	0.0	0.3	91.2	11.1
75	52	69	93	13	64	100	3	52
38.2	51.9	53.1	4.6	10.2	0.0	0.3	46.1	6.1
31	54	24	39	43	64	103	27	89
42.2	68.6	48.8	6.9	15.8	0.0	0.4	66.7	15.0
23	8	32	25	29	64	92	17	38
65.0	100.0	57.9	39.5	12.0	16.8	9.2	1.1	23.5
2	1	19	4	38	10	14	106	24
39.6	N/A	61.1	11.0	16.9	31.6	6.8	1.3	32.0
26	N/A	15	22	25	6	16	103	15
40.5	58.3	51.3	8.4	6.5	2.0	2.1	10.6	20.5
24	20	26	23	60	25	34	60	27
45.2	56.9	54.8	20.7	28.3	1.8	5.2	60.2	92.7
18	24	23	13	4	27	19	20	3
55.3	62.9	61.5	39.3	10.2	0.0	1.7	26.1	29.2
9	12	14	5	44	61	41	35	17
56.2	58.3	77.7	25.5	19.2	0.0	0.6	86.0	11.7
8	20	5	10	19	64	75	7	48
19.1	N/A	44.3	4.6	0.0	1.2	1.8	5.7	27.7
104	N/A	39	38	125	31	38	75	20
51.4	62.9	80.3	1.4	0.9	0.0	0.8	1.5	2.3
12	11	4	75	115	64	69	101	113
29.0	50.1	34.5	0.6	12.1	0.0	0.3	54.9	7.0
69	100	62	99	37	64	106	23	80
29.9	50.2	36.4	0.9	3.5	0.0	0.2	15.7	1.8
67	97	59	92	88	64	116	50	117
31.7	51.8	39.0	1.7	0.0	0.0	0.5	60.3	9.3
58	57	49	68	125	64	81	18	64
28.8	50.2	33.1	1.7	3.8	0.0	0.5	10.6	9.9
70	93	65	70	83	64	83	61	59
30.9	66.6	27.0	0.4	7.0	0.7	0.4	26.3	9.5
62	9	71	107	57	34	93	34	63
20.6	53.5	11.1	0.4	23.1	0.6	1.6	89.9	29.2
98	39	99	108	9	35	44	4	18
52.9	52.9	N/A	N/A	19.4	0.5	1.1	73.6	27.6
10	42	N/A	N/A	17	39	60	14	22
47.6	100.0	39.0	6.8	7.5	10.7	5.6	4.4	9.8
15	1	51	26	54	12	17	89	61
25.2	56.4	19.7	1.5	5.0	10.1	1.7	1.2	7.3
83	28	82	71	72	13	42	105	77

(continued)

Table 8.1 (continued)

Indicator										
	Country	REC	Land resources			Water resources				
Land area per capita			Percentage of arable land to total land area	Arable land per capita	Surface water	Annual precipitation	Groundwater	Total internal renewable water resources		
Latvia	20.3	19.5	5.4	31.5	26.3	11.8	6.1	22.5	5.1	13.6
	41	32	36	43	11	79	53	82	87	67
Singapore	20.0	0.4	0.0	1.4	0.0	64.6	N/A	85.9	N/A	43.2
	42	133	133	127	133	5	N/A	6	N/A	25
Finland	20.0	13.6	10.1	12.4	19.5	10.7	3.9	20.2	1.0	17.8
	43	64	25	92	23	89	66	94	109	57
Mozambique	19.9	8.7	5.9	11.1	10.2	12.0	2.9	35.6	3.1	6.4
	44	92	33	96	61	78	75	56	94	89
Sweden	19.8	10.2	7.8	10.6	12.9	13.9	4.6	23.2	7.0	21.0
	45	83	29	97	41	68	60	77	75	50
Cote d'Ivoire	19.7	7.7	2.8	15.3	6.7	19.6	2.7	46.4	17.1	12.2
	46	103	55	84	77	53	80	40	46	73
Chile	19.7	5.0	7.7	2.8	3.6	38.2	13.4	52.5	27.1	60.0
	47	121	30	120	108	24	21	32	30	13
Thailand	19.7	19.4	1.3	52.3	10.6	24.6	9.0	55.2	11.8	22.2
	48	33	104	21	54	42	38	27	59	48
Tanzania	19.3	11.5	3.4	22.1	11.7	12.4	1.1	38.9	4.8	4.8
	49	74	51	65	48	74	99	51	89	96
Bosnia and Herzegovina	19.2	14.7	2.4	33.3	12.5	27.6	7.7	35.0	32.6	35.1
	50	54	67	40	44	36	43	58	22	31
Korea, Rep.	19.0	8.3	0.3	26.0	1.4	26.3	7.5	44.5	19.7	33.7
	51	94	130	56	126	38	44	41	40	34
Haiti	18.9	20.0	0.5	61.5	4.6	22.2	4.6	49.2	11.2	23.8
	52	30	126	14	98	47	59	37	62	44
Moldova	18.8	35.9	1.6	93.5	23.8	1.5	N/A	N/A	N/A	1.5
	53	7	88	4	14	122	N/A	N/A	N/A	113
Dominican Republic	18.6	9.8	0.8	28.0	3.7	27.4	4.7	48.2	34.9	21.9
	54	85	113	48	105	37	58	38	18	49
Austria	18.5	11.4	1.7	28.0	7.6	23.1	10.2	38.3	10.4	33.7
	55	76	86	49	73	46	32	53	64	35
Qatar	18.5	1.1	1.1	1.9	0.3	0.2	0.0	0.0	0.7	0.2
	56	130	108	124	130	133	127	131	111	121
Croatia	18.4	11.9	2.3	27.1	9.5	29.7	18.3	38.2	28.3	34.0
	57	73	70	53	66	35	11	54	28	33
Paraguay	18.4	17.6	10.9	16.5	27.8	18.8	9.1	39.2	14.8	11.9
	58	38	23	81	9	56	37	50	49	75
Mongolia	18.4	43.2	100.0	0.5	10.2	2.5	0.2	8.2	0.5	1.1
	59	2	1	132	60	119	117	115	115	117
Georgia	18.3	5.4	2.8	10.0	4.3	30.7	10.1	34.9	35.7	42.2
	60	120	56	101	101	33	33	59	17	28

