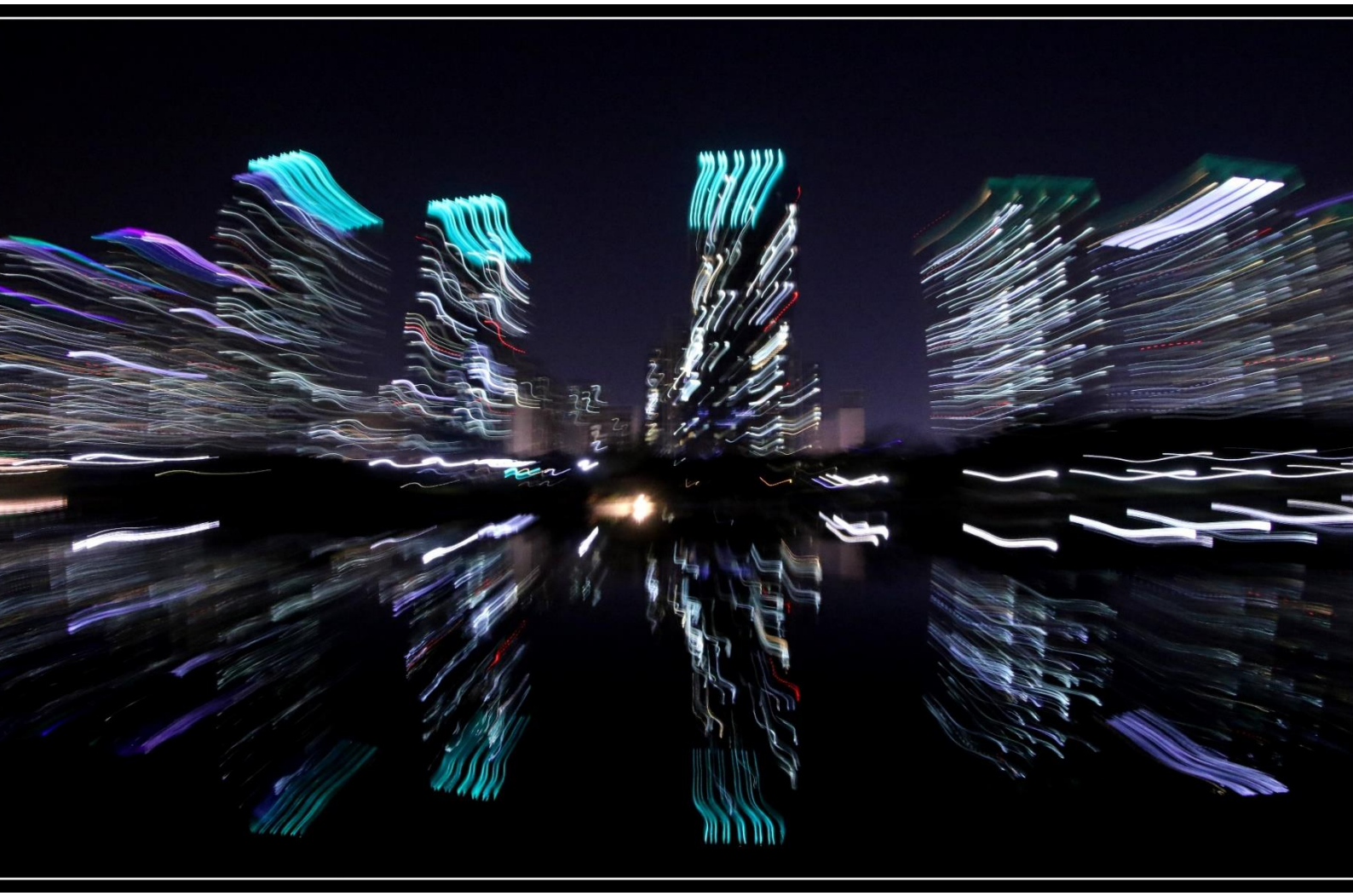
the global sustainable competitiveness index 2019



the *REAL* competitiveness index

About this Report

The Sustainable Competitiveness Report, 8th edition

December 2019

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All artwork by Yake – www.yakepics.com

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About SolAbility

SolAbility is an independent sustainability think-tank and advisory, with presence in Korea and Switzerland.

SolAbility is the maker of 3 DJSI Super-Sector Leaders. We have designed and implemented the sustainable management for GS Engineering & Construction (DJSI Global Industry leader 2012), Korea Telecom (DJSI Global Industry Leader 2011-2013, 2015), and Lotte Shopping (DJSI Global Industry Leader 2011-2015).

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1 Sustainable Competitiveness

What?

The Global Sustainable Competitiveness Index (GSCI) measures the total competitiveness – now, and the potential into the future – of nation-economies. It is based on 116 quantitative – not qualitative! - indicators to exclude any subjectivity.

Sustainable competitiveness is the ability to generate and sustain inclusive wealth without diminishing the future capability of sustaining or increasing current wealth levels.

The GSCI is the most comprehensive measurement of the competitiveness of nation-states - both as-is, and with respective to future potential.

Why?

GDP and other measurements based on economic indicators do not measure real competitiveness. To counter the lack of integral competitiveness measurement of nations, the GSCI integrates all three dimensions of sustainable development: the environment, the society, the economy. Because development that is not sustainable is not development. It is called regression.

How?

The GSCI is based on 116 measurable and comparable quantitative indicators. Quantitative indicators can be measured and exclude subjectivity associated with qualitative indicators. The methodology was originally developed based on ESG frameworks to evaluate corporate sustainability.

The sustainable competitiveness model is based on 5 pillars of equal importance:

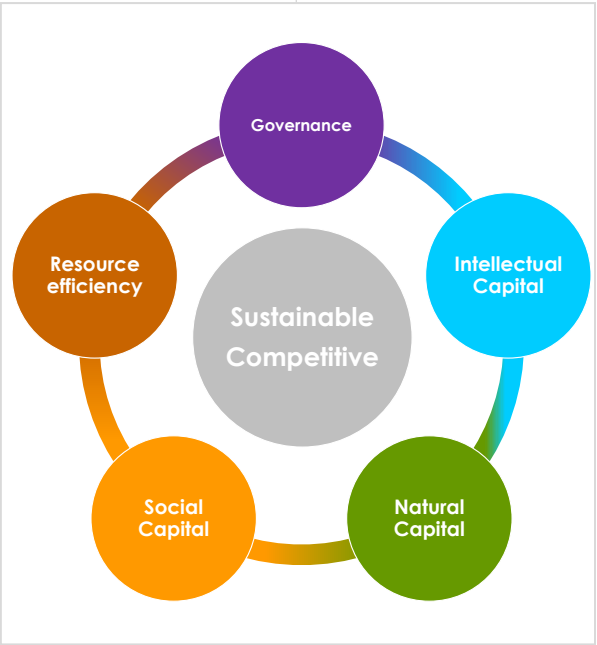
Natural Capital: the given natural environment, including the availability of resources, and the level of the depletion of those resources.

Social Capital: health, security, freedom, equality and life satisfaction within a country.

Resource Management: the efficiency of using available resources as a measurement of operational competitiveness in a resource-constraint World.

Intellectual Capital: the capability to generate wealth and jobs through innovation and value-added industries in the globalised markets

Governance Efficiency: Results of core state areas and investments – infrastructure, market and employment structure, the provision of a framework for sustained and sustainable wealth generation



1.1 Key Take-aways: Competitiveness Index 2019:

Scandinavia, Northern Europe on Top – Least developed Africa behind:

- The top 5 spots are occupied by Scandinavia: Sweden is leading the Sustainable Competitiveness Index – followed by the other 4 the Scandinavian nations.
- The top 20 are dominated by Northern European countries, including the Baltic states
- Of the top twenty nations only two are not European – New Zealand on 12, and Canada on 19.
- Germany ranks 15, the UK 17, and the World's largest economy, the US, is ranked 34. The US ranks particularly low in resource efficiency, but also social capital – potentially undermining the global status of the US in the future
- Of the large emerging economies (BRICs), China is ranked 37, Brazil 49, Russia 51, and India 130.
- Some of the least developed nations have a considerable higher GSCI ranking than their GDP would suggest (e.g. Laos, Timor, Burma, Bhutan, Suriname…)
- Asian nations (South Korea, Japan, Singapore, and China) lead the Intellectual Capital ranking. However, achieving sustained prosperity in these countries might be compromised by Natural Capital constraints and current high resource intensity/low resource efficiency
- The Social Cohesion ranking is headed by Northern European (Scandinavian) countries, indicating that Social Cohesion is the result of economic growth combined with a country-wide social consensus

The Sustainable Competitiveness World Map 2019

The Sustainable Competitiveness World Map. Dark areas indicate high competitiveness, light areas low competitiveness

1.2 Sustainable vs. Conventional Competitiveness

Conventional Competitiveness: GDP measurements, the WEF Index

The success of nations currently is mostly expressed in their economic output – GDP, and GDP per capita, GDP growth. The GDP or GNI, however, are limited to the current economic output, and do not evaluate underlying structures.

The best-know competitiveness ranking is the WEF's Competitiveness Index. However, the WEF index is flawed, both methodically and in terms of indicators considered. It is therefore not really surprising that the Index results rise eyebrows. We are all aware that the US is a big economy – but the 2nd most competitive economy? Please. Yes, the US has MS, Google and precision military hardware, people don't buy American cars because they are not competitive – and that's all. Here are some of the most striking differences between the WEF-Index and the Global Sustainable Competitiveness Index:

	Rank		
Country	**GSCI**	**WEF**	**+/-**
Sweden	1	8	+7
Finland	2	11	+9
Iceland	3	26	+23
Denmark	4	10	+6
Norway	6	17	+11
Switzerland	5	5	-
Estonia	7	31	+24
New Zealand	12	19	+7
Germany	15	7	-8
United Kingdom	17	9	-8
France	20	15	-5
Japan	25	6	-19

	Rank		
Country	**GSCI**	**WEF**	**+/-**
South Korea	27	13	-14
Netherlands	29	4	-25
USA	34	2	-32
Spain	38	23	-15
China	37	28	-9
Singapore	41	1	-40
Australia	42	16	-26
Bolivia	48	107	+59
Brazil	49	71	+22
Argentina	69	83	+14
United Arab Emirates	80	25	-55
India	130	68	-62

We consider the GSCI to be a more balanced index and measurement of competitiveness that delivers a deeper and more accurate picture of the true competitiveness of a nation-economy. (For a detailed analysis of the similarities and differences between the GSCI and the WEF index, please refer to the research paper "Sustainable Vs WEF Competitiveness").

1.3 Sovereign Bond Ratings Do Not Reflect Risks

The sovereign bond rating of a country – commonly referred to as credit rating - determines the level of interest a country has to pay for loans and credits on the financial markets. It is therefore a very important parameter for every economy – it defines the level of capital cost for new investments, and the cost of debt. Credit ratings also affect the risks investors are willing to take in overseas investments.

Sovereign risk ratings market is dominated by the "three sisters": Moody's, S&P, and Fitch. Sovereign risks are calculated based on a mix of economic, political and financial risks. All of these criteria represent current risks that, like GDP calculations, do not take into account the framework that defines the current situation. They do not consider the wider environment – the education availability, the ability and motivation of the workforce, the health, well-being and the social fabric of a society, the physical environment (natural and man-made) that are the fundament of the current situation. Credit ratings describe symptoms, they do not look at the root causes. It is therefore questionable whether credit ratings truly reflect investor risks of investing in a specific country, in particular for long-term bonds and investments.

Sustainable vs. conventional country credit rating

Comparison of evaluation models:

The Global Competitiveness Model is based on 5 pillars, aiming to cover & evaluate performance of all elements that make economic development (the root). Conventional ratings are based on 4 areas of results. Conventional credit ratings rate the outcome (the end-result); the GSCI the root cause of the outcome.

Rating comparisons and implications

In order to test the implications of the conventional applied sovereign bond ratings, a virtual sustainability-adjusted credit rating was calculated. The sustainability-adjusted rating is equally based on GSCI ratings and conventional ratings (average of Moody's, S&P, and Fitch).

Country	Credit rating (average of Moody's, S&P; Fitch)	Sustainability-adjusted rating	Level difference
Argentina	CCC	BB-	5
Australia	AAA	AA	-2
Bolivia	BB-	BBB-	4
Brazil	BB	BBB	4
Canada	AAA	AAA	0
China	A+	A+	0
Ethiopia	B	BBB-	5
Fiji	BB-	BB-	0
France	AA	AA+	1
Germany	AAA	AAA	0
India	BBB	BB	-3
Japan	A+	AA-	1
Kuwait	AA	BBB-	-7
Latvia	A-	AA-	3

Country	Credit rating (average of Moody's, S&P; Fitch)	Sustainability-adjusted rating	Level difference
Morocco	BBB-	BB	-2
Paraguay	BB+	BBB+	3
Portugal	BBB	A	3
Qatar	AA-	BBB+	-4
Romania	BBB-	A	4
Saudi Arabia	A+	BBB	-4
Singapore	AAA	AA	-2
Slovenia	A-	AA-	3
South Africa	BB+	BB	-1
Spain	A-	A	1
United Arab Emirates	AA	A	-3
United Kingdom	AA	AA+	1
USA	AAA	AA	-2
Vietnam	BB	BB+	1

Based on sustainable competitiveness, countries dependent on exploitation of natural resources would receive a significant lower credit rating. On the other hand, some developing nations would receive higher ratings (and therefor lower interest rates) based on their development potential.

In the asset management world, it is now standard procedure to integrate "E, S and G" into financial investment risk/opportunity evaluation, while credit ratings do exclude ESG risks - and therefore do not cover all investor risks. Key observations:

- Sovereign bond ratings show a high correlation to GDP/capita levels: ***Poor countries have to pay higher interest rates than rich countries.***
- Sovereign bond ratings do not reflect the non-tangible risks and opportunities associated with nation economies
- ***Sustainable adjusted ratings and conventional ratings show significant differences.*** Under a sustainability-adjusted credit rating, countries with high reliance on exploitation of natural resources would be rated lower, while poor country with a healthy fundament (biodiversity, education, governance) would receive higher ratings.

It is high time that credit ratings include sustainability in their risk calculations.

1.4 Higher Sustainability Equals Higher Wealth

The chicken or the egg?

Sustainable competitiveness means that current wealth levels are not in danger of being reduced or diminished through over-exploitation of resources (i.e. natural and human resources), the lack of innovation investments required to compete in the globalised markets (i.e. education), or the discrimination, marginalisation or exploitation of segments of a society.

The leading nations on the GSCI ranking are mostly high-income countries, suggesting a certain correlation between Sustainable Competitiveness score and GDP per capita, or income levels (high income = high sustainability). The same is true when visualizing average deviations of GDP per capita and the sustainable competitiveness score.

GDP/capita and sustainable competitiveness

However, the correlation is superficial and refuted by too many exceptions to the rule. Resource economies (e.g. Sadia Arabia, Kuwait) are ranked significantly below their GDP ranks. This indicates that **the correlation is** not from GDP to sustainable competitiveness, but rather **from sustainable competitiveness to income levels**. In other words: higher sustainable competitiveness can be associated with higher income levels.

The presence of large natural resources allows for exploitation of the natural capital (e.g. the oil-rich countries of the Middle East). However, such wealth is highly unsustainable and the wealth generated will diminish with depletion of the resources in the absence of an adequate alternative development and fostering of all 5 pillars. The influence of sustainable competitiveness on GDP is not immediate; it is time-deferred. Policy decisions therefore have to be made in light of sustainable competitiveness to achieve desired results at a later stage.

In other words: *sustainability is the chicken AND the egg*.

1.5 The 2019 Global Index Rankings

Previous indexes can be downloaded on the SolAbility website.

