the

global

sustainable

competitiveness

index

the *REAL* competitiveness index

About this Report

The Sustainable Competitiveness Report, 8th edition

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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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the sustainable competitiveness index 2018

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The Global Sustainable Competitiveness Index

7th Edition, 2018

Foreword

We are living in a paradox world: the GDP has been growing, in recent years. However, a large majority of people in many countries are worse off than 30 years ago, despite growing GDP: *the GDP is growing, but people are doing worse*. What does that mean? It means that the GDP is, at best, a somewhat imprecise measurement of the *total* financial wealth of a nation. For one, GDP does not reflect neither the real nor the perceived wealth of the average citizen. And it is based on a competitiveness model that does not incorporate the very foundations of a nation's economic success – the GDP can rise even when a nation is in steep decline. The GDP, at worst, is an inadequate indicator based on which governments do or do not formulate and implement certain policies. ***Because it does not reflect reality, policies based on GDP focus cannot improve reality***.

In this light, SolAbility has developed the Global Sustainable Competitiveness Index (GSCI) – as a thorough alternative to the GDP to measure the real wealth of nations, and to express the potential for sustain current wealth levels. The GSCI is based on model that incorporates all pillars of sustained growth and wealth creation: natural capital availability; national governance efficiency (the framework in which all players operation - the outcomes of policy directions and investments, e.g. the availability of infrastructure); intellectual capital (innovation and business capabilities); resource efficiency, and social cohesion. The Sustainable Competitiveness Index also integrates data trends over time to allow for a better expression of future development potential. Apart from a few survey-based indicators (such as TI corruption index), all indicators are quantitative, derived from international databases (namely the World Bank). It is therefore free of ideological bias.

The GSCI is expresses current and future development prospects and risks of nations. The results aim at serving as an alternative to commonly used metrics and measurements of competitiveness, such as the GDP or credit ratings, for academic purposes, and policy decision making.

Unfortunately, we are living in a world that is as (or more) divided ideologically than at the end of the cold War nearly 30 years ago now. In this light, we have analysed what the potential implementation of proposed policies under the new US administration would mean for the competitiveness of the USA, and China.

We hope you find this information useful.

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1 Executive Summary

What?

A comprehensive measurement of the competitiveness of nation-states, both as-is and the future potential.

Why?

To counter the lack of integral competitiveness measurement of nations by integrating 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 111 measurable and comparable quantitative indicators in order to exclude the subjectiveness of qualitative indicators. The methodology was originally developed based on frameworks to analyse corporate sustainability.

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

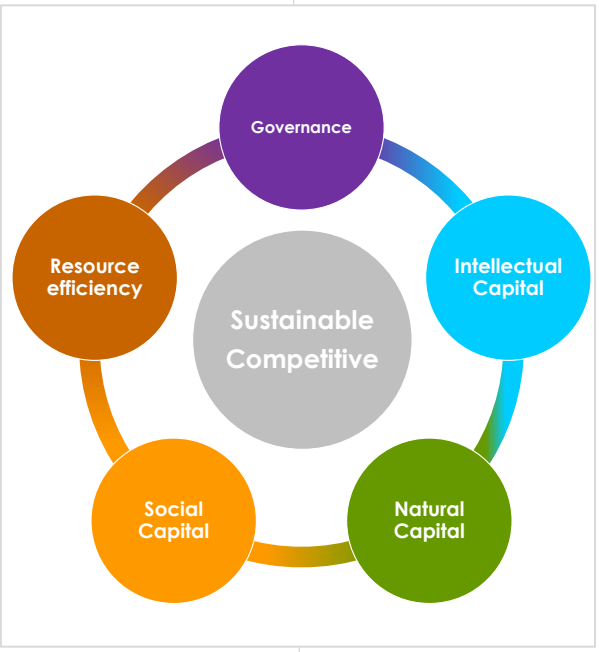
Natural Capital: the given natural environment, including the availability of resources, and the level of the depletion of those resources.

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



The Sustainable Competitiveness model is developed with a view of the fundamentals that shape the current and the future state (i.e. competitiveness) of a nation-economy. It is based on a competitiveness model that incorporates all relevant pillars of sustained growth and wealth creation of a nation – natural capital availability, resource efficiency, social cohesion, government-led development direction, and innovation and business capabilities. The Sustainable Competitiveness Index also integrates data trends over time to allow for a better expression of future development potential.

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 innovative edge required to compete in the globalised markets (i.e. education), or the discrimination, marginalisation or exploitation of segments of a society.

The Global Sustainable Competitiveness Index is a measurement for social, environmental and economic development. The GSCI is measuring wealth, and prosperity – *inclusively*.

1.1 The lack of inclusive measuring wealth and development

Conventional country comparisons, rankings and ratings are based on economic and/or financial indicators. They are exclusive. But nevertheless taken as end-result. Common ratings is only the current financial and/or performance. Current performance is the sum of results of many activities and investments, some of them long passed. GDP measurements are exclusive of important areas on which it is base on. Economic and financial indicators - *at best* - reflect current economic success. Without considering what makes economic success possible.

In addition, economic activities have adverse side-effects on the environment and societies: pollution, depletion of natural resources, climate change, health impacts, inequality and impacts on the socio-cultural fabric of a country. Conventional ratings neglect the very basis of current economic output and success.

GDP-based analysis and ratings based on economic end-performance fail to account for current developments that define future success or decline.

Economic and financial indicators are therefore insufficient measurements for risk and investment analysis – or credit ratings. In other words: **"competitiveness" in its current meaning and commonly used financial/industrial indicators are an insufficient basis for investment decisions and policy making.**

The Sustainable Competitiveness Index is based on a model that integrates – *includes* - economic and financial indicators with the basis that make the business success possible in the first place. Businesses cannot be successful if the environment does not provide the fundaments of its operations and success: infrastructure, the stability of laws, human, financial and material resources. The GSCI measures the environment that allows businesses and societies to flourish: the availability of resources, education levels, infrastructure, resource efficiency, the societal framework, the natural environment. We measures what makes the GDP possible. The GSCI measures the process, not the result. It is based purely on quantitative performance data - comparable and measurable - collected by recognised international agencies. The use of quantitative indicators guarantee the highest level of objectivity. The Sustainable Competitiveness Index was developed to measure the level of development – and the potential for development – of a country-economy. *Inclusively.*

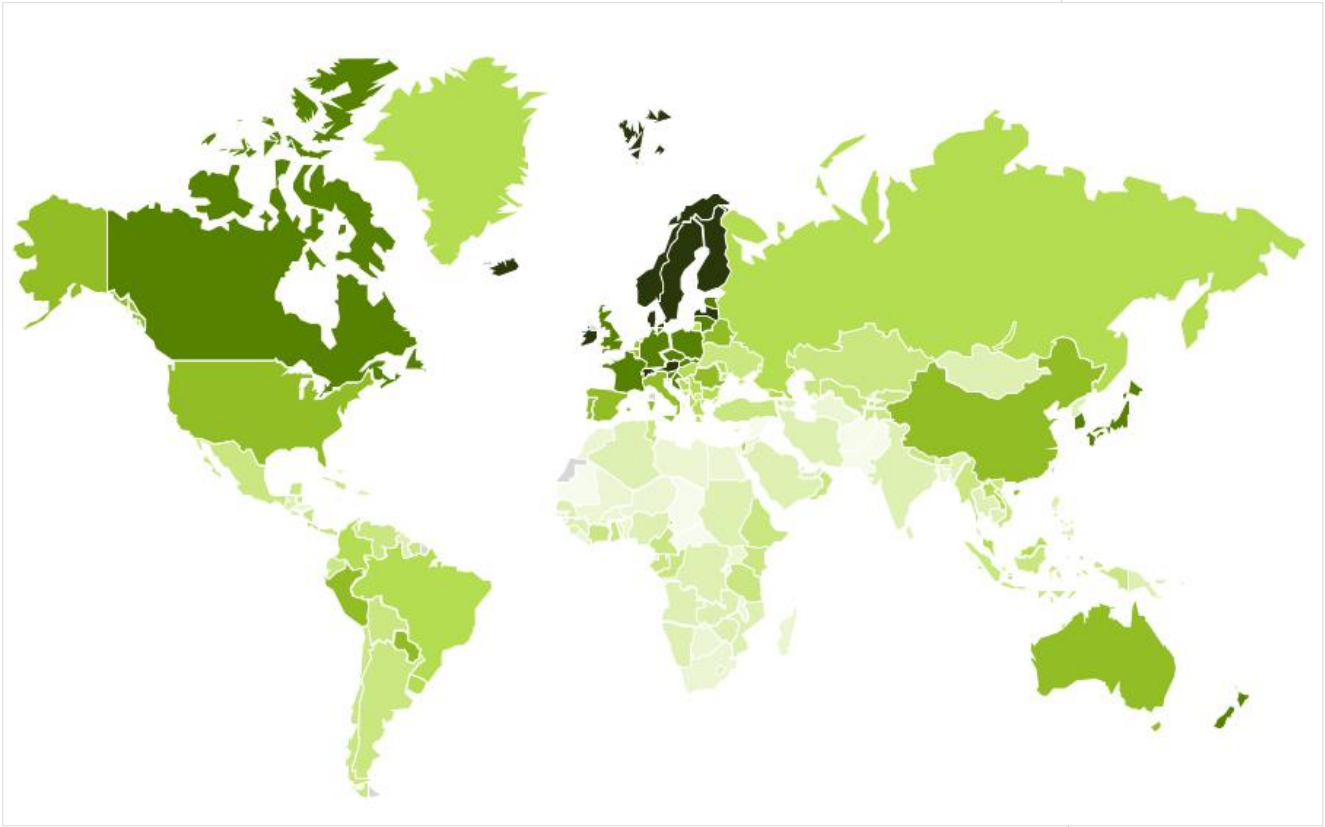
Sustainable competitiveness is the ability to generate and sustain inclusive wealth without diminishing the future capability of sustaining or increasing current wealth levels.