Forest resources	Growing stock in forest and other wooded land	Proportion of land area covered by forest	Forest area per capita	Energy resources	Fossil energy	Energy production	Proportion of combustible renewables and waste to total energy consumption	Net energy imports of the energy consumption
44.3	51.9	63.4	11.4	13.3	0.0	1.0	60.2	6.0
19	53	12	20	35	64	63	20	93
2.2	N/A	3.8	0.0	0.3	0.0	0.1	1.3	0.0
128	N/A	114	131	123	64	122	104	126
59.8	56.6	85.4	28.7	6.9	0.0	3.3	24.2	5.9
6	26	2	8	58	64	30	38	95
42.8	54.3	57.8	11.3	20.0	0.0	0.5	87.4	15.6
22	34	20	21	14	64	78	6	34
56.5	60.2	80.5	20.8	7.5	0.0	3.6	24.9	8.2
7	16	3	12	56	64	28	37	74
33.8	58.0	38.3	3.6	18.5	0.0	0.5	81.1	13.9
49	22	53	51	20	64	79	9	41
29.9	59.1	25.6	6.6	4.1	0.0	0.5	17.0	3.7
66	17	75	27	78	64	77	48	105
33.7	52.4	43.5	1.9	5.7	0.3	1.0	20.6	7.6
50	46	42	64	64	47	61	41	75
35.1	53.7	43.7	5.0	20.9	0.0	0.4	94.7	11.8
41	38	41	34	11	64	94	2	45
36.6	51.1	50.2	4.1	2.1	0.0	1.2	N/A	8.6
36	73	30	45	106	64	55	N/A	70
45.8	51.8	75.0	0.9	0.9	0.0	0.9	1.5	2.1
17	56	7	91	113	59	64	102	114
16.7	50.0	4.3	0.1	16.4	0.0	0.2	74.8	8.9
112	112	113	125	27	64	117	13	69
20.8	50.1	13.9	0.8	23.2	0.0	64.2	3.5	0.3
95	98	90	95	8	64	2	93	121
34.6	50.4	47.8	1.4	5.1	0.0	0.2	22.9	2.8
45	89	33	74	69	64	114	40	109
39.1	53.4	55.3	3.2	5.0	0.0	1.4	19.1	4.3
29	40	22	54	71	64	51	44	102
0.0	N/A	0.0	0.0	60.5	35.6	100.0	0.0	99.1
133	N/A	131	132	1	3	1	120	2
32.4	51.2	40.3	3.0	2.3	0.0	1.0	5.0	6.2
55	69	47	55	104	64	62	84	87
26.1	0.0	51.3	18.5	13.5	0.0	1.1	51.5	18.9
78	121	26	14	34	64	58	24	30
27.6	54.3	8.2	26.9	11.7	0.0	5.5	4.8	58.5
76	33	106	9	39	64	18	85	7
35.2	51.4	46.2	4.3	3.4	0.0	0.3	12.3	5.2
40	63	38	43	92	64	102	58	97

(continued)

Table 8.1 (continued)