Rank	Country	Score	Rank	Country	Score	Country	Rank	Score	Country	Rank	Score
1	Sweden	60.6	46	Macedonia	47.2	Gabon	91	43.2	Swaziland	136	38.9
2	Finland	59.5	48	Bolivia	47.1	Cuba	92	43.0	Gambia	137	38.9
3	Iceland	57.3	47	Uruguay	47.2	Ghana	93	42.9	South Africa	138	38.8
4	Denmark	57.0	49	Brazil	46.8	Suriname	94	42.9	Egypt	141	38.6
6	Norway	56.9	50	Ethiopia	46.7	Tanzania	96	42.7	Lesotho	139	38.6
5	Switzerland	56.9	51	Russia	46.7	Cote d'Ivoire	95	42.8	Turkmenistan	140	38.6
7	Estonia	54.9	53	Malta	46.6	Iran	97	42.6	Solomon Islands	143	38.4
8	Luxembourg	54.5	52	Colombia	46.7	Tunisia	98	42.5	Botswana	144	38.4
9	Latvia	54.4	54	Moldova	46.5	Togo	100	42.3	Sudan	142	38.5
10	Croatia	54.2	55	Malaysia	46.4	Maldives	101	42.3	Pakistan	145	38.3
11	Austria	54.2	56	Montenegro	46.4	Venezuela	99	42.3	St. Kitts and Nevis	146	38.2
12	New Zealand	53.9	57	Guyana	46.2	Republic of Congo	102	41.9	Liberia	147	38.1
13	Slovenia	53.8	58	Chile	45.9	Philippines	103	41.7	Djibouti	148	38.0
14	Ireland	53.6	59	Mauritius	45.9	Democratic Republic o	104	41.7	Zambia	149	37.9
15	Germany	53.5	60	Serbia	45.8	Nicaragua	105	41.5	Jordan	150	37.7
16	Czech Republic	53.1	62	Burma	45.8	Azerbaijan	106	41.5	Bahrain	151	37.7
17	United Kingdom	52.8	64	Nepal	45.6	West Bank and Gaza	107	41.1	Rwanda	152	37.6
18	Liechtenstein	52.6	61	Cyprus	45.8	Dominica	108	41.1	Comoros	153	37.5
19	Canada	52.2	63	Kyrgistan	45.7	Mozambique	109	41.0	Madagascar	154	37.4
20	France	52.0	65	Brunei	45.5	Saudi Arabia	110	41.0	Malawi	155	37.3
21	Poland	51.9	66	Indonesia	45.4	Sri Lanka	111	41.0	Lebanon	156	37.3
22	Slovakia	51.6	70	Laos	45.0	Qatar	112	40.8	Mali	157	37.2
23	Belgium	51.3	68	Uzbekistan	45.0	Dominican Republic	113	40.8	Niger	158	36.9
24	Portugal	51.1	71	Albania	45.0	Equatorial Guinea	114	40.8	Guinea-Bissau	159	36.9
25	Japan	51.1	72	Kazakhstan	44.9	Angola	115	40.7	Afghanistan	160	36.7
27	South Korea	50.8	69	Argentina	45.0	Senegal	116	40.6	Libya	161	36.6
26	Romania	50.8	67	Panama	45.1	Burkina Faso	117	40.6	Kuwait	162	36.4
28	Lithuania	50.6	77	Turkey	44.4	Mongolia	118	40.5	Honduras	163	36.2
29	Netherlands	50.5	73	Oman	44.7	Morocco	119	40.4	Samoa	164	36.2
30	Italy	49.9	74	Ukraine	44.7	Fiji	120	40.3	Kiribati	165	35.5
31	Hungary	49.2	75	Mexico	44.4	Zimbabwe	121	40.2	Syria	166	35.3
32	Bulgaria	49.2	76	Bhutan	44.4	El Salvador	122	40.2	Central African Republ	167	35.3
33	Bosnia and Herzegovin	49.2	78	Vietnam	44.4	Papua New Guinea	123	40.2	Iraq	168	34.6
34	USA	49.1	79	Ecuador	44.4	Nigeria	124	39.9	Burundi	169	34.5
35	Georgia	48.8	80	United Arab Emirates	44.3	Guinea	125	39.7	Uganda	170	34.4
36	Costa Rica	48.8	81	Cameroon	44.0	Tonga	126	39.7	Vanuatu	171	34.4
38	Spain	48.5	83	Belize	43.8	India	130	39.5	Chad	172	34.4
37	China	48.5	84	Timor-Leste	43.7	Trinidad and Tobago	127	39.6	Eritrea	173	34.2
39	Paraguay	48.3	82	Thailand	43.8	Benin	128	39.5	Mauritania	174	33.8
40	Belarus	47.8	85	Algeria	43.6	Guatemala	129	39.5	Grenada	175	33.2
41	Singapore	47.8	86	Cambodia	43.5	Sao Tome and Principe	131	39.4	Seychelles	176	32.8
42	Australia	47.6	87	Kenya	43.4	Bangladesh	132	39.1	South Sudan	177	31.8
43	Israel	47.5	88	Armenia	43.3	Namibia	133	39.1	Yemen	178	31.3
44	Greece	47.4	89	Sierra Leone	43.3	Cape Verde	134	39.0	Haiti	179	31.3
45	Peru	47.3	90	Tajikistan	43.3	Jamaica	135	39.0	Bahamas	180	30.5

natural capital

2 Natural Capital

Natural capital is the basis on which a country is built: the physical environment and climatic conditions, combined with the extent of human activities that have or will affect the natural environment. The Natural Capital of a country reflects its ability to sustain the population and the economy, now and into the future.

A nation's natural capital is a given value – it is as it is – i.e. there are limitations to human ability to improve or change the availability of natural capital. While it takes little exploit natural capital, rebuilding or improving natural capital factors is difficult, and requires significant time and resources.

Natural Capital Ratings 2019 – Key Take-aways

High-ranking countries are characterised by abundant water availability, the source of a rich biodiversity. Many of the highest scoring countries are located in tropical areas. While some of these countries currently may lack social, intellectual and governance capital, their Natural Capital would allow them to develop sustainable competitiveness over time. A certain correlation with the level of human activities and population density can also be observed: large countries with a comparably small population density and rich biodiversity tend to score higher.

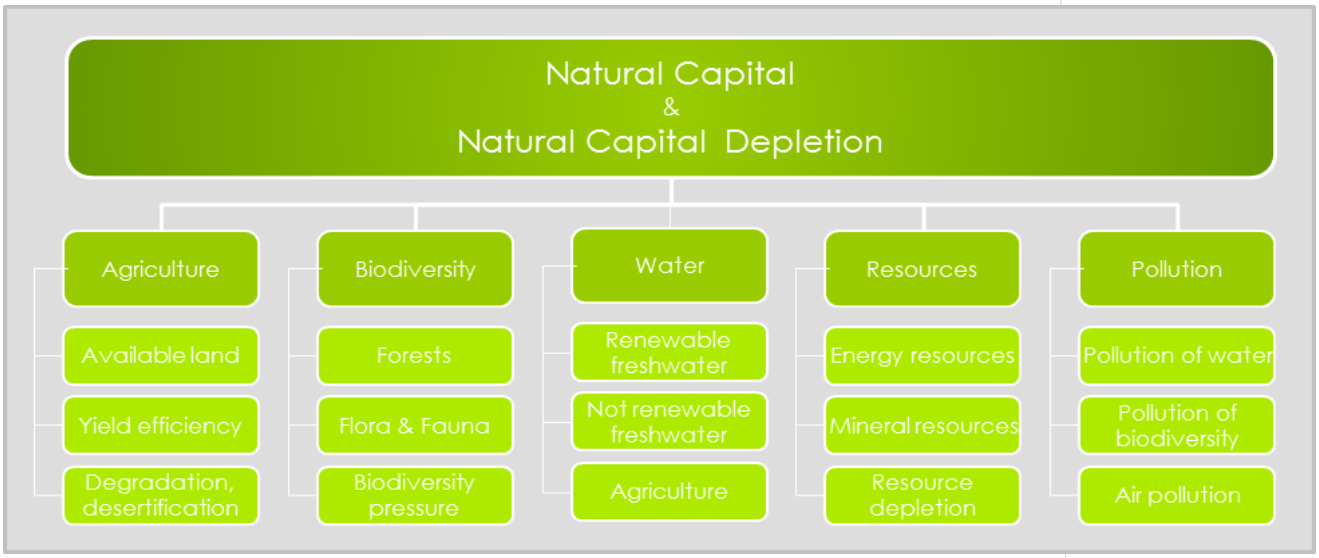
The Natural Capital Index is topped by Guyana, followed by Laos, Congo, Cameron and Sweden. OECD representation in the top 20 is limited to Sweden, Canada, New Zealand and Finland. The two most populated countries, China (153) and India (163) are both affected by a combination of arid climate, high population density and depletion levels, raising concerns over those countries' ability to self-sustain their large populations in the long term.

The Natural Capital World Map. Dark areas indicate high, light areas low levels of natural capital

Natural Capital Components

The Natural Capital of a country is defined by the natural physical environment. The Natural Capital model incorporates the essence of resources available that allow a country to be completely self-sustaining: land, water, climate, biodiversity, food production and capacity, as well as renewable and non-renewable energy and mineral resources. In addition, the level of depletion or degradation of those resources that could endanger future self-sufficiency are taken into account to reflect the full picture of the available natural capital.

The number of data points related to natural capital available from a variety of sources is nearly endless. The main challenge is to select the most relevant and meaningful indicators amongst the wealth of available data. In order to define meaningful and relevant, the core issues affecting the sustainable use of natural capital have been defined in the natural capital model below:



Key elements of competitiveness drivers in the Natural Capital Sub-Index

Natural capital indicators

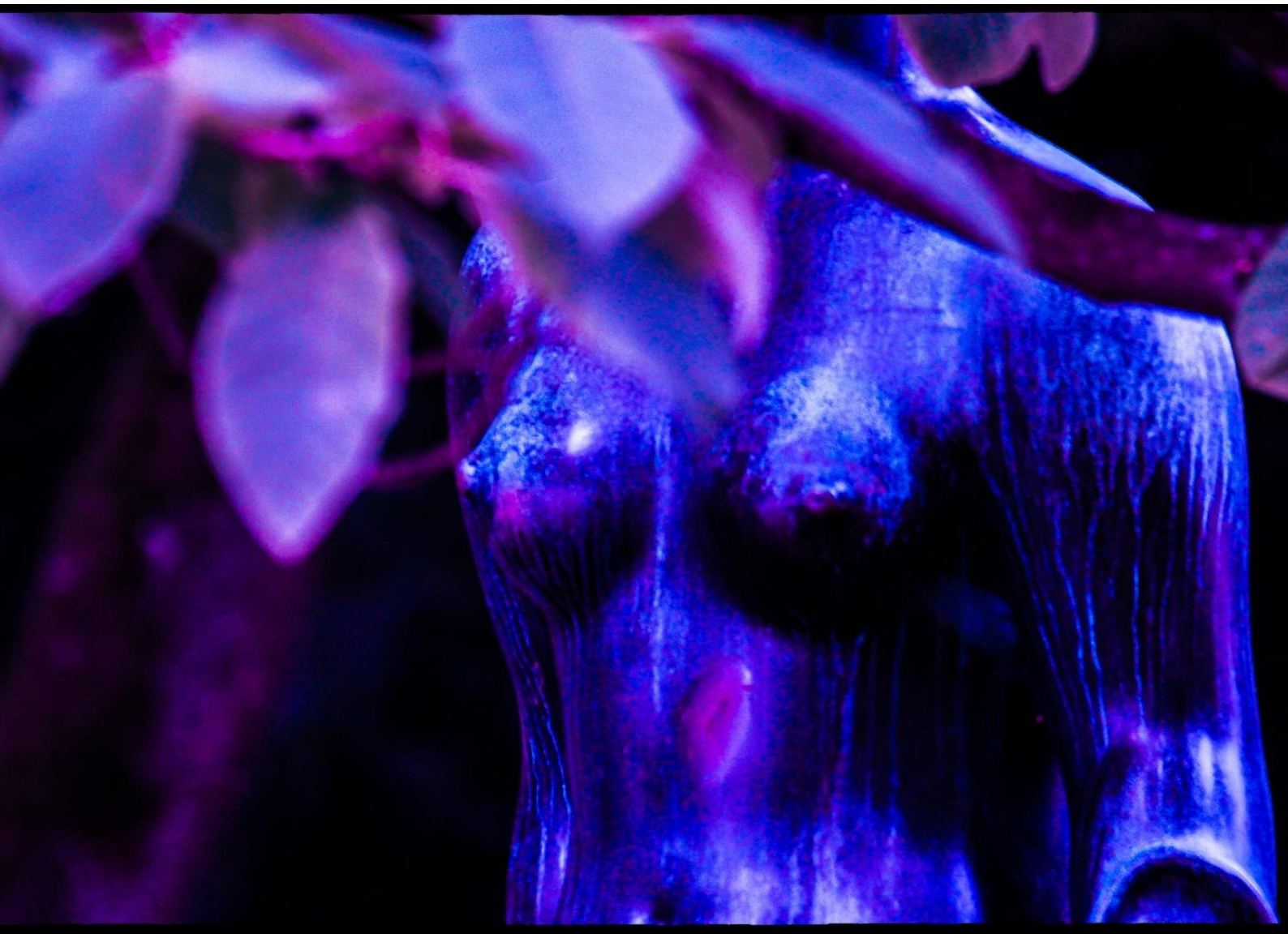
Based on the definition of the key natural capital areas, data series are chosen as indicators that reflect the sustainable competitiveness of a country based on its natural resources (natural capital).

The indicators have been analysed for the latest data point available as well as their development over time, reflecting the current status and the future outlook in relation to the size and population of a country. In addition, indictors that measure the depletion or degradation of the natural resources have been taken into account. The combination of these indicators reflect the current status as well as the ability to sustain the population and the national economy.

As some of the above key areas are difficult to express in numerical values, some quantitative scores compiled by UN agencies have been used for certain indicators, such as biodiversity potential, resource depletion, and the ecological footprint.

For the full list of indicators used, please refer to the methodology section.

governance



3 Governance Efficiency

The Governance Sub-Index of the Sustainable Competitiveness Index is based on quantitative data series – i.e. *not* based on qualitative evaluation of government systems. In addition, some aspects of government direction implications (such as human rights, freedom of press, etc.) are assigned to the Social Capital Index. The Governance Sub-Index aims at evaluating the performance of a country's regulatory framework and infrastructure environment to facilitate sustainable competitiveness. The regulatory and infrastructure framework should enable an environment in which the country's natural, social and intellectual capital can flourish to generate new and sustain existing wealth.