1.2 The Competitiveness Index 2018: Key Takeaways

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

- Of the top twenty nations only three are not European – New Zealand on 13, South Korea on 16, and Japan on 20.
- The top 5 is a pure Scandinavian affair: 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 and Slovenia
- Germany ranks 14, the UK 22, and the World's largest economy, the US, is ranked 29. 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 32, Brazil 42, Russia 43, and India 121.
- 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 Map2018



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

1.3 The 2018 Global Index Rankings

Due to changes in methodology, comparison between 2016 and 2017 scores are of limited value - ranking comparison therefor heave been omitted in this report. Interested stakeholders can download all previous indexes on the SolAbility website.

Rank	Country	Score	Rank	Country	Score	Country	Rank	Score	Country	Rank	Score
1	Sweden	60.5	46	Bulgaria	47.2	Ukraine	91	43.0	Fiji	136	39.7
2	Norway	58.2	47	Costa Rica	47.1	Cuba	92	43.0	Bahrain	137	39.6
3	Iceland	57.6	48	Greece	46.9	Guyana	93	43.0	Trinidad and Tobago	138	39.6
4	Finland	57.4	49	Moldova	46.9	Dominica	94	42.9	Jordan	139	39.5
5	Denmark	57.2	50	Serbia	46.8	Maldives	95	42.5	Rwanda	140	39.4
6	Ireland	55.4	51	Malaysia	46.7	Mongolia	96	42.4	South Africa	141	39.2
7	Switzerland	55.3	52	Colombia	46.6	Cyprus	97	42.3	Malawi	142	39.1
8	Austria	54.8	53	Albania	46.6	Mozambique	98	42.0	West Bank and Gaza	143	39.0
9	Latvia	54.2	54	Singapore	46.5	Mauritius	99	42.0	Botswana	144	39.0
10	Estonia	53.7	55	Laos	46.2	Saudi Arabia	100	42.0	Turkmenistan	145	38.9
11	Slovenia	53.7	56	Bosnia and Herzegovir	46.2	Democratic Republic c	101	41.9	Guinea-Bissau	146	38.8
12	Luxembourg	53.6	57	Bolivia	45.9	Togo	102	41.7	Egypt	147	38.7
13	New Zealand	53.6	58	Montenegro	45.8	Namibia	103	41.7	Tonga	148	38.6
14	Germany	53.4	59	Kazakhstan	45.5	Bahamas	104	41.6	Madagascar	149	38.6
15	Croatia	53.4	60	Burma	45.4	Philippines	105	41.6	Burkina Faso	150	38.5
16	South Korea	53.3	61	Argentina	45.4	Qatar	106	41.6	Mali	151	38.5
17	Liechtenstein	53.1	62	Kyrgistan	45.2	United Arab Emirates	107	41.4	Benin	152	38.3
18	Slovakia	53.0	63	Turkey	45.1	Nigeria	108	41.3	Bangladesh	153	38.1
19	France	52.9	64	Ethiopia	45.1	Thailand	109	41.2	Comoros	154	38.1
20	Japan	52.8	65	Chile	44.9	Kuwait	110	41.2	Honduras	155	37.9
21	Czech Republic	52.7	66	Indonesia	44.7	Senegal	111	41.1	Uganda	156	37.8
22	United Kingdom	51.9	67	Mexico	44.7	Zambia	112	41.0	Libya	157	37.4
23	Lithuania	51.8	68	Ghana	44.5	Sierra Leone	113	41.0	Jamaica	158	37.3
24	Canada	51.4	69	Suriname	44.5	Angola	114	41.0	Gambia	159	37.1
25	Poland	51.2	70	Panama	44.4	Algeria	115	41.0	Morocco	160	37.1
26	Belgium	49.9	71	Timor-Leste	44.4	Iran	116	40.9	Burundi	161	37.1
27	Romania	49.7	72	Venezuela	44.3	Solomon Islands	117	40.9	Djibouti	162	37.0
28	Netherlands	49.6	73	Macedonia	44.3	Sudan	118	40.7	Central African Republ	163	36.9
29	USA	49.2	74	Tunisia	44.3	Dominican Republic	119	40.5	Swaziland	164	36.9
30	Peru	49.2	75	Vietnam	43.9	El Salvador	120	40.5	Lebanon	165	36.8
31	Italy	49.0	76	Nepal	43.9	India	121	40.5	Pakistan	166	36.6
32	China	48.9	77	Cote d'Ivoire	43.9	Zimbabwe	122	40.4	Afghanistan	167	36.6
33	Portugal	48.9	78	Bhutan	43.9	Guatemala	123	40.3	Syria	168	36.2
34	Belarus	48.9	79	Tajikistan	43.8	Cambodia	124	40.3	Samoa	169	36.2
35	Paraguay	48.2	80	Kenya	43.7	Sri Lanka	125	40.2	Vanuatu	170	36.0
36	Australia	48.2	81	Republic of Congo	43.6	Azerbaijan	126	40.2	Chad	171	35.6
37	Spain	48.1	82	Nicaragua	43.6	Guinea	127	40.2	Mauritania	172	35.4
38	Malta	48.1	83	Ecuador	43.4	St. Kitts and Nevis	128	40.1	Grenada	173	35.2
39	Uruguay	47.9	84	Armenia	43.4	Papua New Guinea	129	40.1	Eritrea	174	35.1
40	Hungary	47.8	85	Uzbekistan	43.3	Lesotho	130	40.0	Kiribati	175	34.9
41	Georgia	47.8	86	Tanzania	43.2	Equatorial Guinea	131	39.9	Haiti	176	34.5
42	Brazil	47.6	87	Cameroon	43.2	Cape Verde	132	39.9	South Sudan	177	32.3
43	Russia	47.5	88	Gabon	43.2	Sao Tome and Principe	133	39.8	Seychelles	178	32.0
44	Israel	47.2	89	Belize	43.2	Niger	134	39.7	Yemen	179	31.0
45	Brunei	47.2	90	Oman	43.2	Liberia	135	39.7	Iraq	180	30.2

1.4 Higher sustainability equals higher wealth

Is it the chicken or the egg?

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. Upfront investments are required to achieve desired results at a later stage. The seeds have to be planted, the plants need to be cared for before the harvest can be collected.

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

Regional spread

Scandinavia as a region achieves the highest Sustainable Competitiveness score, followed by other regions in the Northern hemisphere. From a European perspective, it is interesting to note that Eastern Europe achieves a higher score than Sothern Europe (which has nominally higher income levels). All African Regions are in the bottom half. The high-income countries of the Middle East have sustained their economic success with the exploitation of their mineral resources. The low Sustainable Competitiveness of the region raises concerns on whether those countries will be able to maintain or sustain their development level once there fossil fuel wealth diminishes.

Regional spread of sustainable competitiveness scores

1.5 Conventional vs. *real* (sustainable) competitiveness

Conventional Competitiveness: GDP measurements, the WEF Index

The success of nations is mostly expressed in their economic output – GDP, and GDP per capita. The GDP or GNI, however, are limited to the current economic output, and do not evaluate the system (i.e. cost) of brought about the output.

The best-know competitiveness ranking is probably the WEF Competitiveness index. However, also the WEF index is flawed, both methodically and in terms of the indicators considered. The WEF competitiveness index does not cover efficiency data, nor innovation fundamental data. We therefore 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"). It is no surprise, therefore, that the results show significant differences.

1.6 Sovereign Bond Ratings & sustainable competitiveness

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 enables and 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).

The comparison of current sovereign bond ratings and a sustainability-adjusted county ratings shows significant differences. Countries whose wealth is based on exploitation of natural resources would receive a significant lower credit rating. May 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 to integrate some form of "E, S and G" into financial investment risk/opportunity evaluation. It seems the credit rating agencies are lagging behind the financial industry in this aspect: current credit ratings do exclude ESG risks and therefore do not cover all investor risks. It is high time that credit rating agencies take into account "intangibles" in their credit risk calculation. Credit ratings have to reflect the underlying factors that define the future development and capability of a country to generate and sustain wealth.