Indicator										
	Country	REC	Land resources			Water resources				
Land area per capita			Percentage of arable land to total land area	Arable land per capita	Surface water	Annual precipitation	Groundwater	Total internal renewable water resources		
El Salvador	18.3	18.1	0.6	54.4	5.0	39.6	13.1	59.4	42.7	43.2
	61	37	120	19	95	22	23	22	14	26
Guinea	18.2	11.5	4.3	19.6	13.0	33.6	9.9	56.0	22.2	46.4
	62	75	40	71	40	29	34	25	33	22
Switzerland	17.9	6.2	0.9	17.0	2.4	32.0	14.4	53.8	9.0	50.9
	63	117	110	78	118	32	20	30	70	19
Estonia	17.9	16.5	5.7	25.2	22.1	13.6	3.0	22.6	13.6	15.1
	64	44	34	58	16	70	74	80	54	64
France	17.8	21.6	1.5	56.9	13.1	20.9	4.1	29.5	31.5	18.4
	65	28	98	17	37	51	65	64	25	55
Benin	17.7	16.5	2.2	38.7	13.3	11.5	2.5	36.5	2.3	4.7
	66	43	74	33	36	83	82	55	102	97
Ghana	17.6	14.1	1.6	35.7	9.0	17.0	2.5	42.2	16.6	6.7
	67	58	90	37	69	60	84	43	47	88
Denmark	17.5	36.8	1.3	100.0	21.0	11.7	0.9	24.2	14.6	7.1
	68	5	101	1	18	80	100	73	50	86
Togo	17.5	29.8	1.6	78.3	19.1	17.5	2.8	41.4	15.1	10.7
	69	11	94	7	24	57	78	45	48	78
Kuwait	17.0	0.8	1.1	0.9	0.2	1.1	0.0	4.1	0.1	0.0
	70	132	107	128	132	126	127	123	123	133
Cuba	16.9	22.1	1.7	56.6	14.8	19.2	3.2	46.7	8.7	18.1
	71	27	87	18	31	54	71	39	71	56
Germany	16.9	19.7	0.7	57.8	6.8	15.8	4.7	24.3	18.8	15.5
	72	31	116	16	76	63	57	72	43	62
Lithuania	16.8	29.4	3.7	59.1	33.8	10.7	4.3	23.2	2.7	12.5
	73	12	48	15	7	90	63	78	97	71
Kazakhstan	16.7	36.6	29.4	15.0	68.0	3.0	0.5	8.6	1.8	1.2
	74	6	9	87	2	116	112	113	104	116
Zimbabwe	16.6	12.0	5.4	17.9	15.0	6.7	0.5	22.5	2.2	1.6
	75	70	35	75	30	102	111	84	103	112
Senegal	16.4	15.5	2.7	33.8	14.1	8.8	2.1	23.8	2.6	6.8
	76	49	57	39	33	100	90	75	99	87
Belarus	16.4	23.6	3.8	46.2	27.3	11.6	3.1	21.4	12.7	9.3
	77	22	45	25	10	82	73	88	57	82
Uruguay	16.4	16.5	9.3	17.4	25.1	21.9	8.6	43.2	18.9	17.0
	78	42	27	76	12	49	40	42	42	58
Romania	16.3	26.6	1.9	66.3	19.7	11.7	9.9	22.4	5.2	9.3
	79	14	82	10	22	81	35	85	85	81
Ethiopia	16.1	10.6	2.1	24.6	8.0	10.5	1.3	31.8	2.8	6.2
	80	79	77	59	70	91	97	62	96	90

Forest resources	Growing stock in forest and other wooded land	Proportion of land area covered by forest	Forest area per capita	Energy resources	Fossil energy	Energy production	Proportion of combustible renewables and waste to total energy consumption	Net energy imports of the energy consumption
6.5	N/A	16.0	0.3	5.1	0.0	0.4	19.7	6.8
126	N/A	85	110	68	64	99	43	83
29.2	51.5	31.0	4.4	0.0	0.0	N/A	N/A	N/A
68	61	67	41	125	64	N/A	N/A	N/A
30.3	51.3	36.4	1.1	3.4	0.0	1.6	9.6	6.0
64	66	58	83	91	64	45	64	91
43.3	51.4	61.1	11.5	6.1	0.0	3.7	15.8	11.2
21	65	16	19	61	64	27	49	51
31.5	57.8	34.2	1.7	3.0	0.0	2.1	6.4	6.5
59	23	63	67	100	64	35	73	85
34.9	50.5	46.9	3.5	13.2	0.0	0.2	60.3	7.1
43	85	35	52	36	64	111	19	79
25.6	50.9	24.8	1.3	15.1	0.0	0.3	68.4	9.1
82	75	77	76	30	64	105	16	66
21.3	50.3	15.1	0.7	7.9	0.4	4.2	19.9	15.4
90	91	87	97	50	44	23	42	35
2.4	0.0	5.8	0.3	19.4	0.0	0.4	88.6	10.5
127	121	111	111	16	64	98	5	56
0.2	0.0	0.4	0.0	55.0	100.0	49.4	0.0	51.3
131	121	126	128	2	1	3	120	8
28.6	50.8	32.0	1.8	3.6	0.0	0.5	12.4	6.0
71	78	66	65	86	64	87	57	92
33.3	60.6	37.2	0.9	5.3	6.8	1.6	9.6	5.0
52	15	54	90	67	15	46	63	99
33.1	51.4	40.5	5.0	3.6	0.0	0.5	15.4	2.7
53	62	45	32	84	64	88	51	111
16.3	51.1	1.4	1.4	17.3	32.8	9.7	0.1	26.7
114	71	120	73	23	5	11	114	23
36.6	51.8	46.3	8.4	16.1	0.5	0.7	69.8	11.3
37	57	37	24	28	37	72	15	50
37.2	51.0	51.3	4.6	10.9	0.0	0.1	49.6	6.0
33	74	28	37	41	64	119	25	94
38.4	54.8	50.0	6.4	1.8	0.0	0.4	6.7	1.8
30	30	31	28	110	64	91	71	118
21.0	50.4	12.0	3.7	7.8	0.0	0.6	33.1	6.1
93	88	97	49	51	64	74	29	88
30.4	54.2	33.6	2.2	4.6	0.3	1.3	12.7	9.9
63	35	64	62	75	46	53	56	58
21.2	50.8	14.2	1.0	21.9	0.0	0.4	100.0	12.0
91	77	88	89	10	64	96	1	44

(continued)

Table 8.1 (continued)