The Governance Efficiency rankings 2018:

- The Governance Ranking is topped by Ireland, followed by the Czech Republic, Slovenia, Poland, and Germany.
- The ranking is dominated by Central and Eastern European nations
- The UK is ranked 32. Japan 64 and the US at 71.
- Of the BRICs, China is ranked 24, Russia 56, India 75, and Brazil 121
- The map shows a clear north-South gap: all African countries score comparable low

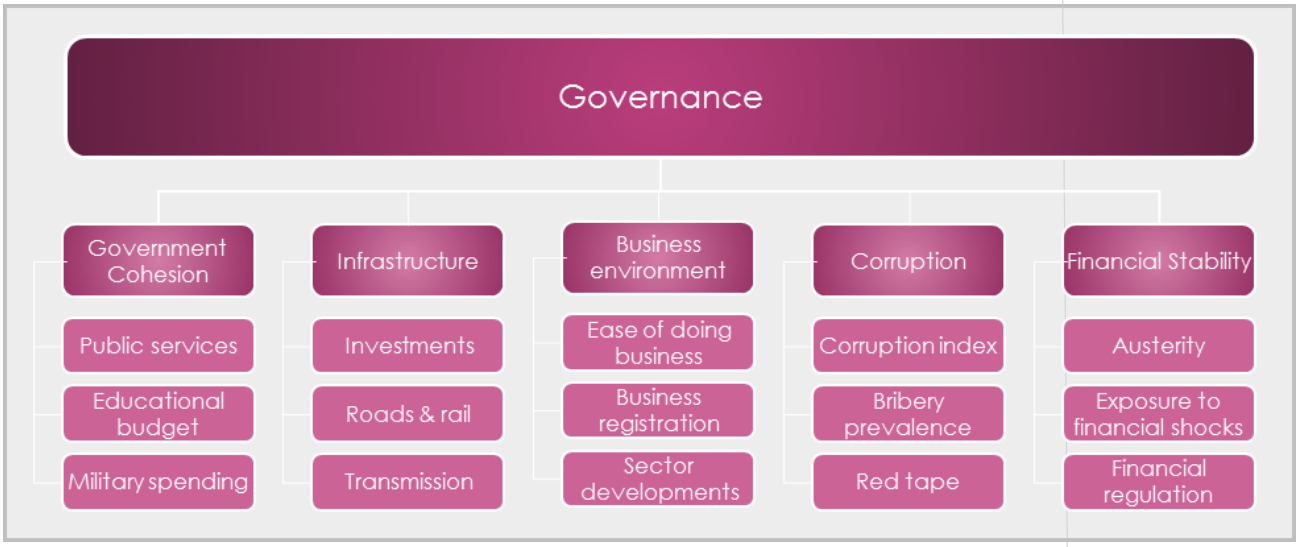
The Governance World Map

The Governance World Map. Dark areas indicate high, light areas low levels of Governance quality

Governing National Development: Shaping Social and Economic Capital

The base of the Sustainable Competitiveness Pyramid – the Natural Capital of a country, is given. Everything else – the society, the economy - is shaped by the legal, regulatory and physical (human built) framework. This framework – the environment in which society exists and businesses operate - is developed, maintained and updated by authorities and institutions, most often government bodies. The Governance Sub-Index therefor encompasses all aspects that shape the framework of society (the Social Capital), and in which the economy (Intellectual Capital, Resource Management) operates. Key aspects of the Governance aspects include:

- Strategic direction of government-led development (the balance between the key elements of government spending: health, education, infrastructure, security).
- The built physical environment (infrastructure) required for smooth operation of the society and businesses, the availability and quality of public services,
- The framework provided to businesses (formal in terms of business regulations, and informal in terms of red tape and corruption negatively affecting businesses),
- Exposure to volatility in terms of government balance sheets, and exposure to volatility shocks as posed by financial market fluctuations.



Key elements of competitiveness drivers in the Governance Sub-Index

Measuring Governance

The result of qualitative governance quality & strategy evaluation depends very much on the evaluator. The Sustainable Competitiveness Index therefore relies on purely quantitative data series to exclude all subjectivity in evaluating and calculating the Governance Sub-Index. In addition, some qualitative indicators (perceived quality of public services and perceived levels of corruption determined through reliable and international surveys) have been incorporated.

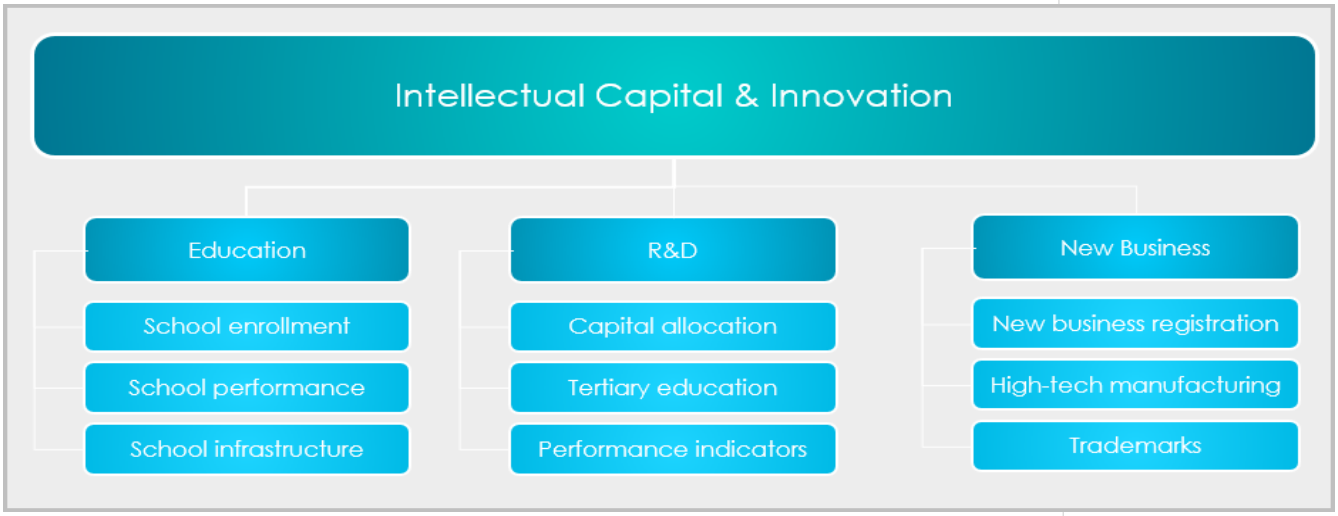
For the full list of indicators used, please refer to the methodology section.

intellectual capital

4 Intellectual capital

Intellectual Capital is the fourth level of the Sustainable Competitiveness Pyramid. In order to create and sustain wealth, jobs and income for the population are required. Providing jobs requires producing goods and providing services that people or businesses, domestically or abroad, are willing to buy. This in turn requires products and services to be competitive in the global market in terms of quality and price. To maximise the domestic benefits, the value chain is ideally covered within the boundaries of a national economy - the largest share of adding value is contained in processing raw materials and/or parts to finished products.

Sustainable competitiveness therefore requires high R&D capabilities (based on solid education), and business entrepreneurship. In addition, sustained economic success requires a healthy balance between service and manufacturing sectors. Over-reliance on the service sector sooner or later leads to diminishing growth potential and loss of knowledge.



Key elements of competitiveness drivers in the Intellectual Capital (innovation capabilities) Sub-Index

Measuring innovation

Quality and availability of education in the past are an indication for today's R&D and innovation capabilities, and today's education performance reflect future innovation capabilities. Strength and depth of R&D activities is the basis for the development of value-added technologies and services. Educational performance indicators are therefore highly important to estimate the ability for sustained innovation and competitiveness.

Additional indicators include performance data on R&D activities and new business development indicators.

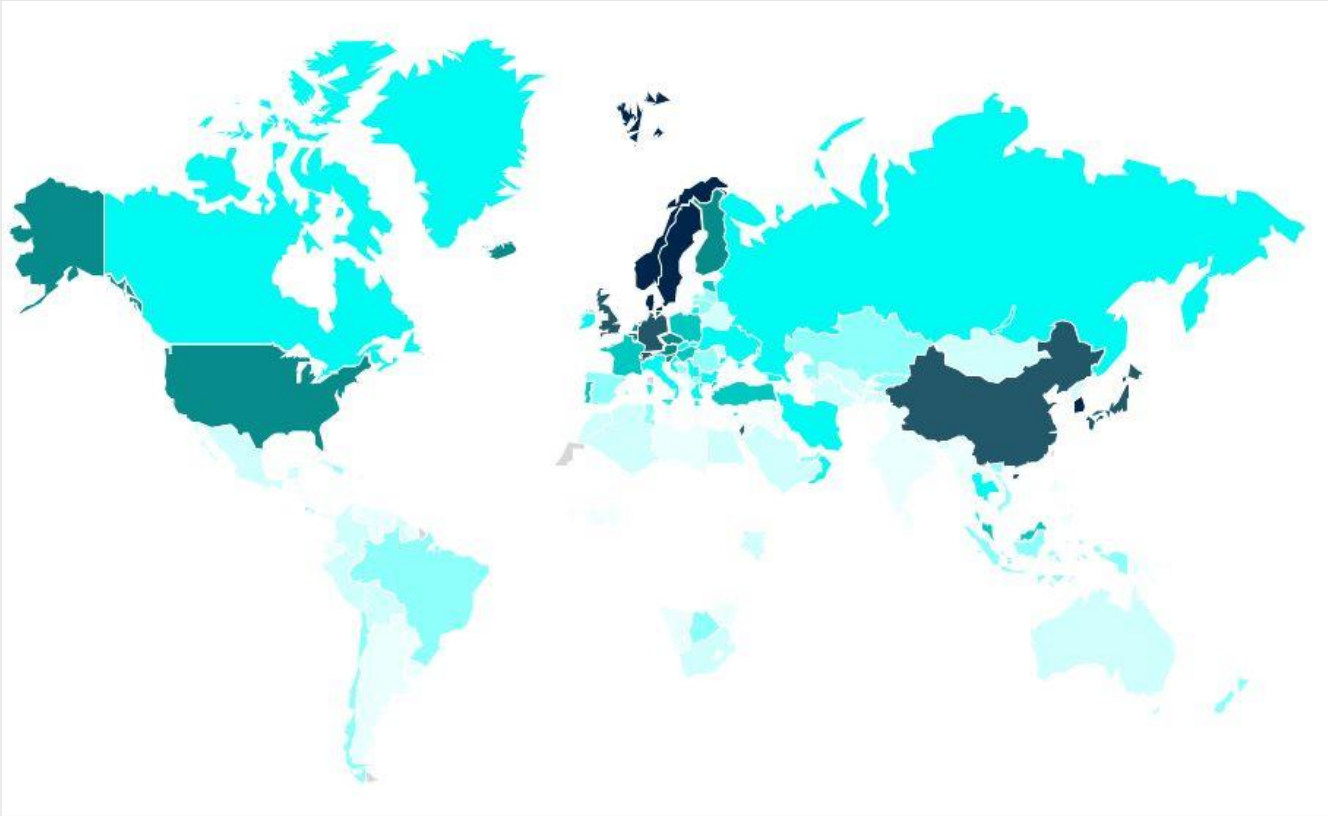
Further indicators relate to the actual business entrepreneurship – new business registration, trademark applications, and the health of the balance between agricultural, industrial and service sectors of an economy.

For the full list of indicators used, please refer to the methodology section.

The Intellectual Capital World Map

Intellectual Capital is the basis for innovation capability and sustainable economic competitiveness. The indicators used for assessing these criteria are composed of data points relating to education, innovation capabilities, and entrepreneurship. Countries with a high score in this ranking are more likely than others to develop (or sustain) successful economies through research and knowledge driven industries, i.e. high-value added industries, and therefore achieve higher growth rates. All indicators used to assess the innovation capability and sustainable competitiveness have been scored against size of the population or against GDP in order to gain a full picture of the competitiveness, independent of the size of a country. In addition, developments (trends) of performance indicators have also been taken into account. Key observations of the Intellectual Capital ranking include:

- The innovation and competitiveness ranking is topped by South Korea – by a considerable margin.
- North-Eastern Asian nations (S. Korea, China, Japan, Singapore) and the Scandinavian Nations (Sweden, Norway, Denmark) dominate the intellectual capital sub-index of the GSCI.
- Eastern European countries and the Baltic States also rank high.
- The UK is ranked 7, Germany 11, the US 15.
- Vietnam (42), Tunisia (43), Bolivia (46) and Cuba (49) are the highest ranked countries of the Southern hemisphere.
- China is ranked 9, Russia 32, Brazil 56, and India 105.



The Intellectual Capital World Map. Dark areas indicate high, light areas low availability of Intellectual Capital

resource intensity

5 Resource Management

The second level of the sustainable competitiveness pyramid is the ability to manage available resource (natural capital, human capital, financial capital) efficiently – regardless of whether the capital is scarce or abundant. Whether a country does or does not possess resources within its boundaries (natural and other resources), efficiency in using resources – whether domestic or imported - is a cost factor, affecting the competitiveness and thus wealth of nations. Over-exploitation of existing natural resources also affects the natural capital of the country, i.e. the ability of a country to support its population and economy with the required resources into the future.

In addition, non-renewable resources that are used today might be scarce and expensive tomorrow, affecting competitiveness, wealth and the quality of life in the future. A number of factors are pointing to rising cost for resources in the future, in particular natural resources: scarcity and depletion of energy, water, and mineral resources, increasing consumption (particular in non-OECD countries), financial speculation on raw materials, and possibly geo-political influences. The key objective of the resource management category is therefore to evaluate a country's ability to deal with rising cost and sustain economic growth in the face of rising prices in the global commodity markets.

Key elements of competitiveness drivers in the Resource Management Sub-Index

Vital natural resources include water, energy, and raw materials. Most of the resources used today are non-renewable, or only partly renewable: fossil-based energy, and minerals. Water aquifers and other natural products (e.g. wood) are renewable, as long as their capacity is not overused and the replacement patterns are not drastically altered, e.g. trough depletion, biodiversity loss, pollution, or climate change.

Resource efficiency indicators are evaluated both in terms of intensity (per capita) and efficiency (relative GDP). The availability of accurate global data is not as wide as in other criteria, particularly in terms of usage of raw materials. Other than steel & minerals usage, reliable raw material usage statistics are not available on a global level. The focus is therefore on energy, energy sources, water, steel usage, as well as GHG emission intensity and productivity. For the full list of indicators, refer to the methodology section.

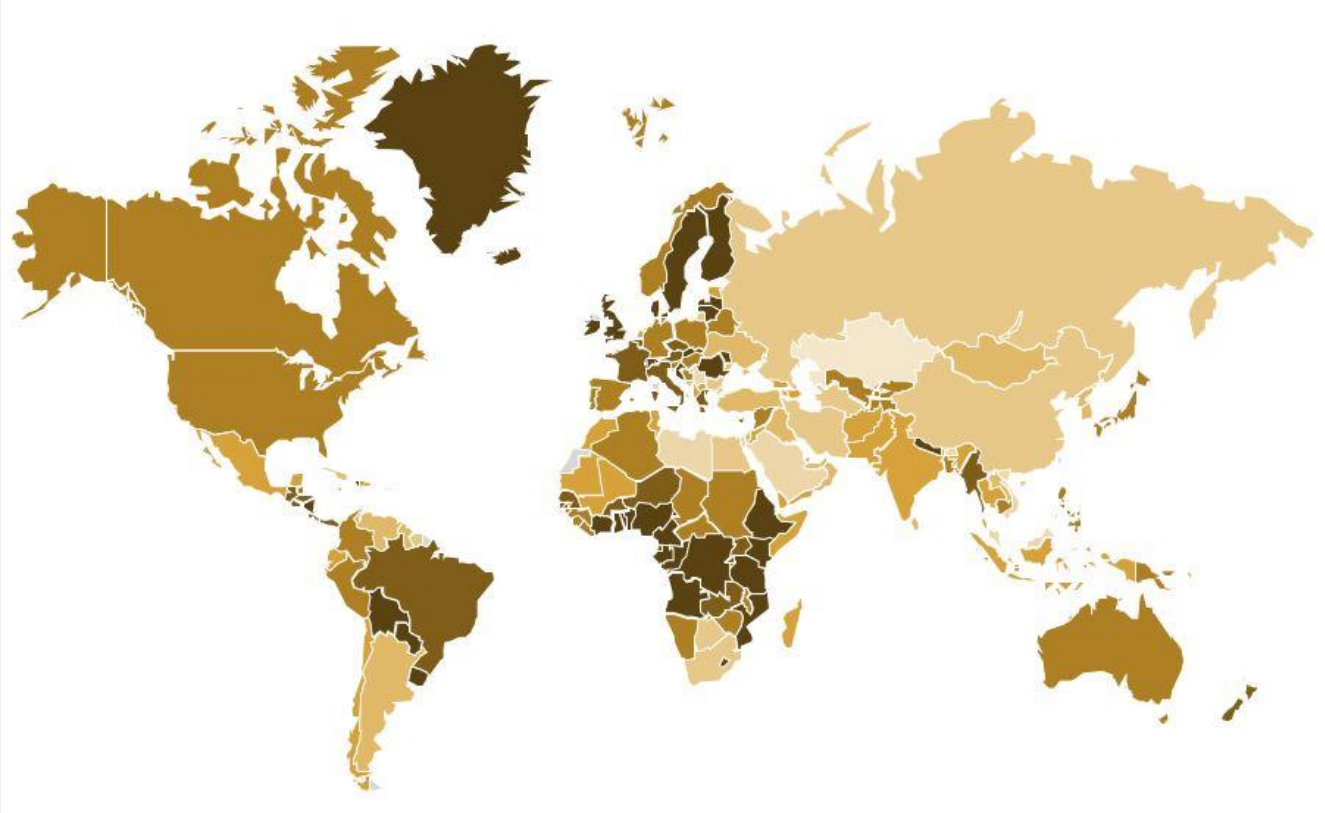
Resource Management World Map

The Resource Management Sub-Index is composed of indicators scored relative to population (e.g. GHG per capita) as well as relative to economic output (e.g. energy consumption per GDP). Indicators measured against population (per capita) clearly favour countries with low resource and raw material consumption (i.e. less developed countries), while indicators scored relative to GDP measure economic efficiency.