Country	Credit rating (average of Moody's, S&P; Fitch)	Sustainability-adjusted rating	Level difference
Australia	AAA	AA	-2
Bolivia	BB−	BBB−	3
Brazil	BB	BBB+	4
Canada	AAA	AAA	0
China	A+	AA−	1
Ethiopia	B	BB+	4
France	AA	AA+	1
Germany	AAA	AAA	0
India	BBB−	BB+	-1
Iraq	B−	CC	-4
Japan	A+	AA	2
Kuwait	AA	A−	-4
Latvia	A−	AA−	3
Morocco	BBB−	BBB	2
Pakistan	B	B−	-1
Poland	A−	AA−	3
Saudi Arabia	A+	BBB+	-3
United Kingdom	AA	AA+	1
United States	AAA	AA	-2
Vietnam	BB−	A−	7

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.

natural capital

2 Natural Capital

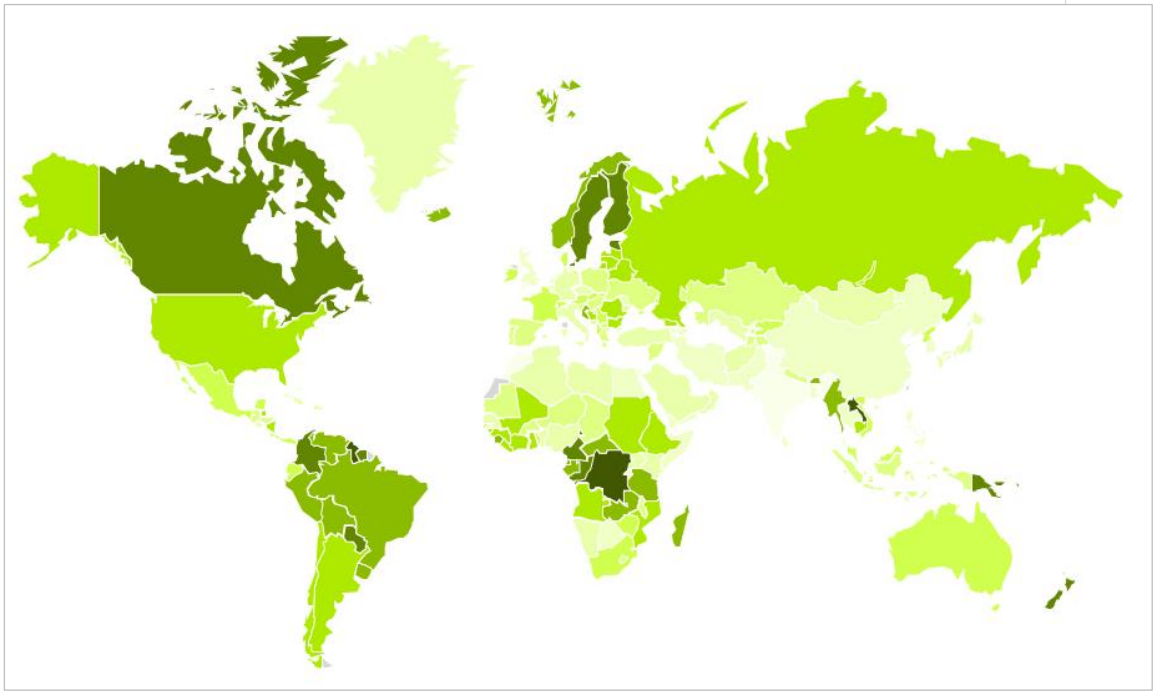
Natural capital is the very basis on which a country is built: the physical environment and climate conditions. *The Land*. The Natural Capital of a country reflects the ability to sustain the population and the economy, in a manner that allows future generations to do the same. Natural Capital is influenced by two major factors: the characteristics of the given geography and climate, combined with the extent of human activities that have or will affect the ability of natural capital to sustain the population and the economy.

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 available of natural capital. While it takes little to impair or exploit the 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 many 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 are on top of the Natural Capital ranking (North America, Scandinavia, Brazil).

The Natural Capital Index is topped by Laos, followed by Guyana, Congo, Papua New Guinea and Sweden. OECD representation in the top 20 is limited to Sweden, Canada, New Zealand and Finland. The two most populated countries, China (150) and India (162). Both countries are 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.

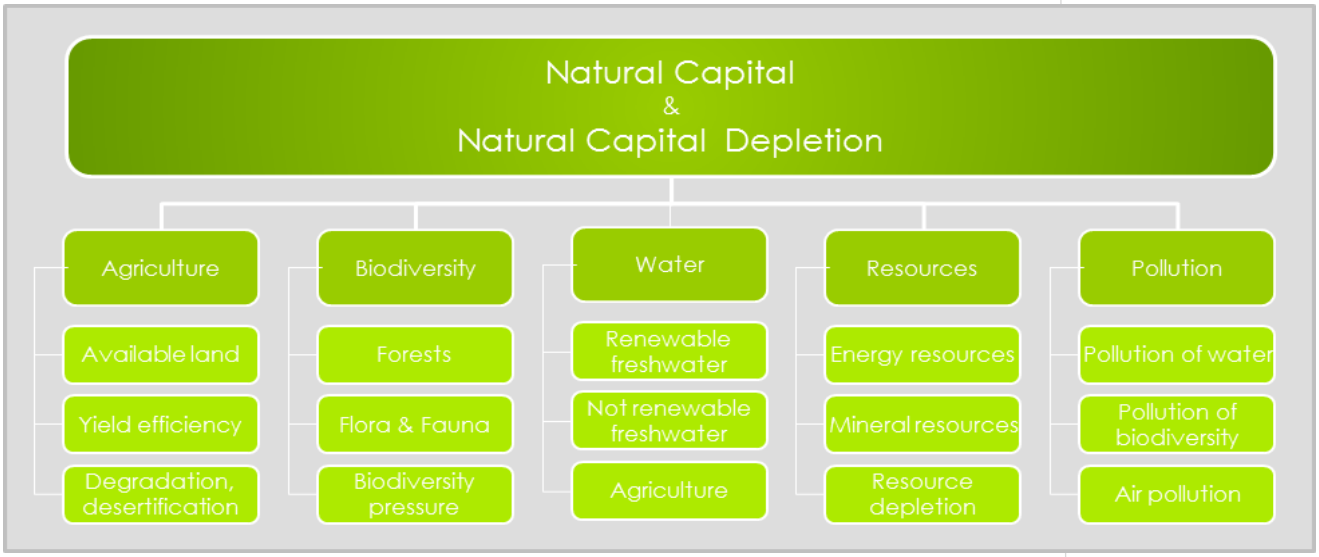


The Natural Capital World Map. Dark areas indicate high, light areas low levels of natural capital

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.

Natural capital: low-cost, high-benefit development

Biodiversity is not just for nature freaks and greenies. A thriving biodiversity provides more of the resources that we all depend on than a dying biodiversity: air, water, food, and other resources, as well as recreational functions. In order to maintain and develop the natural capital of a country/region, the existing natural environment needs to be protected, upgraded, and developed in a way that benefits all – sustainable win-win solutions. It is more efficient to work with than against our natural environment.

Technically speaking, development in line with the environment is not difficult. We know the regime, technologies and the systems required that will, given implementation, evolve further. It is also not costly – on the contrary. Return analysis that includes all internal and external factors always shows that sustainable is more efficient.

Negative natural capital protection incentives

- Environmental regulations, designation of protected areas
- Setting mandatory efficiency and pollution prevention standards (possibly coupled with fines for non-compliance)
- User-pays and polluter-pays principles: defining prices of resources (e.g. water) that reflect the inclusive value of the resource or internalizes non-financial depletion and/or pollution costs. This measurement can be coupled with positive incentives, whereby the revenues so gained are redistributed in relevant R&D efforts, support for technology, subsidies, or other programs

Positive natural capital incentives

- Integration of all external impact costs at the source of origin in zero-sum incentive schemes whereby external costs are taxed and redistributed in relevant technology/services
- Targeted R&D and policies conveying resource-efficiency technologies (a growth market with large economic potential)
- Investment in restoring natural capital (e.g. forests) with long-term benefits for renewable resources (such as groundwater), and possibly, tourism
- Designation of sustainable development demonstration projects and areas, and support for sustainable agriculture and resource management
- Market tools such as cap-and-trade systems unfortunately have proven to be ineffective due to the complexity of cap definition and administrative overheads requirements

Compensation through technology

Despite very limited natural resources, Israel maintained a high level of economic prosperity compared to other countries with similar climate characteristics. Israel has developed and applied intelligent technology (in particular in terms of irrigation) which allows to extract high yields from limited resources. However, Israel's natural water reservoirs are limited and diminishing despite the technology applied, posing a serious challenge to the long-term sustainment of

current output levels. Israel's example demonstrates both the positive impact on the development level as well as the limitations of technology to guarantee long-term sustained development.