Indicator										
	Country	REC	Land resources			Water resources				
Land area per capita			Percentage of arable land to total land area	Arable land per capita	Surface water	Annual precipitation	Groundwater			
Serbia	16.1	26.4	2.1	63.9	21.2	12.1	N/A	19.4	N/A	4.8
	81	15	76	12	17	76	N/A	97	N/A	95
Italy	16.1	13.7	0.8	39.1	5.2	21.9	6.6	28.9	21.0	31.3
	82	63	112	32	92	48	48	67	37	38
Hungary	16.0	31.6	1.6	82.4	20.6	11.4	12.4	20.5	9.5	3.3
	83	8	91	6	20	84	27	91	68	103
Netherlands	15.9	16.7	0.3	52.4	2.9	24.3	29.1	32.5	19.2	16.4
	84	40	129	20	112	43	3	61	41	59
Slovak Republic	15.8	19.0	1.6	49.0	12.1	14.5	11.2	28.5	5.1	13.2
	85	34	93	23	46	67	29	68	86	69
Bulgaria	15.6	22.5	2.6	50.7	20.7	10.3	2.0	21.1	8.5	9.8
	86	25	59	22	19	92	91	89	73	80
Czech Republic	15.6	25.6	1.3	69.5	14.1	9.1	1.8	23.4	2.6	8.6
	87	16	103	8	34	96	95	76	98	85
Poland	15.1	23.2	1.4	61.9	13.5	9.5	2.2	20.9	5.9	8.9
	88	23	100	13	35	95	89	90	82	83
China	14.8	7.7	1.2	20.2	3.9	13.4	3.2	22.5	12.8	15.2
	89	105	106	67	103	71	72	83	56	63
Ireland	14.7	12.1	2.7	26.0	10.9	26.3	8.0	38.7	22.5	35.9
	90	69	58	55	52	39	42	52	32	30
Madagascar	14.7	7.3	4.9	10.1	7.7	25.2	6.2	51.8	13.6	29.2
	91	108	39	100	72	40	52	35	53	41
Botswana	14.6	22.1	50.3	0.6	6.0	3.8	0.2	14.5	0.4	0.2
	92	26	5	130	82	113	118	108	116	124
Mexico	14.4	11.0	3.0	22.1	10.4	12.2	2.3	25.8	10.3	10.6
	93	77	53	64	56	75	88	71	65	79
Greece	14.4	13.8	2.0	32.8	10.4	15.7	6.0	22.6	11.5	22.7
	94	62	78	41	59	64	54	81	60	47
Portugal	14.3	8.1	1.5	20.2	4.8	16.4	9.1	29.2	6.3	21.0
	95	97	96	68	96	62	36	65	80	51
United Kingdom	14.3	14.4	0.7	42.4	4.5	21.0	6.5	41.7	5.8	30.2
	96	56	118	30	100	50	50	44	84	40
Spain	14.1	17.3	1.9	42.5	12.7	11.0	2.4	21.9	8.6	11.2
	97	39	81	29	43	87	86	86	72	76
Azerbaijan	14.0	15.1	1.6	38.6	9.6	9.1	4.2	15.9	11.3	5.0
	98	50	92	34	65	97	64	104	61	94
Libya	13.9	24.0	49.4	1.5	12.8	0.5	0.0	1.9	0.0	0.0
	99	19	6	125	42	132	126	129	127	131
Argentina	13.5	25.0	12.1	23.5	43.7	8.8	3.2	20.4	6.7	5.1
	100	17	19	62	4	99	70	93	77	93

Forest resources	Growing stock in forest and other wooded land	Proportion of land area covered by forest	Forest area per capita	Energy resources	Fossil energy	Energy production	Proportion of combustible renewables and waste to total energy consumption	Net energy imports of the energy consumption
31.0	51.3	37.0	2.7	3.2	0.0	1.5	7.1	8.6
61	68	55	58	94	64	49	69	71
31.3	54.2	36.7	1.1	1.6	0.1	0.5	5.5	2.1
60	36	57	87	111	58	85	77	115
26.3	51.1	26.4	1.4	3.4	2.3	1.1	7.8	5.4
77	72	72	72	90	23	57	67	96
20.2	50.2	12.7	0.2	4.0	0.0	4.2	4.5	10.6
101	95	95	121	82	60	24	88	54
35.1	51.6	47.1	2.5	2.2	0.0	1.2	5.8	4.3
42	60	34	59	105	64	56	74	101
33.9	52.0	43.0	3.8	4.0	4.3	1.4	5.5	7.4
47	51	44	48	81	19	50	79	76
32.4	52.3	40.3	1.8	4.1	1.4	3.0	6.4	9.0
56	47	46	66	79	30	32	72	68
31.8	56.2	36.1	1.7	4.1	2.0	1.8	8.0	8.4
57	29	60	69	80	26	40	66	72
39.2	94.5	26.3	1.1	4.5	1.2	1.7	9.1	11.6
28	5	73	84	76	32	43	65	49
20.5	50.2	12.7	1.1	0.9	0.0	0.4	2.7	1.6
99	94	94	80	114	64	89	96	119
28.2	56.5	25.2	4.1	0.0	0.0	N/A	N/A	N/A
74	27	76	44	125	64	N/A	N/A	N/A
36.5	52.3	23.2	38.6	5.7	0.0	0.6	23.1	6.1
38	48	78	6	63	64	76	39	90
34.4	58.7	38.9	3.9	5.5	0.4	N/A	5.0	16.2
46	19	52	46	66	41	N/A	83	32
30.2	50.6	35.7	2.4	2.9	3.7	0.8	4.2	4.2
65	82	61	60	102	20	65	90	103
33.6	50.6	44.3	2.3	3.5	0.0	0.5	14.5	2.9
51	81	40	61	87	64	80	53	108
21.0	51.1	14.0	0.3	2.9	0.2	2.4	3.1	9.3
92	70	89	109	101	50	33	95	65
33.9	52.8	43.1	2.8	1.9	0.2	0.8	5.7	3.3
48	44	43	56	108	53	71	76	106
20.6	50.4	13.3	0.7	13.8	2.2	7.3	0.0	70.8
97	87	92	96	32	24	15	120	5
15.1	50.0	0.1	0.2	19.6	18.8	14.1	1.0	59.2
123	109	128	115	15	9	9	107	6
24.2	58.9	12.5	5.0	3.5	0.1	2.0	3.6	13.4
84	18	96	33	89	54	36	92	42