The resource intensity map shows that the resource intensity of less developed countries seems to be – generally speaking - lower than that of higher developed economies. However, indicators are measured both against economic output (GNI/GDP) and against per-capita performance. While the per-capita intensity is naturally lower in less developed economies, the per-output performance in efficient developed countries is lower than in the developing countries.

The resource intensity ranking is topped by Kenya, followed by Togo and Ethiopia – mainly due to low resource consumption. However, also highly developed economies achieve high rankings – Sweden (5), Luxembourg (6) and the UK (8) are all ranked within the top ten. However, the World's economic powerhouses are ranked significantly lower – Germany on 77, Japan on 96, the US on 102, and China on 160. The low rankings indicate a distinctive potential for improving sustainable competitiveness through reducing resource intensity and resource management – i.e. reducing costs, at the end of the day.

The main implications of higher or lower resource management capabilities are related to stability and sustained economic growth: should global prices for raw materials and energy rise significantly in the future (as trends and the majority of available research suggests), the countries in the lower ranks will face substantial higher costs and challenges to maintain their growth compared to countries with higher efficiency and intensity scores.



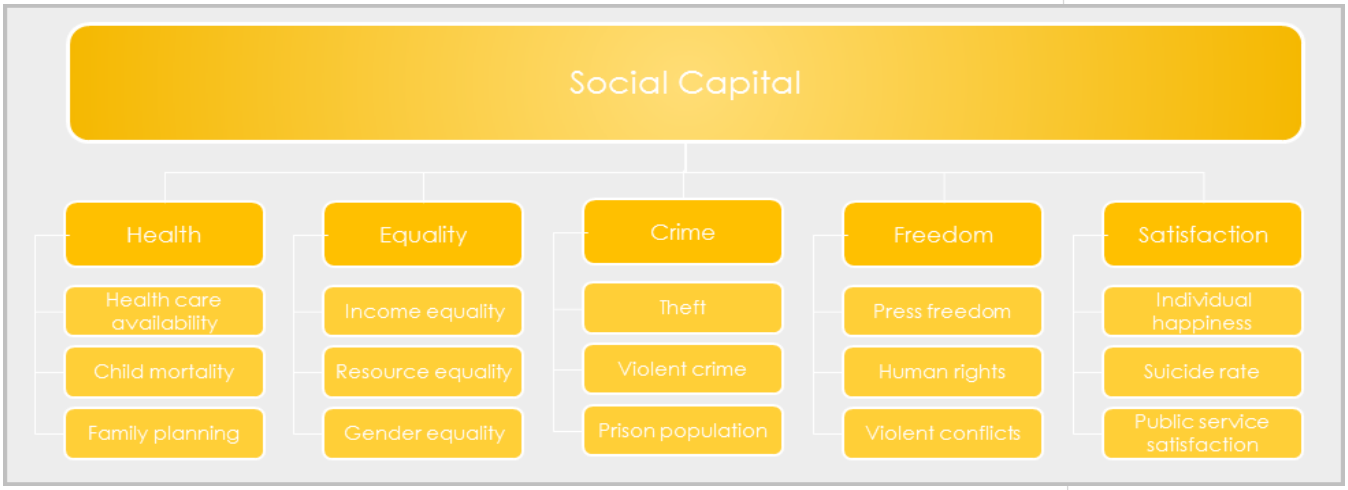
The Resource Intensity World Map. Dark areas indicate low, light areas indicate high resource Intensity.

social cohesion

6 Social Capital

The Social Capital of a nation is the sum of social stability and the well-being (perceived or real) of the entire population. Social Capital generates social cohesion and a certain level of consensus, which in turn delivers a stable environment for the economy, and prevents natural resources from being over-exploited. Social Capital is not a tangible value and therefore hard to measure and evaluate in numeric values. In addition to local historical and cultural influences, the social consensus in a society is affected by several factors: health care systems and their universal availability/affordability (measuring physical health); income and asset equality, which are correlated to crime levels; demographic structure (to assess the future generational balance within a society); and freedom of expression, freedom from fear and the absence of violent conflicts that are required for businesses to be able to generate value.

While a direct connection of social cohesion to creating wealth and sustain economic development might be difficult to establish scientifically, a certain degree of equality, adequate health systems, freedom from fear and equal opportunities (without which no American Dream ever would have been possible) are pre-requisites to achieve the same. The absence or deterioration of social cohesion in turn leads to lower productivity (health), rising crime rates, and potentially social unrest, paralysing economic development and growth.



Key elements of competitiveness drivers in the Social Capital Sub-Index

Social Capital Indicators

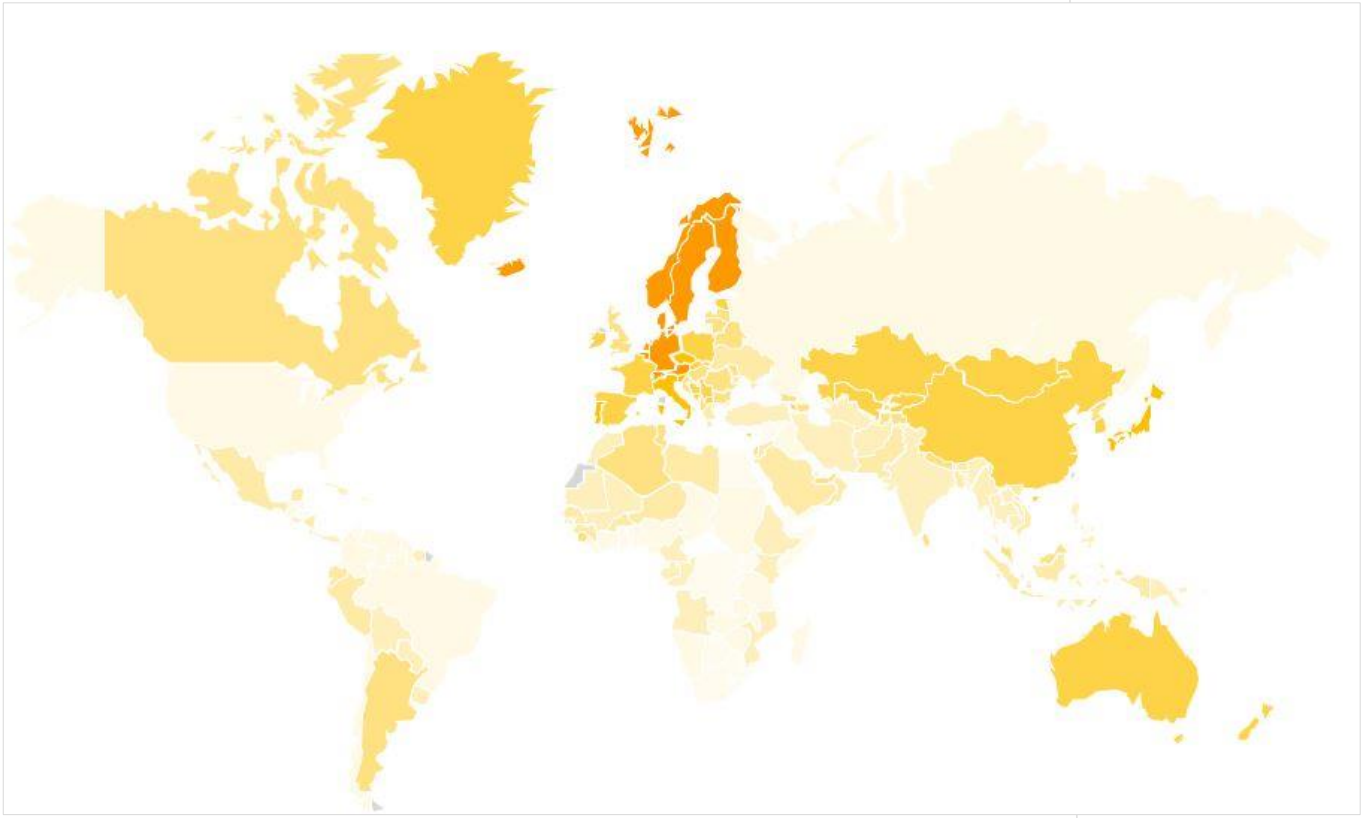
The indicators selected to measure social cohesion have been selected from the 5 themes above (health, equality, crime, freedom and age structure). Some of these indicators (e.g. "happiness") are qualitative, i.e. not based on performance data that can be measured. Instead, qualitative indicators from surveys and other sources compiled by recognised organisations were used to measure the qualitative aspects of social cohesion, including single indicators from the Happy Planet Index (New Economics Foundation), the Press Freedom Index (Reporters Without Borders), and the Global Peace Index (Institute for Economics and Peace). For the full list of used indicators, please refer to the methodology section.

Social Capital World Map

A certain level of social balance or social consensus is required to maintain a stable environment in which economic activities can take place. The higher the social capital of a country, the better the economy can flourish. The higher the social consensus, the higher the motivation of individuals to contribute to the wider good, i.e. the sustainable development of the nation – and the less likely they are to fall off the track into illegal paths of wealth generation that eventually hurt the legal economy. The indicators used to calculate the Social Capital score of countries is composed of health and health care factors (availability and affordability), the quantitative equality within societies (income, assets, and gender equality), freedom indicators (political freedom, freedom from fear, individual happiness), crime levels, and demographic indicators.

- The top 20 in the Social Capital sub-index is dominated by European countries from the North (particularly Scandinavia) – only Japan (12), Singapore (13) and Kyrgyzstan (19) break into the ranks
- The USA, due to comparable high crime rates, low availability of health services, and rising inequality, is ranked 142, just below Guinea-Bissau and above South Sudan.
- The UK is ranked 40, reflecting the deteriorating social fabric.
- China is ranked 34, India 90, Russia 127, and Brazil 148
- The highest ranked South American country are Argentina (55) and Ecuador (69); the highest-ranking African country Burkina Faso (73).

Most African nations, particular within and south of the Sahel zone, are at the bottom of this list, due to a combination of low availability of health care services and child mortality, limited freedom of expression, and unstable human rights situation



The Social Capital World Map. Dark areas indicate high, light areas low maturity of Social Capital

7 From Evaluating to Defining Sustainable Competitiveness

The GSCI evaluates the competitiveness of nation-economies. But what actually is competitiveness?

Policy and investment decision in all pillars of competitiveness are inter-acting and affect the competitiveness of a country:

- The availability and state of **natural capital** does not affect short-term economic development or recovery – unless the capital in question is oil or other commodities in demand on the global market. Exploitation of natural resources (natural capital) can bring short-term economic benefits, but is often accompanied by diminishing the basis of future development (e.g. in the case of forest exploitation)
- **Resource intensity** is cost. The higher the resource efficiency, the higher the competitiveness of an economy. However, resource intensity is not directly linked to short-term economic development. While resource usage is increasing with initial development, efficiency tends to increase with higher development and investments. However, economic decline (as has occurred in Greece since 2010), leads to lower resource consumption.
- **Social capital** is negatively affected by economic decline. A declining economy leads to fewer financial resources available for social capital aspects (health, community development, integration, …), and leads to higher criminality as well as individual despair – all of which negatively affects the competitiveness of a nation-economy on the long term.
- There seems to be a fairly direct connection of **Intellectual capital** availability and positive/negative economic development. All countries that have cut investments (including, but not restricted to, innovation, R&D and education), have seen a slower recovery or even further decline since the financial crisis – and vice versa. While it may look sensible at first glance to cut expenditure to reduce deficits, cuts do not work because they also cut the required base to kick-start growth. Cutting investments is unsustainable competitive, i.e. not sustainable competitive. Sustainable competitiveness means: analysing the likely outcome of measurements before they are implemented – i.e. calculating not only the cuts, but also the cost of cuts. A majority of policy makers these days seem to be blind to the long-term cost of cuts and benefits of investments. They do not look ahead.
- The analysis of individual indicators suggests a fairly straightforward connection between the **Governance framework** provided to the economy: countries who cut investments (infrastructure, general investments), countries with a large (uncontrolled) domestic financial investment markets, and a low industrial base have all declined more and recovered slower than countries with higher investments, smaller domestic financial markets and a better industrial base. It also seems straightforward that a steep increase of financial market size in short term seems to be the indication of an imminent burst of a bubble.

In a sustainable efficient entity, powers are balanced. Imbalance in power between individuals, groups, and entities always lead to lower efficiency over time. Low efficiency means higher overall cost, less benefits. What might appear competitive now (e.g. the exploitation of natural non-renewable resources), but is not into the future, is not competitive. Competitiveness that is not sustainable is not competitive.