Natural Capital: Key challenges and opportunities

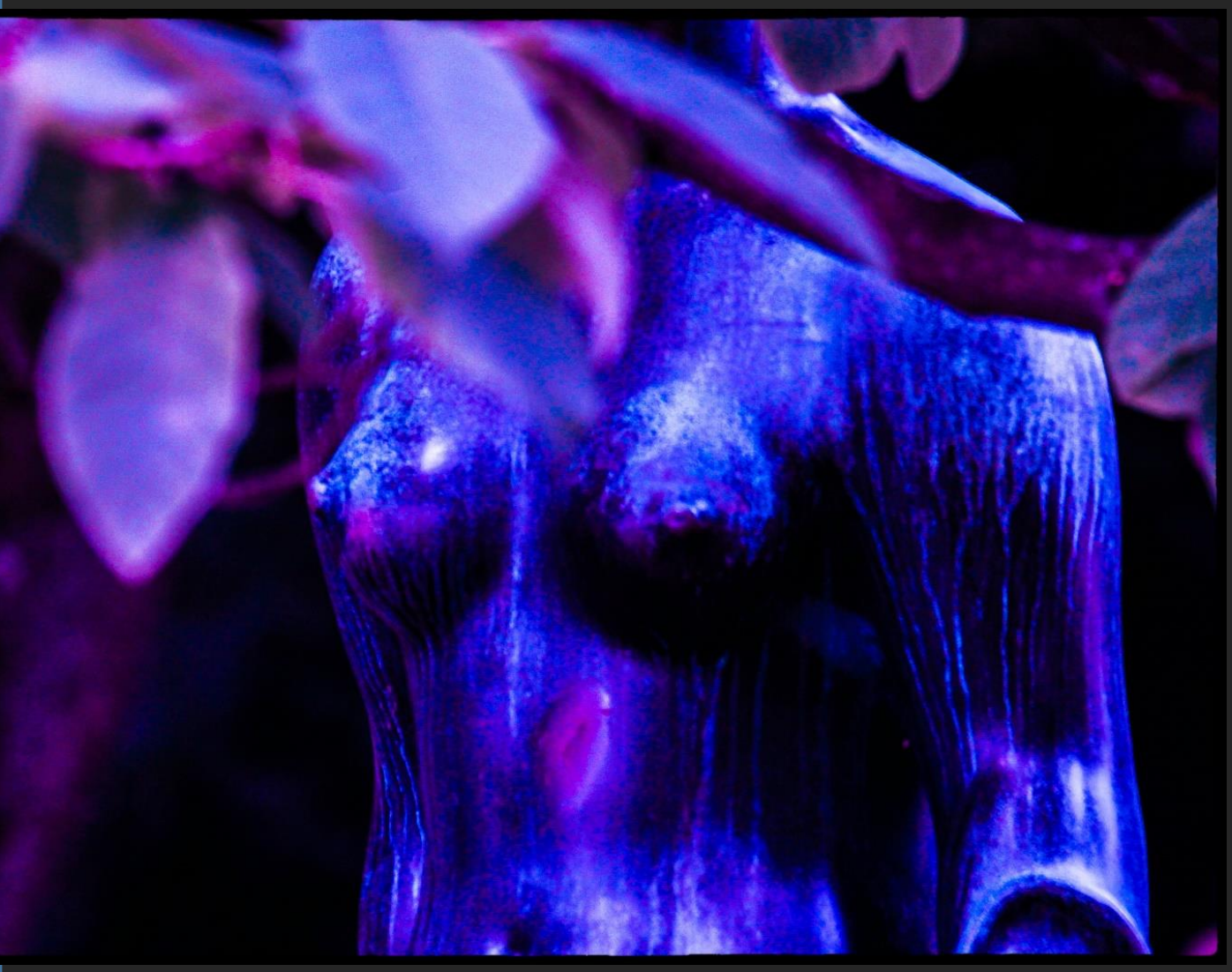
Element	Todays issues	Sustainable competitive	LCHB solution
Water	Increasing water shortage, depleting natural aquifers Water is polluted by plastic, consumption, and transportation	Sufficient and clean water is available for human consumption, agriculture, and the biosphere	Protected waterways Internalise external cost of water pollutants Investment in water technology, treatment, and solar-powered desalination facilities
Air	Smog and other air pollution is responsible for significant health cost and low quality of life	Air is free of pollution	Internalise external cost (health) of air pollutants Regulate emissions
Soil	Eroding, degraded and polluted lands causing lower fertility and loss of biodiversity	The soil is rich, free from pollution, toxic materials and protected from erosion and degradation	Foster organic farming Apply intelligent agriculture to detoxify and desalinate degraded and eroded soil
Biodiversity	High levels of biodiversity loss, de-forestation, accelerating loss of biodiversity, pollution, and climate change	Rich, diverse, thriving biodiversity	Design protected biosphere habitats Reforest in arid regions Apply intelligent agriculture to detoxify and desalinate degraded and eroded soil
Agriculture	Eroding and degraded soil, Food contains pesticides Meat consumptions leads to deforestation Subsidies and trade regimes distort markets	Sustainable provision of sufficient and healthy food for all	Eliminate or level all subsidies Foster small-scale farming & technologies enabling market access to small-scale farmers Integrate external cost of industrial agriculture Foster alternatives to bulk protein foods, including through new technologies
Natural Resources	Natural resources are over-used and are depleting Extraction of resources leads to corruption and conflicts (the resource curse)	Non-renewable resources are used efficiently and wherever replaced by renewable resources Minerals, metals and plastics are recycled and re-used in a circular economy	Foster recycling technologies (circular economy) Nationalisation of resources to prevent corruption Define rights and limitation of rights of host communities of significant resources
Climate	We're on course for disaster	Climate change is contained	Tax fossil fuels and fossil materials according their climate impact, re-invested in climate technology, projects, and mitigation Support further development of energy technologies, in particular batteries & smart grids

The Sustainable Competitiveness Index - Natural Capital Rankings

Scores and rankings of the level of Natural Capital by country:

Country	Rank	Score	Country	Rank	Score	Country	Rank	Score	Country	Rank	Score
Laos	1	71.3	Mozambique	46	52.7	Seychelles	91	42.7	Tonga	136	35.3
Guyana	2	67.9	Argentina	47	52.6	Nepal	92	42.5	Kenya	137	35.0
Democratic Republic of C	3	66.3	Belarus	48	52.5	Mauritania	93	42.0	Mongolia	138	35.0
Papua New Guinea	4	64.4	Cote d'Ivoire	49	52.0	Indonesia	94	42.0	Botswana	139	34.9
Sweden	5	63.0	Bulgaria	50	51.9	Samoa	95	41.4	Thailand	140	34.9
Paraguay	6	62.9	Lithuania	51	51.7	Lesotho	96	41.3	Comoros	141	34.5
Colombia	7	62.6	Georgia	52	51.2	Gambia	97	41.3	Bahamas	142	34.4
Republic of Congo	8	62.4	Guinea-Bissau	53	50.8	Kazakhstan	98	41.1	Netherlands	143	34.4
Cameroon	9	62.4	Chile	54	50.7	Greece	99	40.8	Cape Verde	144	34.4
Canada	10	62.2	Solomon Islands	55	50.6	Macedonia	100	40.6	United Kingdom	145	34.2
New Zealand	11	61.5	Cambodia	56	50.2	Dominica	101	40.5	Pakistan	146	33.9
Finland	12	61.3	Romania	57	50.0	Guatemala	102	40.3	Philippines	147	33.5
Suriname	13	61.0	Zimbabwe	58	49.6	Niger	103	40.3	Yemen	148	33.4
Estonia	14	60.5	Panama	59	49.6	Syria	104	40.3	South Korea	149	33.3
Sierra Leone	15	59.5	Ireland	60	48.8	Montenegro	105	40.2	China	150	33.2
Peru	16	59.3	Costa Rica	61	48.7	Sao Tome and Principe	106	40.2	Egypt	151	33.2
Burma	17	58.8	Kyrgistan	62	48.6	Honduras	107	40.1	Sri Lanka	152	33.1
Venezuela	18	58.5	Ecuador	63	48.2	Luxembourg	108	40.1	Azerbaijan	153	32.5
Norway	19	58.2	Australia	64	47.9	Italy	109	39.9	Eritrea	154	32.3
Brazil	20	58.2	Serbia	65	47.5	Algeria	110	39.6	Iran	155	32.2
Central African Republic	21	58.1	Switzerland	66	47.3	Uzbekistan	111	39.5	South Sudan	156	32.0
Equatorial Guinea	22	58.1	Togo	67	47.3	Vanuatu	112	39.4	Maldives	157	31.6
Iceland	23	57.9	Mexico	68	47.2	Nigeria	113	39.3	Grenada	158	30.6
Madagascar	24	57.9	Austria	69	47.2	Dominican Republic	114	39.3	Bangladesh	159	30.5
Gabon	25	57.8	Liechtenstein	70	46.8	Benin	115	39.3	Belgium	160	30.2
Uruguay	26	57.6	Denmark	71	46.1	Rwanda	116	38.5	Mauritius	161	30.0
Croatia	27	57.4	Brunei	72	46.0	Namibia	117	38.5	India	162	30.0
Bolivia	28	56.9	Vietnam	73	45.9	Burundi	118	38.4	Morocco	163	29.8
Zambia	29	56.8	Albania	74	45.9	Uganda	119	38.2	Jamaica	164	28.1
Bhutan	30	56.4	Malaysia	75	45.6	Trinidad and Tobago	120	38.0	Kiribati	165	27.6
Tanzania	31	55.9	Slovakia	76	45.5	Czech Republic	121	37.8	Tunisia	166	27.6
Latvia	32	54.8	South Africa	77	45.2	Armenia	122	37.7	Haiti	167	27.5
Liberia	33	54.4	France	78	45.1	St. Kitts and Nevis	123	37.1	Kuwait	168	26.9
Angola	34	54.3	Hungary	79	44.6	Turkey	124	37.0	Qatar	169	26.6
Mali	35	54.2	Malawi	80	44.6	Oman	125	36.9	Cyprus	170	25.6
Russia	36	53.9	Timor-Leste	81	44.3	Japan	126	36.8	Bahrain	171	25.5
Ethiopia	37	53.9	Spain	82	44.3	Senegal	127	36.7	United Arab Emirates	172	25.5
Fiji	38	53.6	Portugal	83	44.2	Cuba	128	36.6	Turkmenistan	173	25.2
Sudan	39	53.5	Burkina Faso	84	44.1	Libya	129	36.5	Iraq	174	24.5
Ghana	40	53.4	Ukraine	85	44.0	Saudi Arabia	130	35.9	Israel	175	24.1
Bosnia and Herzegovina	41	53.4	Swaziland	86	43.8	Djibouti	131	35.8	Singapore	176	23.6
Guinea	42	53.4	Slovenia	87	43.6	Moldova	132	35.7	West Bank and Gaza	177	22.4
Belize	43	53.3	Chad	88	43.2	Germany	133	35.7	Malta	178	22.1
Nicaragua	44	53.1	Tajikistan	89	43.0	El Salvador	134	35.5	Jordan	179	20.8
USA	45	53.0	Poland	90	42.9	Afghanistan	135	35.4	Lebanon	180	19.4