(continued)

Table 8.1 (continued)

Indicator										
	Country	REC	Land resources			Water resources		Surface water	Annual precipitation	Groundwater
Land area per capita			Percentage of arable land to total land area	Arable land per capita	Water resources	Water resources				
Macedonia, FYR	13.4	12.0	2.2	27.7	9.4	10.8	N/A	N/A	N/A	10.8
	101	71	73	52	67	88	N/A	N/A	N/A	77
Luxembourg	13.4	14.2	0.9	40.5	5.6	17.1	12.9	31.7	4.4	19.5
	102	57	111	31	90	59	24	63	90	53
Belgium	13.3	15.1	0.5	46.2	3.5	14.9	6.5	29.0	4.2	20.0
	103	51	125	24	110	66	49	66	92	52
Namibia	13.1	30.8	63.8	1.5	16.1	2.7	0.6	9.7	0.3	0.4
	104	9	2	126	28	117	109	111	119	120
Lebanon	12.8	6.1	0.4	18.4	1.2	24.0	4.4	22.9	45.0	23.7
	105	119	127	73	128	44	62	79	13	45
Turkey	12.7	18.2	1.9	45.2	13.1	12.7	2.7	20.5	12.9	14.9
	106	35	84	27	39	73	79	92	55	65
Kenya	12.3	7.7	2.4	16.3	6.2	6.3	0.6	21.8	0.8	1.8
	107	104	66	82	80	105	108	87	110	110
Pakistan	11.7	15.6	0.8	45.5	5.5	8.9	4.4	17.3	10.2	3.6
	108	48	115	26	91	98	61	100	67	102
Saudi Arabia	11.0	7.7	13.8	2.3	5.2	0.5	0.0	2.0	0.1	0.1
	109	102	17	122	93	131	125	128	124	130
United Arab Emirates	11.0	1.1	1.9	0.9	0.3	0.7	0.0	2.6	0.2	0.1
	110	131	83	129	131	129	124	127	121	129
Armenia	10.3	10.3	1.6	25.5	6.5	13.9	1.8	19.9	21.8	12.1
	111	81	89	57	79	69	94	96	34	74
South Africa	9.8	10.1	4.3	16.7	11.1	4.9	0.4	16.8	0.5	1.9
	112	84	41	80	50	107	113	102	114	109
Turkmenistan	9.8	13.9	16.6	6.7	17.4	1.9	1.9	5.7	0.1	0.2
	113	61	13	108	26	120	92	119	125	126
Eritrea	9.7	6.6	3.3	11.4	6.0	4.5	0.7	15.2	0.7	1.4
	114	112	52	94	83	109	105	105	112	114
Tajikistan	9.4	6.2	3.6	10.2	5.7	15.0	7.3	23.9	6.1	22.9
	115	116	50	99	87	65	46	74	81	46
Iran, Islamic Rep.	9.1	10.3	3.9	18.1	11.0	4.3	0.7	8.3	4.3	4.0
	116	80	44	74	51	110	103	114	91	101
Kyrgyz Republic	9.0	9.1	6.2	11.1	10.8	11.2	2.6	18.8	10.2	12.9
	117	90	32	95	53	86	81	98	66	70
Tunisia	8.7	14.0	2.6	30.9	12.4	2.6	0.2	7.4	1.4	1.4
	118	59	60	44	45	118	116	116	105	115
Morocco	8.5	13.5	2.5	30.1	11.5	4.7	0.5	11.7	3.2	3.3
	119	65	65	46	49	108	110	109	93	104

Forest resources	Growing stock in forest and other wooded land	Proportion of land area covered by forest	Forest area per capita	Energy resources	Fossil energy	Energy production	Proportion of combustible renewables and waste to total energy consumption	Net energy imports of the energy consumption
34.7	50.2	46.6	3.4	2.9	0.0	0.8	7.6	7.0
44	92	36	53	103	64	67	68	81
25.6	50.1	N/A	1.2	0.9	0.0	0.3	3.9	0.2
81	102	N/A	79	116	64	108	91	125
25.8	50.5	26.3	0.4	2.1	0.0	1.5	5.5	3.2
79	84	74	105	107	64	48	80	107
25.8	50.5	10.3	21.7	3.2	0.0	0.1	13.9	2.4
80	83	102	11	96	64	118	54	112
21.3	50.0	15.7	0.2	0.5	0.0	0.0	2.0	0.3
89	114	86	116	122	64	123	98	124
23.7	54.6	17.4	1.1	1.8	0.4	0.4	4.6	3.8
86	31	84	85	109	40	90	86	104
18.6	51.9	7.1	0.6	17.3	0.0	0.4	77.9	10.2
107	54	109	101	24	64	95	11	57
16.2	50.5	2.5	0.1	8.9	0.2	0.4	36.5	9.6
115	86	117	127	48	51	97	28	62
15.3	50.0	0.5	0.2	20.8	26.0	19.8	0.0	40.7
121	109	125	114	12	7	7	118	12
16.9	50.0	4.5	0.3	23.9	33.8	23.7	0.0	36.3
111	105	112	113	7	4	6	116	13
19.4	50.1	10.6	0.6	0.8	0.0	0.3	0.0	4.4
103	101	100	100	118	64	104	115	100
19.6	52.0	8.9	1.3	8.1	8.3	3.3	11.2	15.1
102	49	104	77	49	14	29	59	37
20.8	50.0	10.3	5.6	7.5	0.4	9.3	0.0	27.7
96	106	101	30	55	42	13	120	21
7.7	0.0	17.7	2.0	18.2	0.0	0.1	83.6	9.9
125	121	83	63	21	64	120	8	60
16.5	50.0	3.4	0.4	1.3	0.0	0.2	0.0	8.2
113	114	115	106	112	64	112	120	73
19.0	51.6	8.0	1.0	6.6	5.6	4.8	0.2	21.4
105	59	107	88	59	17	20	109	26
17.8	50.1	5.9	1.2	0.9	0.0	0.2	0.1	5.0
110	99	110	78	117	64	113	110	98
18.3	50.1	7.7	0.7	4.9	0.2	0.8	15.0	10.6
109	102	108	98	73	49	68	52	53
20.9	50.6	13.5	1.1	0.7	0.0	0.0	3.1	0.5
94	80	91	81	119	64	125	94	120