In a sustainable entity, the economy does not run against nature and/or communities/society. All dimensions of an entity are all running in parallel in win-win interactions. The fundamentals hat make an economy, a society, and the natural environment in which both of the above operate/live in, are balanced interacting:

The Sustainable Competitiveness Framework:

Sustainable competitiveness only requires two fundamentals as its base:

- Equal opportunities, everywhere
- Decision-making based on science and sustainable cost-benefit analysis that lead to l**ow-cost, high-benefit solutions** (**LCHB**s)

7.1 Requirements for Sustainable Competitiveness

Sustain able competitive economies/nation-states are characterised by high efficiency – i.e. systems and policies that enable and foster efficiency. We need efficient systems of governance, free of any religious, political or special interest views

Sustainable governance

- Efficient governance systems that have built-in guarantees against authorism with clear assigned and shared responsibilities
- Direct democracy (citizens can not only elect politicians, but also vote on legislation and policies)
- Efficient legal framework and judicial system that is available and equal for and to all
- Financial markets that serve the real economy, not vice-versa
- Simple tax regime that taxes all forms of income equally. Public services, including health, education and infrastructure, are financed through progressive income taxes
- Harmonised tax rates across regions and countries
- Efficient and well-maintained transport infrastructure, and other public infrastructure (health, education, recreation)
- Corruption prevention
- Wise allocation of state resources, balancing social, environmental and economic interests

Innovation

- Equal quality education for all, constantly adjusted to changing requirements, including vocational training
- A national/regional economic development strategy/vision supported by government policies, co-ordination, and incentives
- An environment that supports and rewards investment in R&D
- Curbing the power of monopoly-like entities

Social cohesion

- Universal public health services for all, with additional private health services beyond the basics
- Respected law enforcement deeply integrated in local communities and related services to curb crime
- Treatment of diseases as diseases, not as crimes (e.g. drug addiction)
- Equal opportunities for all genders, races and minority groups
- New models of employment and public participation in public services in light of increasing automatization (robotics and artificial intelligence)

Resource intensity

- Introducing sustainable balance-sheets for all economic activities (integration of externalities): polluter pays principle for all substances and activities. Cost to the environment and/or society are factored into the cost of all products and services

- Harmonised global taxing of greenhouse gases, to be reinvested in renewable energy technologies and climate change impact mitigation
- Resource efficiency – supporting the development of the circular economy
- Improvement and streamlining of organic food production

Natural capital

- Legal protection of the leftover natural biodiversity
- Restoring biodiversity where possible through sustainable agriculture and land management
- Reforestation
- Protection of waterways, investment in desalination facilities

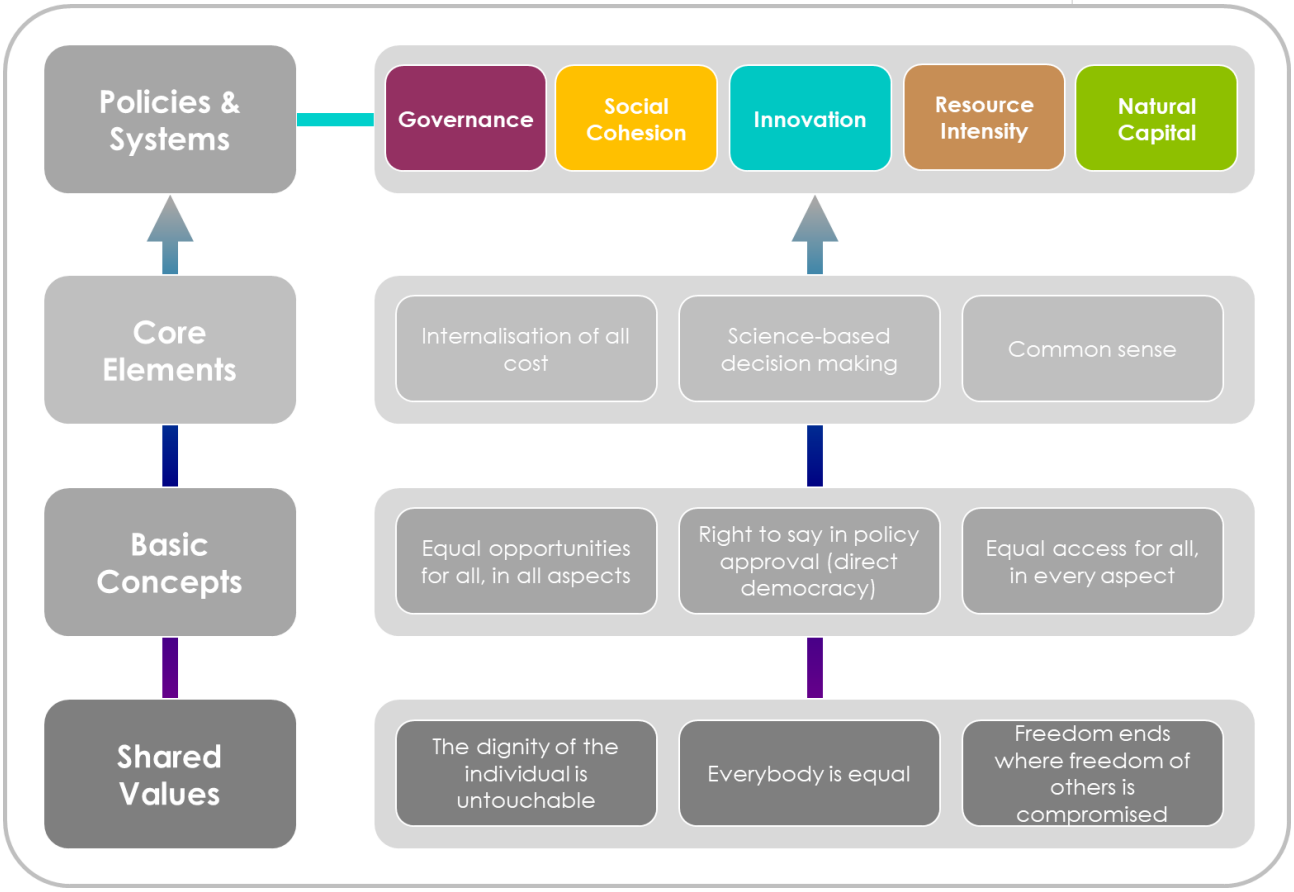
7.2 Shared Values

At the base of sustainable economy, we need simple shared values:

- The dignity of the individual is untouchable.
- All individuals are free. The freedom of an individual (or group) ends where the freedom of others is compromised.

The economics of sustainable competitiveness is equally simple:

- Provision of equal opportunities and equal access for all.
- Internalising all cost, tangible and intangible, in the balance sheets – of products, services, and in project and policy appraisal.



7.3 Outlining Sustainable Governance

The following is a rough outline of issues to be considered when aiming for a real sustainable & competitive framework:

- **Governance update**
  Our current systems were designed when monarchies were the going power structures: elected presidents replace the king. It is stupid to concentrate power in a single pair of hands, be that in a company, an organisation, local authorities or on the state level. We don't need kings, presidents, prime ministers and CEOs. We need teams of decision makers.
- **Democracy upgrade**
  We currently have systems that allow us to choose between different versions of jokes every couple of years. That is not democracy. We need real democracy – we need systems that allow citizens to vote on policy and regulation changes on a regular basis.
- **Legal equality**
  As is, justice is for the rich and powerful. Suing for your legal rights and defending yourself in court requires significant financial resources. If you don't have financial resources, you are seriously restricted in obtaining your legal rights, and being sued can ruin you. The justice system has to be available to all, while there should be barriers for people/entities that sue for the sake of suing.
- **Financial markets reboot**
  The real economy (the producing economy) currently serves as collateral for the rent seeking/gambling industry that we call "the financial markets". We need financial markets that serve for what they were initially intended: provide money transfer and provision of capital for innovation and production.
- **Taxing re-start**
  There will and should always be different levels of wealth. But the discrepancies have gone completely out of hand, with taxing favouring those that already have. Being at the right place at the right time or being a CEO should be neither grounds for amassing millions/billions, nor for yielding influence and power.
- **Integrating the environment in the economy**
  If pollution dos not have a price, pollution does happen. We need a system that quantifies pollution, and then can be integrated into the price of resources and materials. The price has to be paid before the pollution occurs. For example - we need a global climate tax. Now.
- **The role of the state**
  Privatisation of infrastructure-based public services (railroad services, water provision, electricity, gas, health care provision) has lead to lower quality, more frequent disruption, higher prices. The role of the state in provision of infrastructure-based service provision therefore has to be discussed, and frameworks to ensure efficient management and prevention of corruption in public services have to be developed. Or should the state be a player in the markets itself?
- **Economic co-operation**

  Countries that have a close relationship and co-ordination (e.g. South Korea, China) have experienced above-average success over the past decades. While such close relationships are not without their own inherited complications, a closer alignment of national development

priorities and the private sector can be highly beneficial and should be more closely scrutinised.

- **Intelligent investment**
  Investment decisions need to be based on a broader assessment of impacts – both negative and positive – and further into the future. In addition, they should be aligned with a clear development strategy, to allocate the limited resources at the highest possible return for society, the economy, the environment and the countries
- **Harvesting on technology**
  New technologies potentially can bring huge benefits to humanity – clean energy technologies, nano-technologies, artificial intelligence, robotics, further digitalisation. A clear strategy is required to prioritise and support beneficial technologies and applications leads to guided development that is beneficial
- **Labour markets and labour security**
  Digitalisation, robotics and artificial intelligence are expected to substitute a significant percentage of today's labour. It is highly likely that there will not be jobs for everybody into the future. Alternative models of labour – for example through a base salary tied to work in organic agriculture, elderly care and other community services, to name a few – need to be evaluated and discussed timely.
- **Public service upgrades**
  The private sector has completely failed to deliver efficient services in monopolistic distribution environments (e.g. running water, rail transport, electricity, …). We need systems that guarantee efficient management of public infrastructure and services.
- **Freeing the press**
  lies and conspiracy theories is not free speech, it is spreading lies and conspiracy theories. Pushing the opinions of owners of media companies is also not free speech. We need a completely independent fact-based press. Less opinions, more facts. Easy in theory, very complex in reality.
- **Education update**
  We need better and adequate education for all, including practical skills. Vocational training needs to be increased and improved, and curriculums updated regularly based on technology and societal developments.
- **Health re-loaded**
  Basic health care has to be available to all, paid for by all. That probably requires state-guided policies, state-managed insurance, and state-managed health services
- **Greening agriculture**
  Industrial agriculture is based on the use of fertilisers, pesticides, and managing land in mono-cultures. All three of these have to be replaced with organic approaches. However, organic agriculture is inevitably more labour intensive. Solutions to keep the cost of food product within reasonable scope for the wider public therefore have to be discussed.
- **Saving the biosphere**
  We need more protection for vital eco-systems, such as the Amazon and other rain-forests. However – it is not only the rainforests. We need more biodiversity across this World – in all countries, in all regions. More land needs more land to be protected as parks, and sustainable management of the resources has to be implemented in line with the communities living in these areas. Water is vital to the survival of humanity; waterways ned to be protected better.

Index

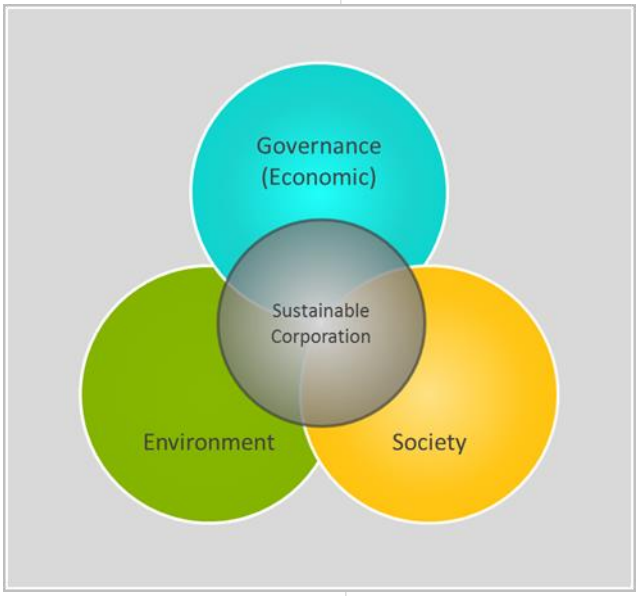
methodology

8 Sustainable Competitiveness Model & Index Methodology

8.1 The Sustainable Competitiveness Model

The three-dimensional sustainability model of reconciling the economy, the environment and the society is often used and applied in the corporate world to evaluate and manage sustainability issues and performance.

However, corporations are entities that operate in very different boundaries and with different goals than states and nation-economies. The elements of the model therefore have to be adapted to the characteristics of nations and their fundament of sustained prosperity.

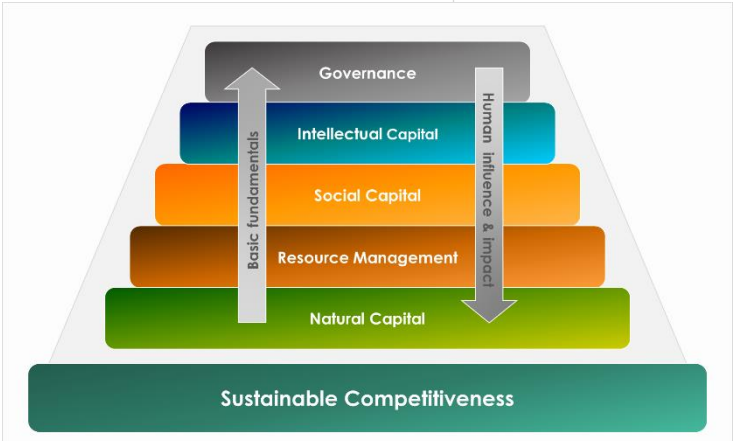


Model of sustainable development often applied in ESG research

While corporate or economic entities (depending on the nature of their business) are working with natural capital, they do not depend on the location of the capital (natural, human, financial) they utilize, and therefore can move their operations to where the external conditions are most favourable, both in terms of physical location (offices/factories) and markets, as well as in terms of business fields. Transport and international trade have made countries and people less dependent on their immediate environment through international trade of resources, including water. However, countries and population cannot simply move should fundamental resources (water, agricultural output) become scarce or the country inhabitable due to climate change. At the end of the day people rely on, and life off, the natural capital of their environment for better or worse.

The Sustainable Competitiveness Pyramid

Sustainable competitiveness - they ability to generate and sustain inclusive wealth and dignifying standard of life for all citizens in a globalised world of competing economies, consists of 5 key elements that interact and influence each other: natural capital (the given natural environment and climate, minus human induced degradation and pollution), social capital, intellectual capital (the ability to compete in a globalised market through sustained innovation), resource management (the ability to extract the highest possible value from existing resources (natural, human, financial), and governance (the framework given, normally by government policies & investments, in which a national economy operates).

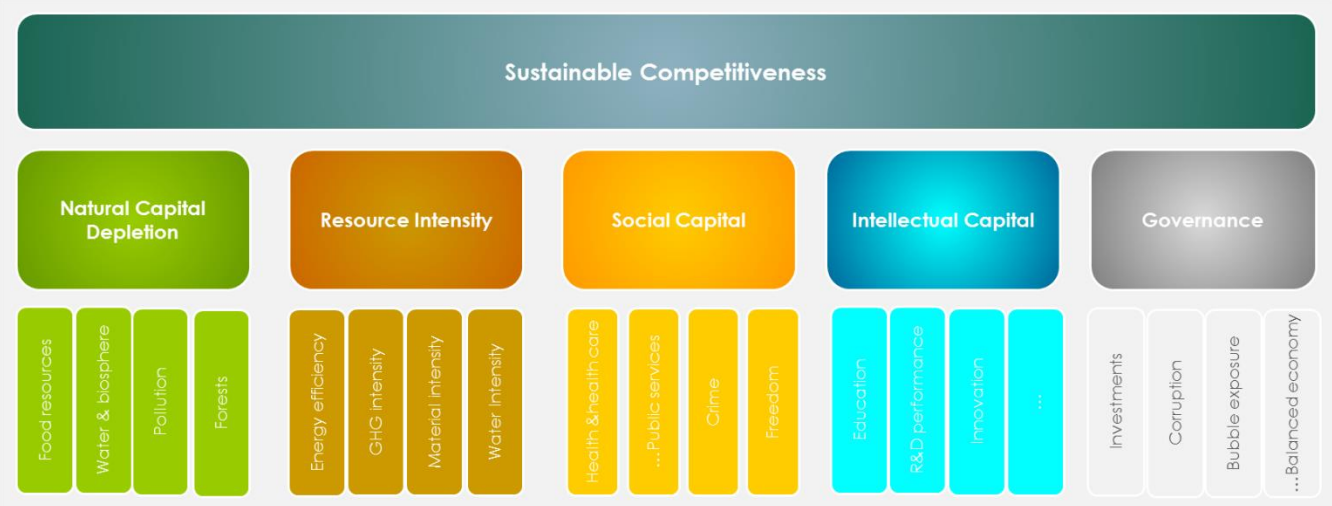


The Sustainable Competitiveness Pyramid

It is now widely accepted that economic activities have adverse impacts or side-effects on the non-financial assets of a country. The negative impacts of economic activities - including negative impacts on the social fabric and cohabitation within a society - can undermine or even reverse future growth and wealth creation. Due to the omission of key non-financial indicators and performance that are fundamental to sustain economic activities, conventionally used measurements to measure wealth of nations such as the GDP have limited informative value for the future development of a country.

Sustainable competitiveness means the ability of a country to meet the needs and basic requirements of current generations while sustaining or growing the national and individual wealth into the future without depleting natural and social capital.