governance



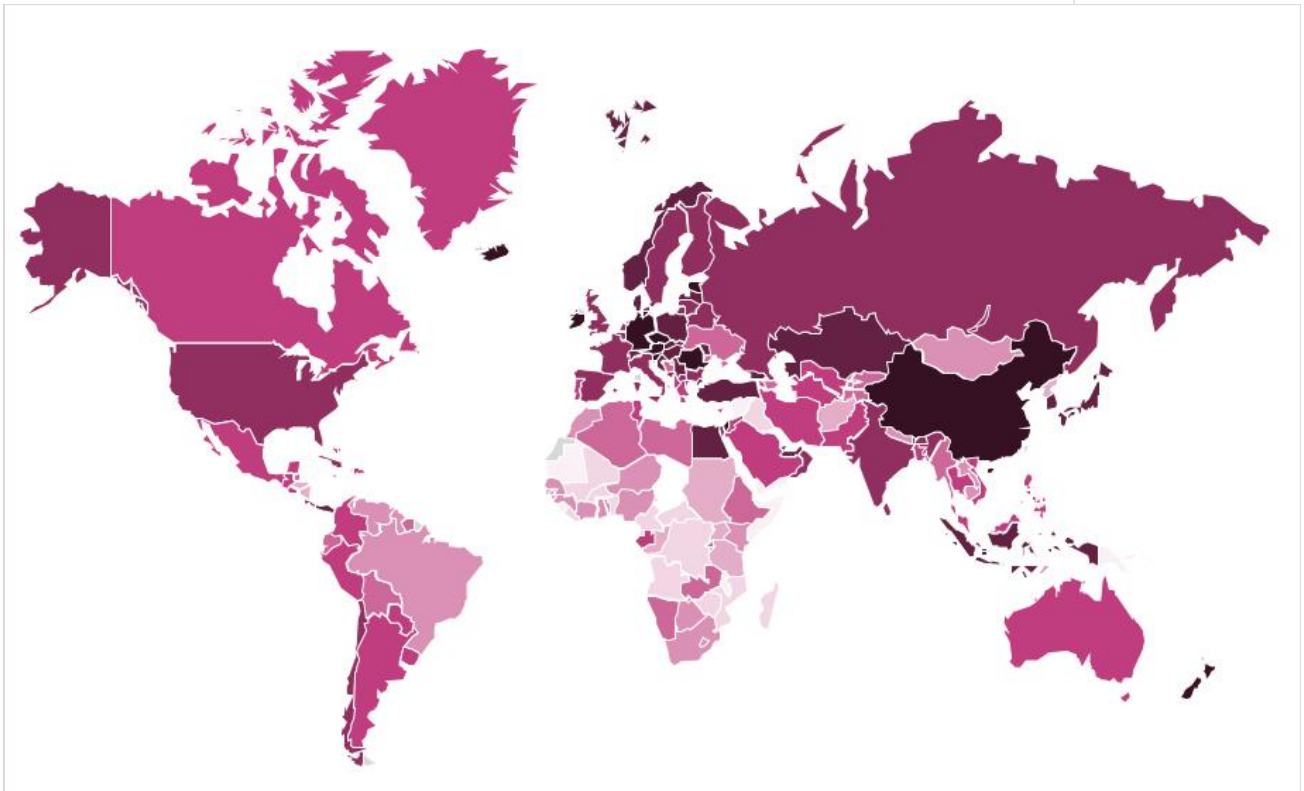
3 Governance Efficiency

The Governance World Map

The Governance Sub-Index of the Sustainable Competitiveness Index is based on quantitative data series – i.e. *not* 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 suitability of a country's regulatory framework and infrastructure environment to facilitate sustainable competitiveness. The regulatory and infrastructure framework should enable a framework 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.
- The ranking is dominated by Central and Eastern European nations
- Germany is ranked 4, Japan 20, the UK 44 and the US at 50.
- Of the BRICs, China is ranked 11, India 55, Russia 59, and Brazil 133
- The map shows a clear north-South gap: all African countries score low

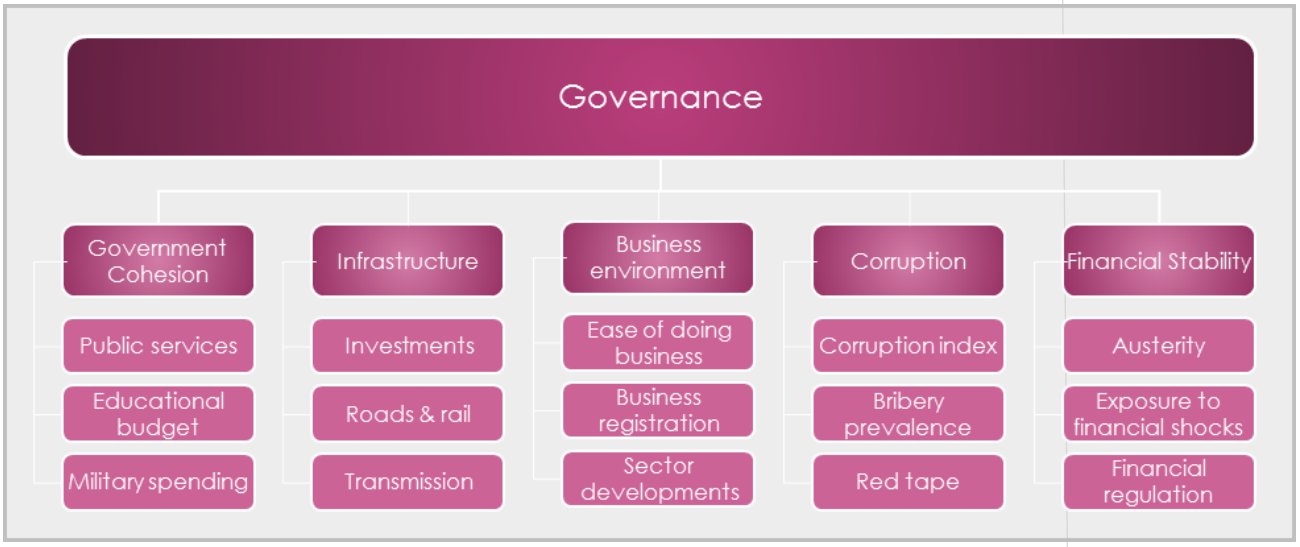


The Governance World Map. Dark areas indicate high, light areas low levels of Governance quality

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.

Governance - stability and intelligent development

Governance is about the provision of a stable environment in which the society and the economy operate. The more stable and secure the framework for the economy, the better the global competitiveness of private sector. Stability requires a clear rule of law, the availability of capital, and development free of disruptions:

- Stable institutions
- Simple and efficient legal framework, regulations, and taxation
- Capital markets that serve the rest of the economy, and not vice-versa
- Absence of corruption

Beyond the basics, governance is about the provision and/or organisation of the physical environment (infrastructure) for society and the economy, as well as fostering intelligent economic and social development and investments:

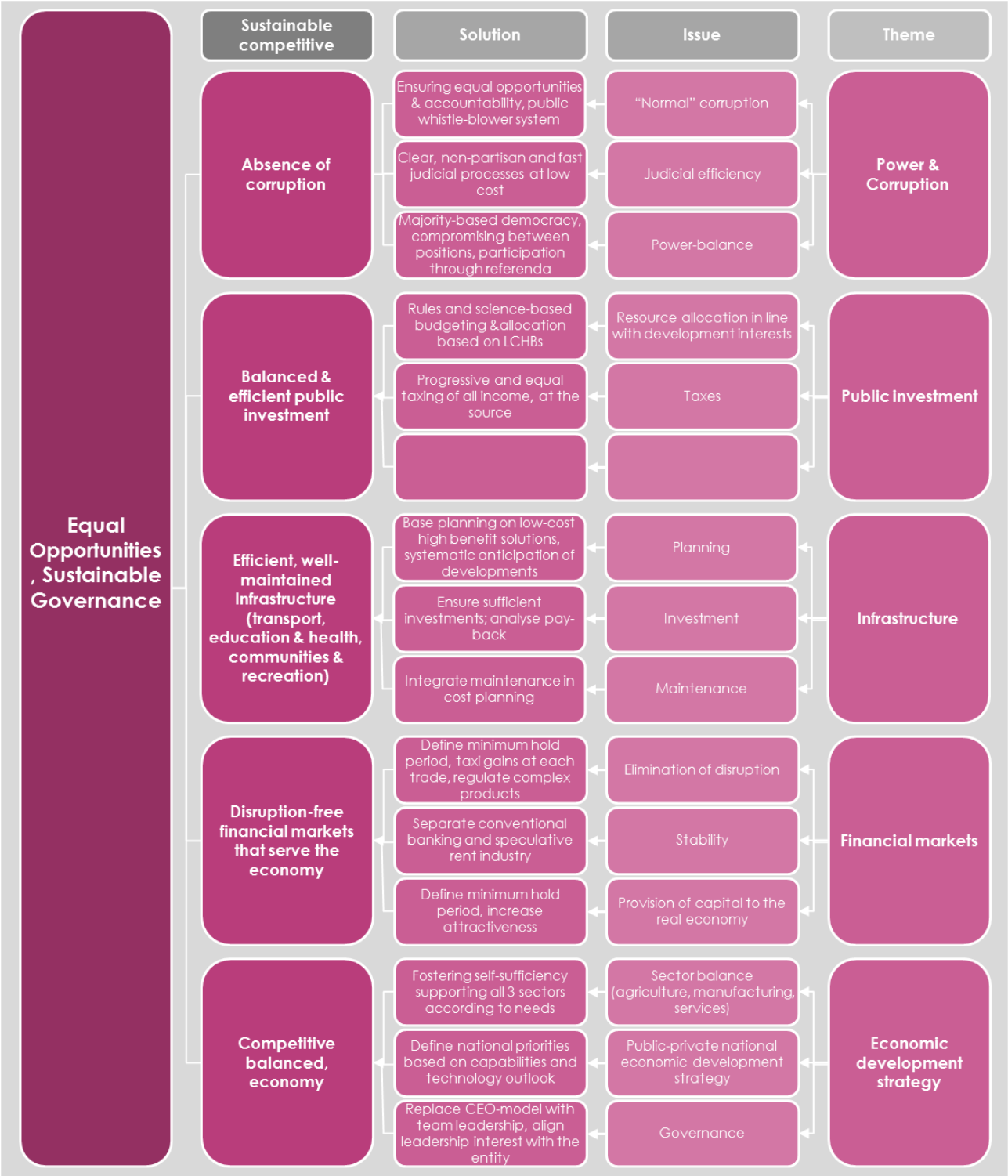
- Balanced government budget allocation
- The availability of efficient and well-maintained infrastructure for both commercial and recreational purposes (transport, education, health, recreational)
- Co-operation between the economy, educational institutions and the state to identify and stimulate key economic sectors

Tools available to achieve the above include

- Eradicating corruption on all levels through systemic case reporting lines & investigations, whistle-blower protection
- Cutting unnecessary bureaucratic and administrative obstacles for businesses.
- regulating the financial markets to eliminate the systemic risks
- Regulating and attaching conditions to the flow of international capital,
- Increase allocation for the development of modern and intelligent infrastructure to kick-start the economy. Beware of prestige projects that turn into white elephants
- Potentially protective measurements in lower developed countries: protecting key national industries (including agriculture) to allow the national industries to reach international competitiveness before competing on global markets

Unfortunately, development strategies are too often driven by economic theories and ideology instead of pragmatism. While the above measurements have been highly successful in Asia, they are in direct contradiction to what dominant players such as the World Bank and the IMF have been demanding from borrowing countries. Considering that development in most debtor countries (particularly Africa) has stalled over the last 50 years while Asian countries have boomed, it is probably fair to state that World Bank/IMF's ideology-driven free market approach has not been particular helpful.

Overview of


Equal Opportunities, Sustainable Governance
Sustainable competitive
Solution
Issue
Theme
Absence of corruption
Ensuring equal opportunities & accountability, public whistle-blower system
"Normal" corruption
Clear, non-partisan and fast judicial processes at low cost
Judicial efficiency
Majority-based democracy, compromising between positions, participation through referenda
Power-balance
Power & Corruption
Balanced & efficient public investment
Rules and science-based budgeting &allocation based on LCHBs
Resource allocation in line with development interests
Progressive and equal taxing of all income, at the source
Taxes
Public investment
Efficient, well-maintained Infrastructure (transport, education & health, communities & recreation)
Base planning on low-cost high benefit solutions, systematic anticipation of developments
Planning
Ensure sufficient investments; analyse pay-back
Investment
Integrate maintenance in cost planning
Maintenance
Infrastructure
Disruption-free financial markets that serve the economy
Define minimum hold period, taxi gains at each trade, regulate complex products
Elimination of disruption
Separate conventional banking and speculative rent industry
Stability
Define minimum hold period, increase attractiveness
Provision of capital to the real economy
Financial markets
Competitive balanced, economy
Fostering self-sufficiency supporting all 3 sectors according to needs
Sector balance (agriculture, manufacturing, services)
Define national priorities based on capabilities and technology outlook
Public-private national economic development strategy
Replace CEO-model with team leadership, align leadership interest with the entity
Governance
Economic development strategy

The Global Sustainable Competitiveness Index - Governance Rankings

Scores and rankings of the level of Governance Sub-Index by country:

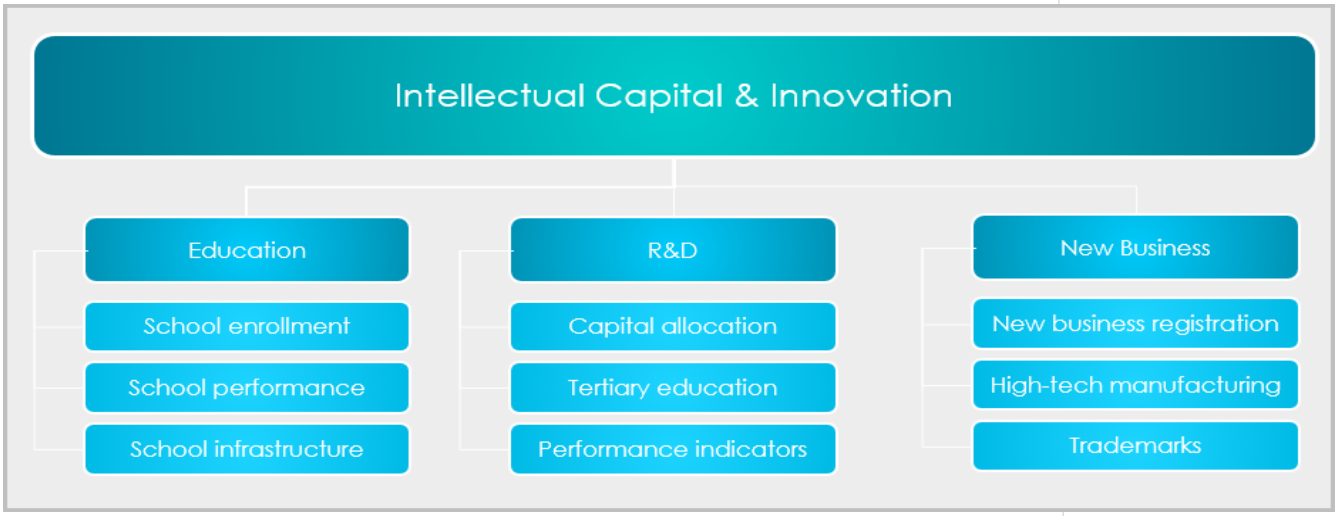
Country	Rank	Score	Country	Rank	Score	Country	Rank	Score	Country	Rank	Score
Ireland	1	68.7	Finland	46	53.7	Canada	91	49.2	Vanuatu	136	40.8
Czech Republic	2	67.8	Bahrain	47	53.6	Greece	92	49.2	Lesotho	137	40.7
Romania	3	65.0	Bhutan	48	53.5	Colombia	93	49.2	Ghana	138	40.5
New Zealand	4	64.1	Sri Lanka	49	53.4	Guatemala	94	48.6	South Africa	139	40.3
Germany	5	62.7	USA	50	53.4	Paraguay	95	48.2	Togo	140	40.3
Estonia	6	62.6	France	51	53.2	Suriname	96	48.0	Timor-Leste	141	40.1
Israel	7	61.3	Chile	52	53.2	Bosnia and Herzegovir	97	47.6	Afghanistan	142	40.0
Slovenia	8	61.0	Bulgaria	53	53.2	Ethiopia	98	47.3	Tonga	143	39.3
Austria	9	60.9	Spain	54	52.8	Burma	99	47.2	Nicaragua	144	39.0
Liechtenstein	10	60.4	Macedonia	55	52.3	Ukraine	100	47.2	Gambia	145	39.0
China	11	60.2	Italy	56	52.2	Bolivia	101	47.1	Honduras	146	38.8
Iceland	12	60.1	Belgium	57	52.1	Azerbaijan	102	47.0	Uganda	147	38.5
Turkey	13	60.0	India	58	52.1	Algeria	103	46.9	Sudan	148	37.9
Poland	14	59.9	Russia	59	52.1	Lebanon	104	46.6	Tanzania	149	37.9
Norway	15	59.7	Netherlands	60	52.0	Grenada	105	46.5	Republic of Congo	150	37.8
Slovakia	16	59.6	Dominica	61	51.9	Rwanda	106	46.3	Eritrea	151	37.5
South Korea	17	59.5	Argentina	62	51.9	Zambia	107	45.3	Guinea-Bissau	152	36.8
Latvia	18	59.3	St. Kitts and Nevis	63	51.8	West Bank and Gaza	108	45.2	Burundi	153	36.4
Denmark	19	58.9	Singapore	64	51.7	Kyrgistan	109	45.0	Comoros	154	36.4
Japan	20	58.0	Tunisia	65	51.6	Jamaica	110	44.9	Samoa	155	36.3
Indonesia	21	58.0	Bangladesh	66	51.5	Namibia	111	44.7	Mozambique	156	35.8
Malta	22	57.8	Jordan	67	51.3	Seychelles	112	44.7	Liberia	157	35.7
Georgia	23	57.8	Iran	68	51.2	Belize	113	44.3	Cameroon	158	35.6
Qatar	24	57.5	Philippines	69	51.2	Tajikistan	114	44.1	Iraq	159	35.4
Mauritius	25	57.4	Australia	70	51.1	Ecuador	115	44.0	Mali	160	35.4
Kazakhstan	26	57.2	Saudi Arabia	71	51.1	Libya	116	44.0	Zimbabwe	161	35.4
United Arab Emirates	27	57.0	Dominican Republic	72	51.0	Laos	117	43.5	Equatorial Guinea	162	35.1
Switzerland	28	56.8	Cape Verde	73	50.9	Kenya	118	43.4	Madagascar	163	34.7
Croatia	29	56.7	Uruguay	74	50.9	Venezuela	119	43.4	Benin	164	34.3
Hungary	30	56.7	Portugal	75	50.9	Swaziland	120	43.1	Democratic Republic o	165	34.3
Luxembourg	31	56.4	Albania	76	50.8	Nigeria	121	42.9	Central African Republ	166	34.2
Panama	32	56.3	Uzbekistan	77	50.7	Mongolia	122	42.7	Angola	167	34.0
Serbia	33	56.2	Vietnam	78	50.6	Morocco	123	42.4	Burkina Faso	168	32.6
Egypt	34	56.1	Mexico	79	50.5	Brunei	124	42.3	Haiti	169	32.4
Moldova	35	56.0	El Salvador	80	50.5	Niger	125	42.1	Papua New Guinea	170	31.6
Belarus	36	55.9	Malaysia	81	50.4	Cambodia	126	42.0	Sierra Leone	171	31.5
Sweden	37	55.4	Bahamas	82	50.3	Guyana	127	41.8	Malawi	172	31.3
Cuba	38	55.3	Pakistan	83	50.2	Nepal	128	41.8	Mauritania	173	31.0
Montenegro	39	54.9	Gabon	84	50.1	Senegal	129	41.7	Yemen	174	30.3
Oman	40	54.8	Turkmenistan	85	50.0	Botswana	130	41.4	Syria	175	29.5
Costa Rica	41	54.8	Armenia	86	50.0	Cote d'Ivoire	131	41.3	Solomon Islands	176	28.6
Kuwait	42	54.6	Peru	87	49.9	Fiji	132	41.1	Sao Tome and Principe	177	28.3
Maldives	43	54.5	Thailand	88	49.8	Brazil	133	41.1	Chad	178	27.9
Lithuania	44	54.2	Cyprus	89	49.6	Djibouti	134	40.9	South Sudan	179	27.1
United Kingdom	45	54.2	Trinidad and Tobago	90	49.3	Guinea	135	40.9	Kiribati	180	22.7

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.

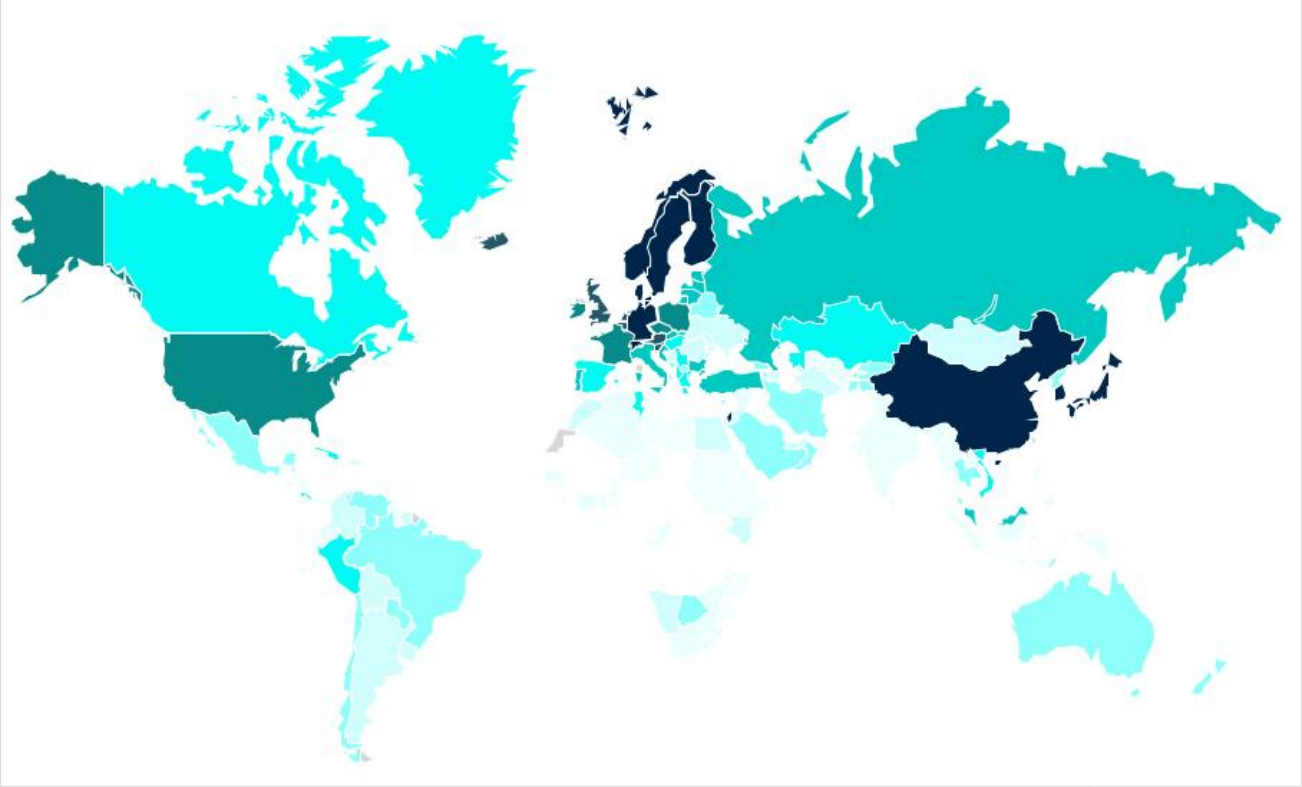
Further indicators relate to the actual business entrepreneurship – new business registration, trademark applications, and the health of the balance between agricultural, industrial and service sectors of an economy.

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 very large margin.
- North-Eastern Asian nations (S. Korea, China, Japan, Singapore) and the OECD countries from the Northern hemisphere dominate the intellectual capital sub-index of the GSCI.
- Eastern European countries and the Baltic States also rank high.
- Germany is ranked 6, Japan 9,the UK 11, the US 19.
- Vietnam (42), Tunisia (43), Bolivia (46) and Cuba (49) are the highest ranked countries of the Southern hemisphere.
- China is ranked 4, Russia 25, Brazil 51, and India 104.