(continued)

Table 8.1 (continued)

Indicator										
	Country	REC	Land resources			Water resources				
Land area per capita			Percentage of arable land to total land area	Arable land per capita	Surface water	Annual precipitation	Groundwater	Total internal renewable water resources		
Niger	8.5	24.7	14.2	19.9	43.5	1.4	0.3	5.1	0.2	0.1
	120	18	15	69	5	123	115	121	120	127
Mali	8.4	14.4	13.9	9.4	20.3	3.8	0.8	9.7	2.3	2.5
	121	55	16	102	21	112	102	110	101	106
Cyprus	8.3	6.2	1.5	15.2	3.5	7.0	0.7	16.9	6.4	4.3
	122	115	99	86	109	101	106	101	79	99
Algeria	7.9	9.3	11.9	5.2	9.8	0.8	0.0	3.0	0.0	0.2
	123	88	20	111	64	127	121	126	126	122
Mauritania	7.9	22.9	52.4	0.6	5.9	0.8	0.1	3.1	0.0	0.0
	124	24	4	131	84	128	120	125	128	132
Lesotho	7.7	8.1	2.5	17.1	6.6	9.9	1.9	26.7	2.3	8.7
	125	98	64	77	78	93	93	69	100	84
Uzbekistan	7.5	8.2	2.6	17.0	6.9	3.8	2.8	7.3	2.9	1.9
	126	96	61	79	75	114	76	117	95	108
Israel	7.3	7.8	0.5	23.6	1.8	6.3	0.3	15.0	8.1	1.7
	127	101	124	61	123	104	114	106	74	111
Oman	7.2	8.0	19.6	0.0	0.5	1.3	0.0	4.2	0.6	0.2
	128	100	11	133	129	125	123	122	113	123
Syrian Arab Republic	6.5	16.5	1.6	42.5	10.4	6.4	2.5	8.6	12.5	2.0
	129	41	95	28	58	103	85	112	58	107
Iraq	6.2	7.3	2.4	15.5	5.7	3.7	2.4	7.3	1.0	4.1
	130	107	69	83	88	115	87	118	108	100
Yemen, Rep.	6.0	3.3	3.8	3.6	2.2	1.6	0.0	5.7	0.4	0.2
	131	126	46	116	120	121	122	120	118	125
Egypt, Arab Rep.	4.7	2.8	2.1	4.7	1.6	0.7	0.9	1.7	0.1	0.1
	132	128	75	113	124	130	101	130	122	128
Jordan	4.0	2.4	2.6	3.2	1.3	1.4	0.1	3.8	1.1	0.4
	133	129	63	117	127	124	119	124	107	119
Highest score	36.6	57.9	100.0	100.0	100.0	71.3	100.0	100.0	100.0	100.0
Lowest score	4.0	0.4	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0
Average score	17.8	14.7	7.4	27.2	12.0	20.7	7.3	34.8	17.5	22.4
Standard deviation	6.8	9.6	14.2	23.3	13.2	17.9	10.6	23.5	20.9	23.7

Note: Among the two lines of figures for the countries and regions, the first line is the scores and