The Sustainable Competitiveness Index is built and calculated based on the sustainable competitiveness model that covers 106 data indicators grouped in5 pillars:



Social Cohesion is the fundamental stability required to maintain interruption-free economic activities: the health of populations, equality, security and freedom within a country

- Natural Capital is the based to sustain a society and economic activities: the given natural environment within the frontiers of a country, including availability of resources, and the level of the depletion of those resources.
- Resource Intensity is a measurement of efficiency, and thus an element of competitiveness: the efficiency of using available resources (domestic or imported) as a measurement of operational competitiveness in a resource-constraint World.
- Social Cohesion is the fundamental stability required to maintain interruption-free economic activities: the health of populations, equality, security and freedom within a country
- Sustainable Innovation is key to sustain economic development in the globalised market: the capability of a country to generate wealth and jobs through innovation and value-added industries in the globalised markets
- The Governance framework is the environment businesses and a national economy are operating in. It is key to future development, not only for software, but also hardware.

Methodology Development

The competitiveness of a nation is influenced by a wide range of factors, i.e. is a complex matter. We are striving to develop a model that can reflect all aspects that define the level of competitiveness. The methodology for the Sustainable Competitiveness is therefore constantly reviewed and has evolved over time. The changes to the Sustainable Competitiveness Model and indicators have been undertaken based on past experiences, new research, data availability, and back-track analysis.

We prioritise accuracy over consistency. Due to changes in methodology, year-on-year comparison of rankings have a somewhat limited informative value. From an index point of view, it might be preferable to base rankings on the same methodology and data. However, we believe that delivering the most accurate result possible is more important than direct of year-on-year rankings comparison. The main changes that have been implemented as a result of the methodology review include changes to the model of competitiveness on which the calculation is based, and further adaptation to availability of congruent data series.

The sustainable competitiveness model has been adapted to better reflect the elements that characterise and influence sustainable competitiveness of nation-economy, and how those elements influence and impact each other. The model used for the first Index consisted of 4 key elements – Natural Capital, Resource Intensity, Sustainable Innovation, and Social Cohesion. Since 2014, the Sustainable Competitiveness model is based on a pyramid with 5 levels. The basic conditions form the basis of the pyramid, on which the next level is built. Vice-versa, the higher levels of the pyramid are influencing the performance of the levels below.

- The base level of the Pyramid is the **Natural Capital** (the given physical environment and resources) – the resources that feed the population, provide energy, and materials
- The second level is **Resource Management** – the ability to use available resources at the highest possible efficiency - natural resources, human resources, intellectual resources, financial resources.
- The third level is the **Social Capital** of a country, the cohesion between generations, genders, income groups and other society groups. Social cohesion is required for the prosperous development of human capital, i.e. Social Capital is the provision of a framework that facilitates the third level of the pyramid
- The fourth level is the **Intellectual Capital**, the fundament for the ability to compete and generate wealth in a globalised competitive market through design and manufacturing of value-adding products and service. It is the basis for management capabilities
- The fifth and highest level is **Governance** – the direction and framework provided by government interventions, expenditure, and investments. Government policies (or the absence of such policies) have strong influence and or impact on all lower levels of the Sustainable Competitiveness Pyramid.

8.2 Competitiveness Indicators

The sustainable competitiveness model is based on a pyramid, where each level is required to support the next higher level. In the top-down direction, the different levels of the pyramid have influence the state of the lower levels.

Natural Capital

The natural capital is the base of the pyramid, and is defined by the characteristics of the given physical environment of a country. The natural capital consists of a mixture of size, population, geography, climate, biodiversity and availability of natural resources (renewable and non-renewable), as well as the level of depletion/degradation of the available resources. The combination of these **factors and the level of depletion of the non-renewable resources due to human activity and climate change represents the potential for sustaining a prosperous** livelihood for the population and the economy of a nation into the future.

Indicators used encompass water, forest and biodiversity indicators, agricultural indicators, land degradation and desertification, minerals and energy resources, pollution indicators and depletion indicators.

Natural Capital Indicators	
Fossil energy prevalence (% of total)	Food Production Index
Renewable freshwater availability/capita	Endangered species
Electricity from hydropower (%)	Energy self-sufficiency
Forest area (% of total)	Land area below 5 m (% of total)
Arable land (ha/capita)	Population living below 5m (% of total)
Potential arable land (ha/capita)	Average rainfall (mm)
Land degradation (% of total)	Biodiversity Benefit Index (GEF)
Land at risk of desertification	Fertilizer consumption/ha
Extreme weather incidents	Tourist attractiveness
Mineral reserves (per GNI and capita)	Ocean Health Index
Population density	Natural resource depletion (as percentage of GNI)

Resource Intensity

The more efficient a nation is using resources (natural, human, financial), the more wealth the country is able to generate. In addition, higher efficiency means smaller negative impacts of potential supply scarcity of resources (food, energy, water, minerals). Higher efficiency is also equal to lower cost per production unit throughout all sectors, private and public. Efficient use of resources and energy is an indicator for a nation's ability to maintain or improve living standard levels both under a future business-as-usual Indicators used cover water usage and intensity, energy usage, intensity and energy sources, climate change emissions and intensity as well as certain raw material usage. However, global data availability for raw materials consumption other than steel is limited and therefore could not be included.

Indicators used cover water usage and intensity, energy usage, intensity and energy sources, climate change emissions and intensity as well as certain raw material usage. However, global data availability for raw materials consumption other than steel is limited and therefore could not be included.

Resource Intensity Indicators	
Transmission losses	Freshwater withdrawal rate
Ecological consumption footprint	Water productivity
NOx emissions per GDP	Steel usage efficiency per capita (T/CAPITA)
NOx emissions per capita	Air pollution - mean particule concentration
Energy per GDP	Air pollution exposure - population
Energy per capita	Hazardous waste per GDP
CO2 emissions / GDP	Electricity consumption / GDP
CO2 emissions /capita	Water usage per capita
Electricity consumption per capita	Waste per capita
Electricity from coal (%)	Waste per GDP
Electricity from oil (%)	SO2 emission per GNI
Renewable electricity excluding hydro (%)	SO2 emissions per capita

Social Capital

The economy requires stability to operate smoothly. Nations and societies therefore need a minimum level of social cohesion, coherence, and solidarity between different regions, between authorities and the people, between different interest groups, between income levels, between generations, and between individuals. A lack of social cohesion in any of the above aspects results in social gaps that eventually lead to increased crime, violence and insecurity that can seriously undermine the stability the economy requires as a basis to thrive in the long run.

Social Capital Indicators	
Doctors per 1000 people	Overweight
Hospital bed availability	Teen moms
Nurses per 1000 people	Life expectancy
Child mortality (below age 5, death per 1000)	Obesity rate
Public health spending (% of total health spending)	Income quintile ratio
Suicide rate	GINI coefficient (income distribution inequality)
Prison population rate (per 100'000 people)	Human rights index
Homicide rate (per 100'000 people)	Women in parliament (% of MPs)
Peace Index	Birth per woman
Press Freedom Index	Aging society
Public health expenditure of total expenditure	

Indictors used cover health performance indicators, birth statistics, income differences, equal opportunities (gender, economic), freedom of press, human rights considerations, the level of crime against both possession and humans, and perceived levels of well-being and happiness.

Intellectual Capital

The backbone of sustained economic success is the ability to continuously improve and innovate on all levels and throughout all institutions (not limited to the private sector). Sustaining competitiveness also requires a long-term view beyond momentary political interests or opinions, and long-term investments in crucial areas (education, infrastructure). Economies that are being deprived from investments sooner or later face decline, as some nations of the formerly "leading" West are currently learning the hard way. Indicators used for the innovation capability sub-index cover education levels, R&D performance indicators, infrastructure investment levels, employment indexes, and the balance of the agricultural-industrial-service sectors.

Intellectual Capital Indicators	
Primary education completion	Spending per student (% of per capita GDP)
Primary student repetitions	Patent applications per 1 million people
Secondary education enrolment	Patent applications (per GDP)
Tertiary education enrolment	New business registrations per 1 million people
Spending on education (% of state expenditure)	Trademark applications
Pupil-teacher ratio	R&D FTEs per million people
Pupil gender ratio	R&D spending
School dropouts secondary	High tech exports
Education spending (% of GDP)	

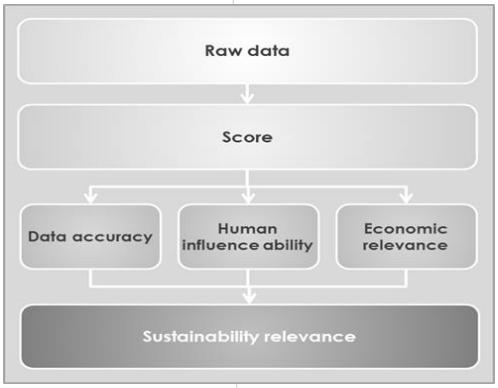
Governance Efficiency

With the given physical environment and conditions in place, the sustained competitiveness of a country is determined by what the society and the economy is able to extract from available resources. This, in turn, is characterized by the framework provided by authorities. The framework of a country provides the basis for businesses and the social consensus. Governance indicator consist of both physical indicators (infrastructure) as well as non-physical attributes (business legislation, level of corruption, government investments, exposure to business and volatility risks, exposure to financial risks, etc.)

Governance Efficiency Indicators	
Internet availability	GNI per capita
TI CPI Index	Non-renewable resource income dependency
Bribery payments - % of businesses	Bank capital-asset ratio
Employment in the service sector	Market fluctuation exposure: stock trading volume (% of GDP)
Employment in the manufacturing sector	Market fluctuation exposure: company value (% of GDP)
Manufacturing value added	Imports (% of GDP)
Unemployment	Population (total)
Investments	Market fluctuation exposure: stock trading volume (% of GDP)
Austerity Index	Market fluctuation exposure: company value (% of GDP)
Quality of public services	Imports (% of GDP)
Poverty development	Population (total)
Military spending (% of total government spending)	GNI (total)
Rail network per area & population	Ease of doing business
Government debt	Access to electricity

8.3 Index calculation

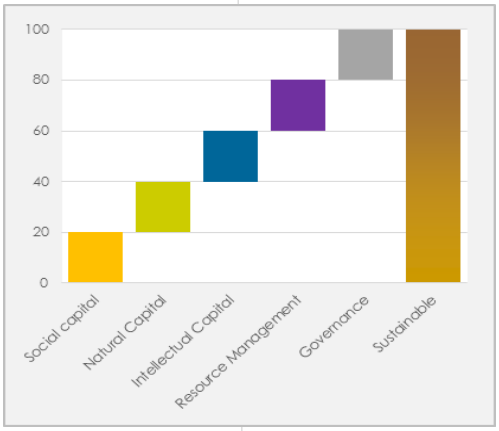
The raw data consist of numerical values. While values can be ranked against each other, they cannot be compared or added to other values (two apples plus three oranges are not equal to five pineapples). It is therefore necessary to extract a scalable and comparable score from the raw data as a first step.



Calculating scores from raw data

When comparing raw data of variables of different countries, an "absolute best" cannot be defined. Scores therefore cannot be calculated against a real or calculated best score. For the purpose of this index, the raw data was analysed and ranked for each indicator individually. Trough calculation of the average deviation, the best performing 5% receive the highest score (100), and the lowest 5% receive the lowest possible score (0). Scores between the highest and the lowest 5% are linearly assigned relative to the best 5% and the worst 5%.

In a second step, the relative importance (weight) of the indicator is assessed against other indicators to calculate scores for the 5 sub-indexes. The Sustainable Competitiveness Index is calculated based on the sub-indexes, each weighted equally.



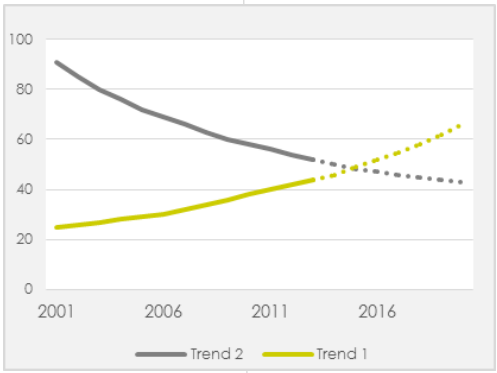
Each level of the Sustainable Competitiveness Pyramid is equally important and therefore equally weighted

Data in perspective

Raw data has to be analysed in perspective: 5000 ha of forest might be a large area for a country like Andorra, but it is a small area in China. Depending on the indicator, the denominator might be the land area, the size of the population, or intensity measurements, e.g. GDP. For certain indicators, (e.g. energy efficiency, but also innovation indicators), the performance is evaluated against two denominators (normally population size and GDP) in order to gain a more altruistic picture of the national sustainability performance that incorporates economic and human efficiency.

Trend analysis: Integrating recent developments

Current data limits the perspective to a momentary picture in time. However, the momentary status is not sufficient to gain a true picture of the sustainable competitiveness, which is, by definition, forward-looking. Of equal importance are therefore the trend developments. Analysing trends and developments allows for understanding of where a country is coming from – and, more importantly - indicates the direction of future developments. Increasing agricultural efficiency, for example, indicates a country's capability to feed an increasing population in the future, or the opposite if the trends are decreasing. Where sufficient data series are available, the trend was calculated for the latest 5 years available and scored to evaluate the current level as well as the future outlook and sustainability potential of a country based on recent developments.



In order to reflect a dynamic performance picture, performance trends are analysed, scored and integrated in the Sustainable Competitiveness Index

Data Sources

Over 90% of the sustainable competitiveness indicators are purely quantitative performance indicators. Data sources were chosen according to reliability and availability of global data. The largest percentage of indicators was derived from the World Bank's indicator database, followed by data sets and indicators provided by various UN agencies. Index calculation

Data reliability & accuracy

The accuracy of the index relies on the accuracy of the underlying data. Given the many individual and agencies involved in data collected around the World, it cannot be excluded that some of the data is not completely accurate. Data sources chosen for this Index (World Bank, UN agencies, OECD, IEA) are considered reasonably reliable. Raw data from the various databases was used as a basis for calculation as-is, i.e. without verifying the actual data.

Limitations of quantitative analysis

In order to exclude subjectivity, only quantitative data has been taken into account. However, quantitative indicators sometimes are not able to differentiate or express real and actual levels of quality. High spending on health care for example does not necessarily guarantee high quality health care system available for the average citizen. Equally, the percentage of school enrolment (on all levels, form primary levels to college and universities) is not necessarily an expression of the quality of the education. However, for some indicators, quality is equally important to quantity from a sustainability viewpoint. For such indicators, quantitative indicators have limited informative value and serve as a proxy.

While explanatory power of quantitative indicators is limited, conducting a qualitative evaluation of the indicators used on the global level would go far beyond the limitations of this index. For indicators with a potentially low correlation between quantity and quality, the weighting has been adjusted accordingly. In order to integrate some qualitative aspects, results of global surveys have been included, e.g. for the quality of public services, or perceived life satisfaction.

Time frame of data used

The Sustainable Competitiveness Index 2019 is based on the latest available data. For most data series, the latest data available dates 2018. Where 2018 data was available, 2017 data has been used. Where 2018 or 2017 data was not available, older data has been used.

Availability of data

For some indicators data is not available for all countries (in particular for the less or least developed economies). If non-available data points would be converted to a 0 (zero) score, the rankings would be distorted. In order to present a balanced overall picture, the missing data points from those countries have been replaced with calculated values, extrapolated based on regional averages, income and development levels, as well as geographical features and climatic averages.