Forest resources	Growing stock in forest and other wooded land	Proportion of land area covered by forest	Forest area per capita	Energy resources	Fossil energy	Energy production	Proportion of combustible renewables and waste to total energy consumption	Net energy imports of the energy consumption
15.6	50.0	1.1	0.5	0.0	0.0	N/A	N/A	N/A
117	107	123	103	125	64	N/A	N/A	N/A
21.6	50.7	11.9	5.5	0.0	0.0	N/A	N/A	N/A
88	79	98	31	125	64	N/A	N/A	N/A
24.1	50.0	22.0	1.1	0.5	0.0	0.1	2.0	0.3
85	108	80	86	121	64	121	99	123
15.5	50.3	0.7	0.3	8.9	0.8	4.3	0.2	47.7
120	90	124	112	46	33	22	108	9
15.3	50.0	0.3	0.5	0.0	0.0	0.0	N/A	N/A
122	114	127	104	125	64	126	N/A	N/A
15.7	50.0	1.7	0.1	0.0	0.0	N/A	N/A	N/A
116	118	119	122	125	64	N/A	N/A	N/A
18.9	50.1	9.0	0.8	3.1	0.1	2.0	0.0	16.0
106	102	103	94	97	57	37	119	33
18.4	50.0	8.3	0.1	0.5	0.0	0.5	0.1	2.0
108	113	105	123	120	64	84	111	116
0.0	0.0	0.0	0.0	17.6	4.9	26.2	0.0	46.2
132	121	130	130	22	18	5	120	10
1.9	N/A	3.2	0.2	3.0	0.3	1.4	0.0	16.2
129	N/A	116	119	99	45	52	117	31
0.9	0.0	2.2	0.2	11.4	11.9	4.0	0.1	42.7
130	121	118	118	40	11	25	113	11
15.5	50.0	1.2	0.2	6.0	0.2	0.8	1.6	35.3
119	114	122	120	62	48	66	100	14
15.0	50.0	0.1	0.0	3.2	0.1	1.1	2.3	15.3
124	109	129	129	95	55	59	97	36
15.6	50.0	1.3	0.1	0.1	0.0	0.0	0.1	0.3
118	118	121	124	124	64	124	112	122
87.1	100.0	100.0	100.0	60.5	100.0	100.0	100.0	100.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
30.0	52.7	31.8	6.6	8.9	3.5	4.4	22.7	15.8
14.7	15.6	23.3	13.1	9.5	11.5	12.3	27.9	19.2

the second line is the rankings of the indicators



Fig. 8.1 REC scores of six continents & top three countries of each continent in 2012

To compare and analyze the REC levels of all the countries in a more visual way, the REC scores are displayed in Fig. 8.2. According to Fig. 8.2, the REC scores of the countries are concentrated, mostly in 10–30 points (up to 104 countries, accounting for 78.2 % of the total), showing little differences. Among the developed countries, Norway scores the highest, 30.4 points, and ranks 6th; among the developing countries, Myanmar scores the highest, 36.6 points. They have little difference.

8.2 Factor Scores and Contribution Rates of REC

Table 8.1 lists the evaluation results of the subordinate indicators of REC and displays the scores and rankings of 4 pillars and 14 individual indicators of REC in 2012 so as to analyze the influences of the pillars and individual indicators on REC of the countries.

On pillars, water resources enjoys the highest standard deviation, hitting 17.9, indicating that this indicator has the largest differences among the countries and is the most primary factor causing REC differences among the countries. The indicator of forest resources also has relatively high standard deviation, 14.7, contributing a lot to REC differences among the countries. Land resources and energy resources have small standard deviations, respectively 9.6 and 9.5, indicating they have small influence on REC differences among the countries. Overall, the countries have little differences on REC. Such differences are mainly caused by the differences of water resources and forest resources, which play the greatest part; two indicators, land resources and energy resources, also play a role, with less contribution. Hereafter, all the countries shall keep on great efforts in water resources and forest resources

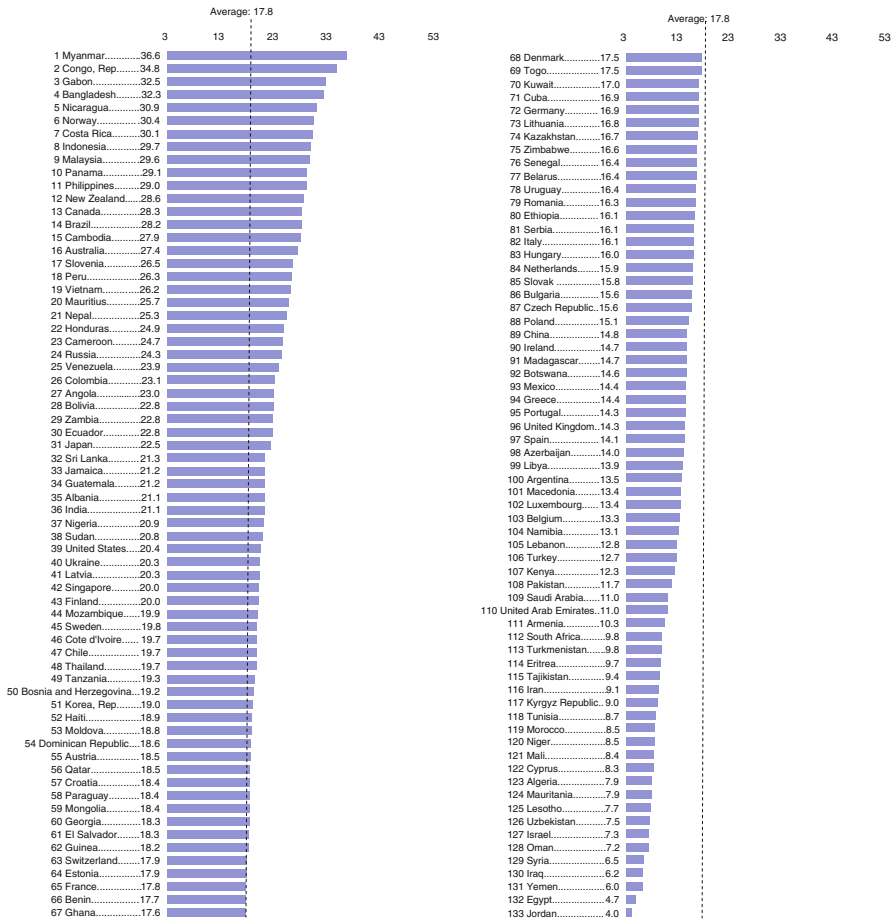


Fig. 8.2 Rankings and scores of REC 2012

to achieve the effective and rapid improvement of REC and narrow the gap with the other countries, and meanwhile, pay close attention to enhance the competitiveness of land resources and energy resources to accelerate the improvement of REC.

On individual indicators, proportion of combustible renewables and waste to total energy consumption enjoys the highest standard deviation, hitting 27.9, indicating that this indicator has very large differences among the countries and is the most primary factor causing REC differences among the countries. The indicators of total internal renewable water resources, annual precipitation, percentage of arable land to total land area and proportion of land area covered by forest also have high standard deviation, 23.7, 23.5, 23.3 and 23.3 respectively, contributing a lot to REC differences among the countries. The other indicators have relatively low standard deviation, indicating they have less influence on REC differences among the countries.

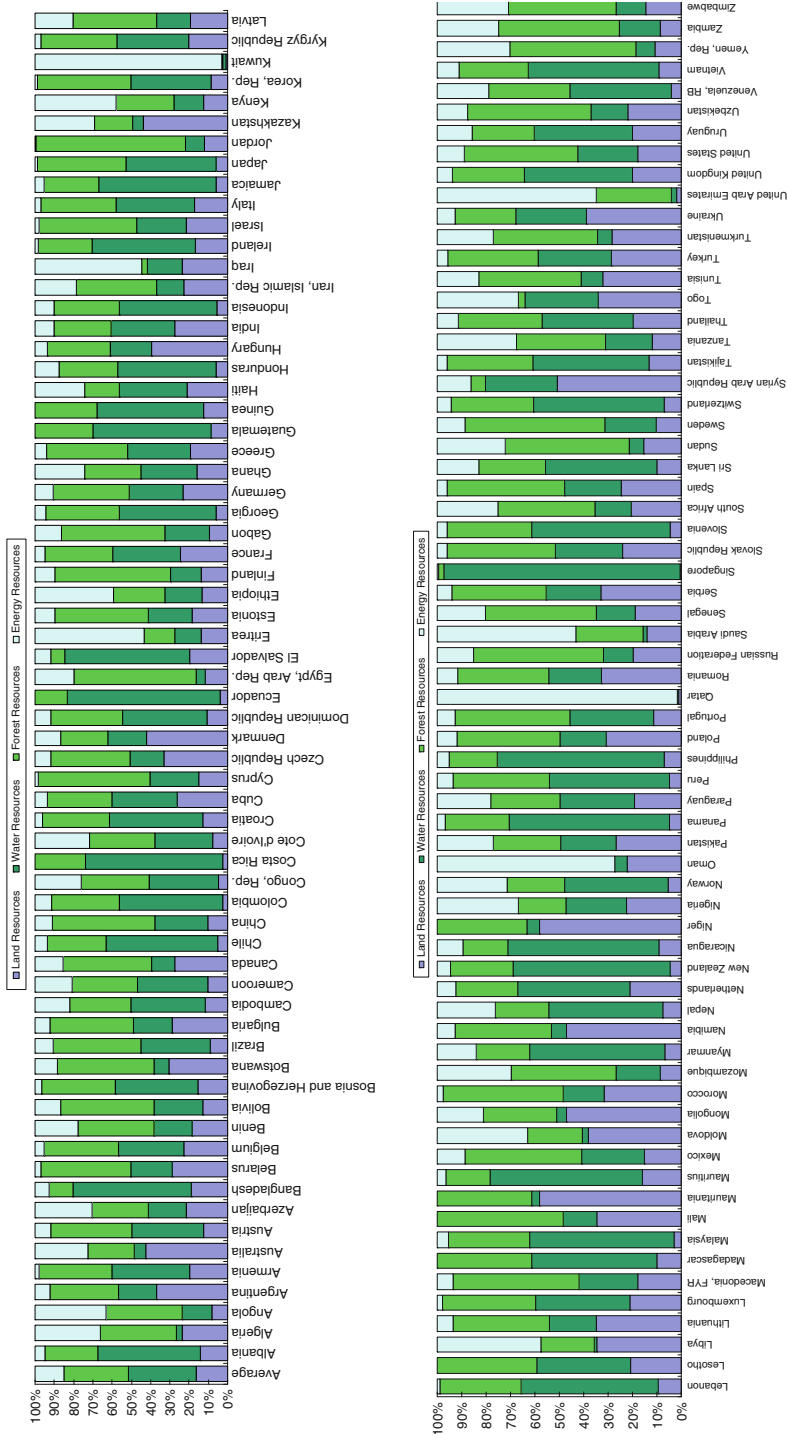


Fig. 8.3 Contribution rates of pillars of REC 2012

To analyze the contribution of the pillars to REC, firstly multiply the scores of the pillars by respective weights, then convert them into the scores at sub-index and finally divide them by the total score of sub-index to get the contribution rates of the pillars. Thus, we could find the contribution of each pillar to the sub-index more visually, as shown in Fig. 8.3.

According to Fig. 8.3, forest resources contributes the most to REC with the average contribution rate of 33.7 %; the contribution rate of water resources the next, 16.5 %; energy resources the least, 15.0 %. Some countries enjoy very high contribution rates of forest resources, even above 60 %, e.g. Egypt and Jordan. And some countries have very high contribution rates of water resources, above 60 %, e.g. Singapore, Ecuador, El Salvador and Philippines. Therefore, to enhance REC, the countries shall focus specially on the competitiveness of forest resources and water resources, while not ignoring the competitiveness of land resources and energy resources.

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