9 Data Tables

The Global Sustainable Competitiveness Index

Rank	Country	Score	Rank	Country	Score	Country	Rank	Score	Country	Rank	Score
1	Sweden	60.6	46	Macedonia	47.2	Gabon	91	43.2	Swaziland	136	38.9
2	Finland	59.5	47	Uruguay	47.2	Cuba	92	43.0	Gambia	137	38.9
3	Iceland	57.3	48	Bolivia	47.1	Ghana	93	42.9	South Africa	138	38.8
4	Denmark	57.0	49	Brazil	46.8	Suriname	94	42.9	Lesotho	139	38.6
5	Switzerland	56.9	50	Ethiopia	46.7	Cote d'Ivoire	95	42.8	Turkmenistan	140	38.6
6	Norway	56.9	51	Russia	46.7	Tanzania	96	42.7	Egypt	141	38.6
7	Estonia	54.9	52	Colombia	46.7	Iran	97	42.6	Sudan	142	38.5
8	Luxembourg	54.5	53	Malta	46.6	Tunisia	98	42.5	Solomon Islands	143	38.4
9	Latvia	54.4	54	Moldova	46.5	Venezuela	99	42.3	Botswana	144	38.4
10	Croatia	54.2	55	Malaysia	46.4	Togo	100	42.3	Pakistan	145	38.3
11	Austria	54.2	56	Montenegro	46.4	Maldives	101	42.3	St. Kitts and Nevis	146	38.2
12	New Zealand	53.9	57	Guyana	46.2	Republic of Congo	102	41.9	Liberia	147	38.1
13	Slovenia	53.8	58	Chile	45.9	Philippines	103	41.7	Djibouti	148	38.0
14	Ireland	53.6	59	Mauritius	45.9	Democratic Republic o	104	41.7	Zambia	149	37.9
15	Germany	53.5	60	Serbia	45.8	Nicaragua	105	41.5	Jordan	150	37.7
16	Czech Republic	53.1	61	Cyprus	45.8	Azerbaijan	106	41.5	Bahrain	151	37.7
17	United Kingdom	52.8	62	Burma	45.8	West Bank and Gaza	107	41.1	Rwanda	152	37.6
18	Liechtenstein	52.6	63	Kyrgistan	45.7	Dominica	108	41.1	Comoros	153	37.5
19	Canada	52.2	64	Nepal	45.6	Mozambique	109	41.0	Madagascar	154	37.4
20	France	52.0	65	Brunei	45.5	Saudi Arabia	110	41.0	Malawi	155	37.3
21	Poland	51.9	66	Indonesia	45.4	Sri Lanka	111	41.0	Lebanon	156	37.3
22	Slovakia	51.6	67	Panama	45.1	Qatar	112	40.8	Mali	157	37.2
23	Belgium	51.3	68	Uzbekistan	45.0	Dominican Republic	113	40.8	Niger	158	36.9
24	Portugal	51.1	69	Argentina	45.0	Equatorial Guinea	114	40.8	Guinea-Bissau	159	36.9
25	Japan	51.1	70	Laos	45.0	Angola	115	40.7	Afghanistan	160	36.7
26	Romania	50.8	71	Albania	45.0	Senegal	116	40.6	Libya	161	36.6
27	South Korea	50.8	72	Kazakhstan	44.9	Burkina Faso	117	40.6	Kuwait	162	36.4
28	Lithuania	50.6	73	Oman	44.7	Mongolia	118	40.5	Honduras	163	36.2
29	Netherlands	50.5	74	Ukraine	44.7	Morocco	119	40.4	Samoa	164	36.2
30	Italy	49.9	75	Mexico	44.4	Fiji	120	40.3	Kiribati	165	35.5
31	Hungary	49.2	76	Bhutan	44.4	Zimbabwe	121	40.2	Syria	166	35.3
32	Bulgaria	49.2	77	Turkey	44.4	El Salvador	122	40.2	Central African Republ	167	35.3
33	Bosnia and Herzegovin	49.2	78	Vietnam	44.4	Papua New Guinea	123	40.2	Iraq	168	34.6
34	USA	49.1	79	Ecuador	44.4	Nigeria	124	39.9	Burundi	169	34.5
35	Georgia	48.8	80	United Arab Emirates	44.3	Guinea	125	39.7	Uganda	170	34.4
36	Costa Rica	48.8	81	Cameroon	44.0	Tonga	126	39.7	Vanuatu	171	34.4
37	China	48.5	82	Thailand	43.8	Trinidad and Tobago	127	39.6	Chad	172	34.4
38	Spain	48.5	83	Belize	43.8	Benin	128	39.5	Eritrea	173	34.2
39	Paraguay	48.3	84	Timor-Leste	43.7	Guatemala	129	39.5	Mauritania	174	33.8
40	Belarus	47.8	85	Algeria	43.6	India	130	39.5	Grenada	175	33.2
41	Singapore	47.8	86	Cambodia	43.5	Sao Tome and Principe	131	39.4	Seychelles	176	32.8
42	Australia	47.6	87	Kenya	43.4	Bangladesh	132	39.1	South Sudan	177	31.8
43	Israel	47.5	88	Armenia	43.3	Namibia	133	39.1	Yemen	178	31.3
44	Greece	47.4	89	Sierra Leone	43.3	Cape Verde	134	39.0	Haiti	179	31.3
45	Peru	47.3	90	Tajikistan	43.3	Jamaica	135	39.0	Bahamas	180	30.5

Natural Capital Competitiveness Scores

Country	Rank	Score	Country	Rank	Score	Country	Rank	Score	Country	Rank	Score
Guyana	1	70.8	USA	46	53.3	Tajikistan	91	43.5	St. Kitts and Nevis	136	35.7
Laos	2	70.3	Guinea-Bissau	47	52.8	Austria	92	43.4	Sri Lanka	137	35.6
Democratic Republic of C	3	66.6	Belarus	48	52.8	Chad	93	43.1	Czech Republic	138	35.6
Cameroon	4	64.0	Bosnia and Herzegovina	49	52.6	Slovenia	94	43.0	Cape Verde	139	35.6
Sweden	5	63.7	Lithuania	50	52.3	Indonesia	95	42.7	Eritrea	140	35.2
Estonia	6	63.3	Brunei	51	52.1	Gambia	96	42.7	Afghanistan	141	34.8
Republic of Congo	7	62.4	Argentina	52	51.8	Kazakhstan	97	42.6	United Kingdom	142	34.6
Finland	8	62.3	Solomon Islands	53	51.8	Sao Tome and Principe	98	42.5	Philippines	143	34.6
Canada	9	62.0	Chile	54	51.6	Serbia	99	42.1	Iran	144	34.5
Paraguay	10	62.0	Romania	55	51.2	Dominican Republic	100	42.0	Egypt	145	34.5
Colombia	11	61.7	Cambodia	56	51.1	Benin	101	41.1	Pakistan	146	34.5
Sierra Leone	12	61.6	Cote d'Ivoire	57	50.8	Italy	102	41.1	Netherlands	147	34.4
Burma	13	61.3	Nicaragua	58	50.8	Niger	103	40.9	Mauritius	148	34.4
New Zealand	14	61.0	Australia	59	50.0	Mauritania	104	40.9	South Korea	149	34.2
Venezuela	15	60.7	Ghana	60	48.9	Greece	105	40.8	Kenya	150	34.2
Brazil	16	60.1	South Africa	61	48.3	Slovakia	106	40.5	Mongolia	151	33.7
Suriname	17	60.0	Ecuador	62	47.9	Uganda	107	40.4	Azerbaijan	152	33.7
Peru	18	59.8	Kyrgistan	63	47.5	Honduras	108	40.4	China	153	33.3
Norway	19	59.1	Malawi	64	47.4	Luxembourg	109	40.2	Morocco	154	33.1
Madagascar	20	58.5	Malaysia	65	47.3	Nigeria	110	39.9	South Sudan	155	33.1
Equatorial Guinea	21	58.3	Georgia	66	47.2	Tonga	111	39.7	Maldives	156	32.6
Iceland	22	58.0	Switzerland	67	47.0	Trinidad and Tobago	112	39.6	Yemen	157	32.2
Papua New Guinea	23	58.0	Lesotho	68	46.9	Djibouti	113	38.7	Grenada	158	31.3
Gabon	24	57.9	Swaziland	69	46.8	Syria	114	38.7	Jamaica	159	31.2
Central African Republic	25	57.7	Denmark	70	46.8	Uzbekistan	115	38.6	Botswana	160	31.0
Guinea	26	57.3	Zimbabwe	71	46.7	Guatemala	116	38.6	Seychelles	161	30.9
Zambia	27	57.2	Samoa	72	46.7	Oman	117	38.6	Bangladesh	162	30.8
Croatia	28	57.0	Ireland	73	46.4	Rwanda	118	38.5	India	163	30.7
Latvia	29	56.7	France	74	46.4	Namibia	119	38.4	Belgium	164	30.3
Bolivia	30	56.1	Albania	75	45.9	Comoros	120	38.2	United Arab Emirates	165	29.7
Belize	31	55.5	Togo	76	45.7	Senegal	121	38.1	Haiti	166	29.3
Russia	32	55.4	Timor-Leste	77	45.7	Japan	122	38.0	Kiribati	167	28.9
Tanzania	33	55.4	Portugal	78	45.5	Vanuatu	123	37.9	Malta	168	28.7
Bhutan	34	55.3	Vietnam	79	45.4	Burundi	124	37.8	Cyprus	169	28.1
Liberia	35	55.2	Ukraine	80	45.2	Moldova	125	37.1	Qatar	170	28.0
Uruguay	36	55.1	Burkina Faso	81	45.2	Cuba	126	36.8	Kuwait	171	27.1
Mali	37	55.0	Macedonia	82	44.7	Turkey	127	36.7	Bahrain	172	27.0
Fiji	38	55.0	Mexico	83	44.5	Armenia	128	36.6	Tunisia	173	26.7
Ethiopia	39	54.5	Hungary	84	44.4	El Salvador	129	36.5	West Bank and Gaza	174	26.6
Panama	40	54.3	Liechtenstein	85	44.3	Libya	130	36.4	Turkmenistan	175	25.3
Costa Rica	41	54.0	Dominica	86	44.3	Germany	131	36.4	Iraq	176	25.2
Angola	42	53.9	Montenegro	87	44.2	Thailand	132	36.3	Singapore	177	24.9
Sudan	43	53.9	Spain	88	44.2	Algeria	133	35.9	Israel	178	24.9
Mozambique	44	53.5	Poland	89	43.7	Bahamas	134	35.8	Jordan	179	23.9
Bulgaria	45	53.5	Nepal	90	43.7	Saudi Arabia	135	35.8	Lebanon	180	20.5

Resource Intensity Competitiveness Scores

Country	Rank	Score	Country	Rank	Score	Country	Rank	Score	Country	Rank	Score
Kenya	1	66.3	Niger	46	53.1	Belarus	91	49.0	Azerbaijan	136	44.1
Togo	2	65.6	France	47	53.1	Bangladesh	92	48.7	India	137	44.0
Ethiopia	3	64.4	Uganda	48	53.0	Namibia	93	48.7	Guyana	138	43.6
Nigeria	4	63.8	Sao Tome and Principe	49	53.0	Algeria	94	48.7	Israel	139	43.6
Sweden	5	63.8	Zambia	50	53.0	Central African Republ	95	48.4	Iraq	140	43.3
Luxembourg	6	63.5	South Sudan	51	52.9	Japan	96	48.3	Trinidad and Tobago	141	43.0
Benin	7	63.3	Guatemala	52	52.9	Syria	97	48.0	Montenegro	142	43.0
United Kingdom	8	62.5	Rwanda	53	52.7	Tajikistan	98	48.0	Venezuela	143	42.8
Tanzania	9	61.4	El Salv ador	54	52.7	Papua New Guinea	99	47.8	Laos	144	42.7
Democratic Republic o	10	61.1	New Zealand	55	52.7	Peru	100	47.8	Argentina	145	42.7
Latv ia	11	61.1	Burma	56	52.4	Tonga	101	47.5	Vanuatu	146	42.3
Republic of Congo	12	60.9	Gambia	57	52.3	USA	102	47.5	Ukraine	147	42.2
Denmark	13	59.8	Italy	58	52.1	Hungary	103	47.4	United Arab Emirates	148	42.1
Croatia	14	59.8	West Bank and Gaza	59	51.9	Bosnia and Herzegov in	104	47.3	Sri Lanka	149	42.1
Nepal	15	59.3	Burkina Faso	60	51.9	Kyrgistan	105	47.3	Cuba	150	42.0
Slov akia	16	58.8	Comoros	61	51.6	Netherlands	106	46.9	Samoa	151	41.9
Cameroon	17	58.7	Cyprus	62	51.4	Pakistan	107	46.7	Turkey	152	41.8
Ireland	18	58.4	Greece	63	51.3	Madagascar	108	46.7	Oman	153	41.6
Moldov a	19	58.3	Djibouti	64	51.2	Yemen	109	46.7	Mongolia	154	41.1
Cote d'Iv oire	20	57.9	Panama	65	51.1	Solomon Islands	110	46.6	South Korea	155	41.0
Nicaragua	21	57.7	Malta	66	50.8	Estonia	111	46.5	Botswana	156	40.9
Angola	22	57.7	Jamaica	67	50.7	Tunisia	112	46.5	Swaziland	157	40.6
Ghana	23	57.7	Portugal	68	50.6	Mali	113	46.0	Bulgaria	158	40.4
Mozambique	24	57.5	Cambodia	69	50.6	Brunei	114	45.9	South Africa	159	39.7
Switzerland	25	57.4	Burundi	70	50.5	Georgia	115	45.8	China	160	39.7
Gabon	26	57.1	Poland	71	50.4	Maldiv es	116	45.6	Russia	161	39.6
Lithuania	27	56.8	Guinea-Bissau	72	50.3	Ecuador	117	45.6	Mauritius	162	39.3
Uruguay	28	56.5	Norway	73	50.3	Macedonia	118	45.6	Iran	163	39.2
Iceland	29	56.0	Zimbabwe	74	50.2	Jordan	119	45.5	Suriname	164	39.1
Romania	30	55.7	Sierra Leone	75	50.1	Timor-Leste	120	45.5	Egypt	165	38.8
Finland	31	55.6	Colombia	76	50.1	Afghanistan	121	45.4	Singapore	166	38.7
Bolivia	32	55.4	Germany	77	50.1	Albania	122	45.4	Turkmenistan	167	38.6
Lesotho	33	55.4	Dominica	78	50.0	Morocco	123	45.3	Malaysia	168	37.9
Haiti	34	55.2	Philippines	79	49.9	Mexico	124	45.3	Bhutan	169	37.8
Paraguay	35	55.1	Canada	80	49.9	Fiji	125	45.1	St. Kitts and Nev is	170	37.7
Honduras	36	54.5	Malawi	81	49.9	Mauritania	126	44.9	Bahrain	171	37.6
Belgium	37	54.5	Liberia	82	49.8	Qatar	127	44.8	Libya	172	37.3
Brazil	38	54.4	Belize	83	49.4	Kiribati	128	44.7	Vietnam	173	36.4
Equatorial Guinea	39	54.3	Slov enia	84	49.3	Indonesia	129	44.4	Serbia	174	36.4
Senegal	40	54.2	Spain	85	49.2	Lebanon	130	44.4	Saudi Arabia	175	35.7
Liechtenstein	41	53.8	Uzbekistan	86	49.2	Chile	131	44.4	Grenada	176	34.2
Austria	42	53.5	Sudan	87	49.2	Armenia	132	44.4	Kazakhstan	177	33.6
Costa Rica	43	53.5	Chad	88	49.1	Dominican Republic	133	44.2	Kuwait	178	30.6
Eritrea	44	53.4	Guinea	89	49.1	Thailand	134	44.1	Seychelles	179	27.6
Czech Republic	45	53.3	Australia	90	49.0	Cape Verde	135	44.1	Bahamas	180	27.0

Social Capital Competitiveness Scores

Country	Rank	Score	Country	Rank	Score	Country	Rank	Score	Country	Rank	Score
Finland	1	58.8	Lebanon	46	47.7	Cape Verde	91	40.4	Benin	136	36.0
Norway	2	58.6	Malaysia	47	47.6	Mali	92	40.2	Nigeria	137	35.9
Iceland	3	58.4	Moldova	48	47.6	Bolivia	93	40.0	Belize	138	35.8
Sweden	4	58.3	Romania	49	47.5	Turkmenistan	94	39.9	Madagascar	139	35.8
Switzerland	5	57.8	Azerbaijan	50	47.3	Laos	95	39.8	Cote d'Ivoire	140	35.8
Luxembourg	6	57.2	Latvia	51	47.2	Cameroon	96	39.8	Guinea-Bissau	141	35.7
Austria	7	57.0	United Arab Emirates	52	47.2	Ethiopia	97	39.8	USA	142	35.7
Netherlands	8	56.8	Croatia	53	47.2	Cambodia	98	39.7	South Sudan	143	35.6
Germany	9	56.4	Israel	54	47.1	Costa Rica	99	39.5	Namibia	144	35.5
Belgium	10	56.2	Argentina	55	47.1	Suriname	100	39.4	Solomon Islands	145	35.5
Denmark	11	55.3	Georgia	56	47.0	Angola	101	39.2	Djibouti	146	35.4
Japan	12	55.0	Algeria	57	46.7	Cuba	102	39.0	Dominica	147	35.3
Singapore	13	53.7	Tunisia	58	46.6	Morocco	103	38.7	Brazil	148	35.0
Slovenia	14	53.4	Nepal	59	46.5	Turkey	104	38.7	Togo	149	34.9
Liechtenstein	15	52.6	Belarus	60	46.2	Sao Tome and Principe	105	38.6	Sudan	150	34.9
Portugal	16	52.6	Bulgaria	61	46.0	El Salvador	106	38.6	Eritrea	151	34.8
Italy	17	52.2	Sierra Leone	62	45.9	Paraguay	107	38.6	Equatorial Guinea	152	34.8
Czech Republic	18	52.0	Albania	63	45.5	Gambia	108	38.5	Dominican Republic	153	34.6
Kyrgistan	19	51.9	Sri Lanka	64	45.2	Thailand	109	38.5	Jamaica	154	34.5
France	20	51.9	Hungary	65	45.0	Philippines	110	38.5	Trinidad and Tobago	155	34.5
Estonia	21	51.9	Brunei	66	44.3	Iran	111	38.4	Colombia	156	34.0
Malta	22	51.4	Oman	67	44.2	Afghanistan	112	38.3	Zimbabwe	157	33.7
Montenegro	23	51.3	Qatar	68	44.1	Comoros	113	38.3	Iraq	158	33.2
South Korea	24	51.2	Ecuador	69	44.1	Mauritania	114	38.2	Zambia	159	33.1
New Zealand	25	51.1	Indonesia	70	44.0	Burma	115	38.1	Venezuela	160	33.1
Mongolia	26	51.0	Bhutan	71	43.8	Mozambique	116	38.1	Guatemala	161	33.0
Cyprus	27	50.9	Jordan	72	43.7	West Bank and Gaza	117	37.9	Fiji	162	33.0
Kazakhstan	28	50.9	Burkina Faso	73	43.6	Kenya	118	37.9	Uganda	163	32.9
Slovakia	29	50.6	Greece	74	43.6	Panama	119	37.3	Egypt	164	32.7
Spain	30	50.6	Kuwait	75	43.4	Papua New Guinea	120	37.2	Kiribati	165	32.5
Serbia	31	50.5	Mauritius	76	43.3	St. Kitts and Nevis	121	37.1	Samoa	166	32.5
Poland	32	50.2	Libya	77	43.2	Gabon	122	37.1	Syria	167	32.4
Armenia	33	49.9	Niger	78	42.7	Republic of Congo	123	37.0	Vanuatu	168	32.4
China	34	49.8	Vietnam	79	42.6	Rwanda	124	36.9	South Africa	169	31.6
Uzbekistan	35	49.7	Saudi Arabia	80	42.5	Liberia	125	36.9	Seychelles	170	31.4
Australia	36	49.7	Nicaragua	81	42.4	Tanzania	126	36.8	Burundi	171	31.3
Ireland	37	49.7	Bangladesh	82	42.1	Russia	127	36.7	Democratic Republic o	172	31.2
Bosnia and Herzegovin	38	49.6	Senegal	83	42.0	Bahrain	128	36.7	Yemen	173	30.9
Macedonia	39	49.3	Pakistan	84	41.9	Guyana	129	36.6	Botswana	174	30.8
United Kingdom	40	48.9	Mexico	85	41.4	Grenada	130	36.5	Honduras	175	29.9
Canada	41	48.7	Guinea	86	41.4	Chad	131	36.5	Haiti	176	29.4
Timor-Leste	42	48.6	Ukraine	87	41.3	Tonga	132	36.5	Swaziland	177	28.8
Tajikistan	43	48.2	Peru	88	41.0	Ghana	133	36.4	Lesotho	178	28.0
Maldives	44	48.2	Uruguay	89	40.9	Malawi	134	36.4	Central African Republ	179	27.7
Lithuania	45	48.1	India	90	40.5	Chile	135	36.0	Bahamas	180	23.9

Intellectual Capital Competitiveness Scores

Country	Rank	Score	Country	Rank	Score	Country	Rank	Score	Country	Rank	Score
South Korea	1	72.9	Brunei	46	45.7	Ecuador	91	34.4	Papua New Guinea	136	25.2
Sweden	2	66.1	Tunisia	47	45.0	Armenia	92	34.2	El Salvador	137	24.8
Norway	3	64.3	Costa Rica	48	44.9	Sri Lanka	93	34.0	Cambodia	138	24.7
Singapore	4	63.6	Latvia	49	44.1	Trinidad and Tobago	94	33.9	Senegal	139	24.6
Denmark	5	63.6	West Bank and Gaza	50	44.0	Uruguay	95	33.9	Comoros	140	24.2
Japan	6	62.3	Chile	51	43.6	Venezuela	96	33.9	Bahamas	141	24.1
United Kingdom	7	62.1	United Arab Emirates	52	43.6	Azerbaijan	97	33.8	Afghanistan	142	23.9
Switzerland	8	62.1	New Zealand	53	43.4	Jamaica	98	33.8	Gabon	143	23.8
China	9	61.5	Lithuania	54	43.0	Argentina	99	33.7	Mozambique	144	23.7
Israel	10	60.8	Spain	55	42.6	Sao Tome and Principe	100	33.5	Burkina Faso	145	23.4
Germany	11	60.6	Brazil	56	42.3	Lebanon	101	33.5	Ethiopia	146	23.3
Finland	12	59.3	Macedonia	57	42.2	Belize	102	33.4	Guatemala	147	22.8
Slovenia	13	59.0	Vietnam	58	41.9	Jordan	103	33.2	Benin	148	22.2
Czech Republic	14	58.5	Bosnia and Herzegovin	59	41.6	Cape Verde	104	33.0	Tanzania	149	21.9
USA	15	58.2	Kazakhstan	60	41.5	India	105	32.1	Angola	150	21.8
Belgium	16	58.0	Indonesia	61	41.1	Namibia	106	31.5	Togo	151	21.6
Netherlands	17	56.4	Cuba	62	41.0	Suriname	107	31.5	Samoa	152	21.6
Austria	18	56.1	Kyrgistan	63	41.0	Laos	108	31.4	Pakistan	153	20.9
Iceland	19	55.4	Romania	64	40.8	Panama	109	31.4	Republic of Congo	154	20.3
France	20	54.6	Botswana	65	40.6	Paraguay	110	31.3	Liberia	155	20.2
Portugal	21	51.6	Australia	66	39.9	Qatar	111	31.3	Haiti	156	20.1
Liechtenstein	22	51.5	Mongolia	67	39.6	Kiribati	112	31.2	Sudan	157	20.1
Malaysia	23	51.4	Montenegro	68	39.4	Nepal	113	31.2	Burundi	158	20.0
Poland	24	51.1	Albania	69	39.2	Fiji	114	31.2	Vanuatu	159	19.7
Hungary	25	50.9	Belarus	70	38.9	Philippines	115	31.0	Equatorial Guinea	160	19.1
Turkey	26	50.4	Timor-Leste	71	38.5	St. Kitts and Nevis	116	30.8	Cameroon	161	18.6
Estonia	27	50.4	Bahrain	72	38.4	Tonga	117	30.7	Yemen	162	18.6
Mauritius	28	49.8	Algeria	73	38.4	Kuwait	118	30.6	Bangladesh	163	18.5
Canada	29	49.7	Uzbekistan	74	38.3	Burma	119	30.6	Malawi	164	18.1
Luxembourg	30	49.7	Peru	75	38.2	Dominican Republic	120	30.6	Gambia	165	17.7
Italy	31	48.8	Mexico	76	38.0	Dominica	121	29.6	Chad	166	16.8
Russia	32	48.6	Maldives	77	37.8	Libya	122	28.7	Guinea-Bissau	167	16.6
Croatia	33	48.5	Guyana	78	37.5	Seychelles	123	28.2	Rwanda	168	15.7
Slovakia	34	47.8	Colombia	79	37.5	Zimbabwe	124	28.1	Nigeria	169	15.6
Ukraine	35	47.8	South Africa	80	37.2	Grenada	125	27.4	Mauritania	170	15.4
Ireland	36	47.2	Moldova	81	36.9	Lesotho	126	27.3	Guinea	171	15.1
Malta	37	47.1	Saudi Arabia	82	36.9	Sierra Leone	127	27.0	Eritrea	172	14.5
Greece	38	46.9	Tajikistan	83	36.7	Iraq	128	26.9	Uganda	173	14.4
Cyprus	39	46.6	Swaziland	84	36.4	Solomon Islands	129	26.9	Madagascar	174	14.1
Georgia	40	46.6	Morocco	85	36.2	Nicaragua	130	26.3	Niger	175	14.0
Thailand	41	46.6	Egypt	86	36.1	Djibouti	131	26.2	Mali	176	13.0
Oman	42	46.0	Kenya	87	36.0	Syria	132	25.8	Central African Republ	177	12.5
Iran	43	46.0	Bhutan	88	36.0	Cote d'Ivoire	133	25.4	Democratic Republic o	178	12.3
Serbia	44	45.9	Turkmenistan	89	35.5	Honduras	134	25.3	South Sudan	179	10.1
Bulgaria	45	45.7	Bolivia	90	35.5	Ghana	135	25.2	Zambia	180	8.7

Governance Efficiency Competitiveness Scores

Country	Rank	Score	Country	Rank	Score	Country	Rank	Score	Country	Rank	Score
Ireland	1	66.5	Turkey	46	54.4	Botswana	91	48.6	Vanuatu	136	39.6
Czech Republic	2	66.3	Serbia	47	54.3	Algeria	92	48.4	Brunei	137	39.2
Slovenia	3	64.3	Montenegro	48	54.3	Azerbaijan	93	48.3	Cameroon	138	38.9
Poland	4	64.2	Macedonia	49	54.2	Malaysia	94	48.1	Burkina Faso	139	38.9
Germany	5	64.1	Chile	50	53.8	Sri Lanka	95	47.9	Djibouti	140	38.7
Latvia	6	63.0	Saudi Arabia	51	53.8	Tunisia	96	47.8	Samoa	141	38.1
Estonia	7	62.5	France	52	53.7	Pakistan	97	47.7	Tanzania	142	37.9
Mauritius	8	62.5	Turkmenistan	53	53.7	Maldives	98	47.3	Zambia	143	37.7
Luxembourg	9	61.6	Thailand	54	53.5	Nepal	99	47.3	Equatorial Guinea	144	37.4
New Zealand	10	61.4	Oman	55	53.3	Ukraine	100	47.1	Democratic Republic o	145	37.3
Finland	11	61.3	Russia	56	53.1	Trinidad and Tobago	101	46.7	Libya	146	37.3
Liechtenstein	12	61.0	Mexico	57	53.0	Burma	102	46.6	Fiji	147	37.2
Israel	13	61.0	Lithuania	58	52.8	Dominica	103	46.4	Mongolia	148	37.2
Austria	14	60.9	Moldova	59	52.8	Ghana	104	46.3	South Africa	149	37.1
Slovakia	15	60.5	Belarus	60	52.4	Seychelles	105	46.1	Grenada	150	36.4
Switzerland	16	60.5	Dominican Republic	61	52.4	West Bank and Gaza	106	45.2	Guinea	151	35.9
Bulgaria	17	60.2	Norway	62	52.3	Jamaica	107	44.7	Lesotho	152	35.7
Denmark	18	59.3	Cyprus	63	52.1	Belize	108	44.7	Benin	153	35.1
Romania	19	58.8	Japan	64	52.1	Iraq	109	44.6	Malawi	154	35.0
United Arab Emirates	20	58.7	Costa Rica	65	52.1	Suriname	110	44.5	Comoros	155	34.8
Iceland	21	58.6	Cambodia	66	51.7	Senegal	111	44.2	Sudan	156	34.5
Croatia	22	58.5	Ethiopia	67	51.7	Nigeria	112	44.1	Niger	157	33.9
Hungary	23	58.3	Armenia	68	51.6	Rwanda	113	44.0	Eritrea	158	33.3
China	24	58.1	Panama	69	51.4	Cote d'Ivoire	114	43.9	Burundi	159	33.1
Netherlands	25	58.1	Sweden	70	51.1	Tonga	115	43.9	Papua New Guinea	160	32.7
Singapore	26	58.1	USA	71	51.1	Togo	116	43.7	Mozambique	161	32.4
Belgium	27	57.8	Egypt	72	50.9	Gambia	117	43.2	Sierra Leone	162	32.0
Georgia	28	57.6	Canada	73	50.5	Zimbabwe	118	42.6	Madagascar	163	31.9
Cuba	29	56.1	Guatemala	74	50.2	Kenya	119	42.4	Syria	164	31.8
Kazakhstan	30	55.9	India	75	50.1	Guyana	120	42.3	Mali	165	31.5
Qatar	31	55.8	Kuwait	76	50.1	Brazil	121	42.2	Uganda	166	31.3
United Kingdom	32	55.8	Colombia	77	50.0	Jordan	122	42.1	Solomon Islands	167	31.3
Vietnam	33	55.7	Argentina	78	49.9	Swaziland	123	41.9	Angola	168	31.1
Spain	34	55.7	Peru	79	49.9	Cape Verde	124	41.8	Honduras	169	30.9
Bangladesh	35	55.5	Ecuador	80	49.7	Bahamas	125	41.7	Nicaragua	170	30.6
Italy	36	55.4	Uruguay	81	49.7	Namibia	126	41.5	Central African Republ	171	30.1
Portugal	37	55.4	St. Kitts and Nevis	82	49.5	Venezuela	127	41.2	Mauritania	172	29.6
Iran	38	55.1	Australia	83	49.4	Afghanistan	128	41.0	Guinea-Bissau	173	29.1
Malta	39	55.0	Uzbekistan	84	49.4	Kyrgistan	129	40.8	Sao Tome and Principe	174	29.1
Indonesia	40	54.7	Bhutan	85	49.2	Laos	130	40.7	Republic of Congo	175	28.9
Bosnia and Herzegovin	41	54.7	Albania	86	48.9	Timor-Leste	131	40.3	Liberia	176	28.2
Greece	42	54.7	Bolivia	87	48.8	Lebanon	132	40.3	Yemen	177	28.1
South Korea	43	54.6	El Salvador	88	48.6	Tajikistan	133	40.2	South Sudan	178	27.5
Philippines	44	54.5	Bahrain	89	48.6	Kiribati	134	40.0	Chad	179	26.4
Paraguay	45	54.5	Morocco	90	48.6	Gabon	135	39.9	Haiti	180	22.3

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