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

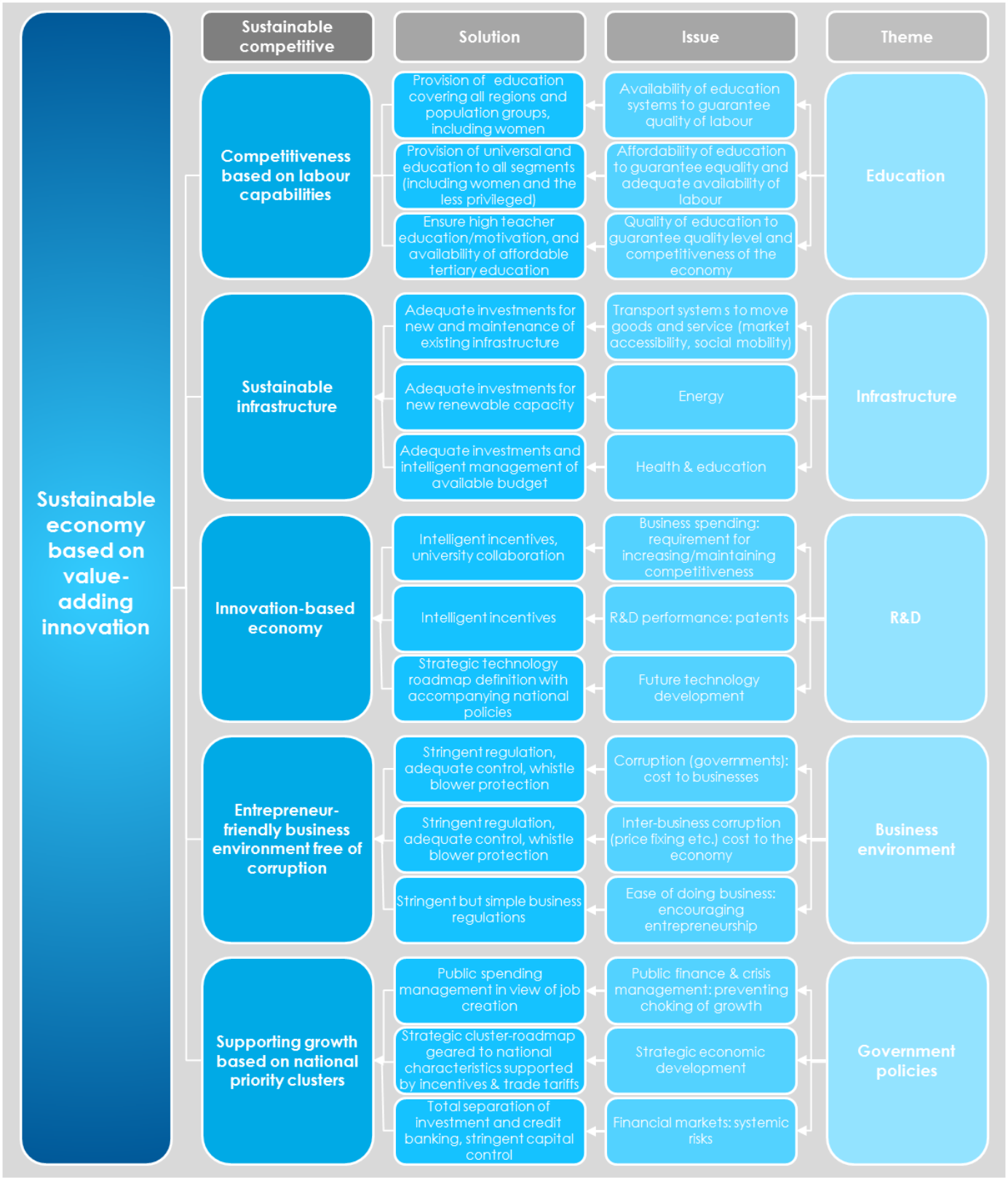
South Korea, Singapore, China and Japan are all found on the top of the innovation ranking. Interestingly, decline is equally reflected as progress in this ranking. The USA (formerly considered powerful not only in size but also in terms of innovation & competitiveness) is ranked low in relation to its global status in most innovation and competitiveness indicators – in line with the widely perceived industrial decline of the country.

- Know-ledge and innovation are key success factors for adding value and achieve sustained growth in an increasingly complex and globalised economy. Countries with low sustainable innovation competitiveness on the other hand are facing difficulties to achieve meaningful growth as nations due to the lack of the basic fundamentals:
- Limited availability and quality of education, leading to limited R&D capabilities and a lack of highly qualified workforce, in turn limiting economic opportunities and development
- Lack of modern transport and communication infrastructure, leading to limited and costly access to markets
- Insufficient R&D spending, limiting opportunities to develop value-adding industries

In order to achieve sustainable economic development through innovation, countries have a number of tools at their disposal. However, there is no one-size-fits all solution. Policies have to be designed intelligently and specific to the circumstances and characteristics of a country:

- Increasing budget allocation for education, and raise incentives for school attendance. However, increasing financial allocation alone is never sufficient without careful and localised planning that also ensures quality, not only quantity
- Formulate policies and incentives to increase allocation for R&D in areas key to a country's characteristics. In many Asian countries, formulating strategic industrial development priorities (priority clusters) on the national level has shown to be highly effective
- Protective measurements: protecting key national industries (including agriculture) to allow the national industries to reach international competitiveness before competing on global markets
- Increase allocation for the development of modern and intelligent infrastructure (which has the positive side-effect of creating employment in countries with high unemployment) to kick-start the economy. However, developing prestige projects that often turn into white elephants and investment ruins is a waste of time & money
- Eradicating corruption on all levels.
- Cutting unnecessary bureaucratic and administrative obstacles for businesses.
- Regulating and attaching conditions to the flow of international capital, and regulating the financial market as so it does not grow into a systemic risk

Unfortunately, development strategies are too often driven by economic theories and ideology instead of pragmatism. While the above measurements have been highly successful in Asia, they are in direct contradiction to what dominant players such as the World Bank and the IMF have been demanding from borrowing countries. Considering that development in most debtor countries (particularly Africa) has stalled over the last 50 years while Asian countries have boomed, it is probably fair to state that World Bank/IMF's ideology-driven free market approach has not been particular helpful.


Sustainable economy based on value-adding innovation
Sustainable competitive
Solution
Issue
Theme
Competitiveness based on labour capabilities
Provision of education covering all regions and population groups, including women
Provision of universal and education to all segments (including women and the less privileged)
Ensure high teacher education/motivation, and availability of affordable tertiary education
Availability of education systems to guarantee quality of labour
Affordability of education to guarantee equality and adequate availability of labour
Quality of education to guarantee quality level and competitiveness of the economy
Education
Sustainable infrastructure
Adequate investments for new and maintenance of existing infrastructure
Adequate investments for new renewable capacity
Adequate investments and intelligent management of available budget
Transport system s to move goods and service (market accessibility, social mobility)
Energy
Health & education
Infrastructure
Innovation-based economy
Intelligent incentives, university collaboration
Intelligent incentives
Strategic technology roadmap definition with accompanying national policies
Business spending: requirement for increasing/maintaining competitiveness
R&D performance: patents
Future technology development
R&D
Entrepreneur-friendly business environment free of corruption
Stringent regulation, adequate control, whistle blower protection
Stringent regulation, adequate control, whistle blower protection
Stringent but simple business regulations
Corruption (governments): cost to businesses
Inter-business corruption (price fixing etc.) cost to the economy
Ease of doing business: encouraging entrepreneurship
Business environment
Supporting growth based on national priority clusters
Public spending management in view of job creation
Strategic cluster-roadmap geared to national characteristics supported by incentives & trade tariffs
Total separation of investment and credit banking, stringent capital control
Public finance & crisis management: preventing choking of growth
Strategic economic development
Financial markets: systemic risks
Government policies

The Global Sustainable Competitiveness Index - Innovation Rankings

Scores and rankings of Intellectual Capital Sub-Index by country:

Country	Rank	Score	Country	Rank	Score	Country	Rank	Score	Country	Rank	Score
South Korea	1	79.0	Peru	46	45.4	Turkmenistan	91	37.2	Republic of Congo	136	28.9
Sweden	2	69.3	Spain	47	45.2	Namibia	92	37.1	Panama	137	27.7
Norway	3	66.7	Costa Rica	48	45.1	Uruguay	93	36.4	Nepal	138	27.6
China	4	66.7	Cuba	49	45.0	Morocco	94	36.4	Benin	139	27.0
Denmark	5	66.5	Saudi Arabia	50	44.9	Azerbaijan	95	36.1	Niger	140	26.9
Germany	6	64.2	Brazil	51	44.6	Belize	96	35.7	Togo	141	26.9
Switzerland	7	64.0	Thailand	52	44.3	Romania	97	35.2	Honduras	142	26.4
Finland	8	63.9	Cyprus	53	44.0	Dominica	98	35.1	Mozambique	143	26.4
Japan	9	63.2	Chile	54	43.8	Egypt	99	35.1	Ethiopia	144	26.3
Israel	10	63.0	New Zealand	55	43.8	Dominican Republic	100	35.1	Libya	145	25.7
United Kingdom	11	62.7	Iran	56	43.6	Senegal	101	34.9	Sudan	146	25.2
Austria	12	61.6	Bahrain	57	43.5	South Africa	102	34.8	Burundi	147	25.1
Belgium	13	61.5	Solomon Islands	58	43.4	Ecuador	103	34.7	Sierra Leone	148	25.0
Slovenia	14	61.2	Belarus	59	43.2	India	104	34.4	Seychelles	149	24.9
Singapore	15	60.7	Montenegro	60	43.2	Ghana	105	34.4	Djibouti	150	24.7
Malta	16	60.6	Oman	61	42.8	Laos	106	34.2	Chad	151	24.7
Netherlands	17	60.5	Macedonia	62	42.8	Uzbekistan	107	34.0	Gambia	152	23.9
Iceland	18	60.3	Georgia	63	42.7	Indonesia	108	33.9	Papua New Guinea	153	23.9
USA	19	59.3	Paraguay	64	42.4	Jamaica	109	33.8	Nigeria	154	22.9
France	20	58.0	Mexico	65	42.3	Trinidad and Tobago	110	33.7	Mali	155	22.5
Czech Republic	21	57.0	Australia	66	42.1	Zimbabwe	111	33.6	Cameroon	156	22.2
Poland	22	56.2	Kyrgistan	67	41.8	St. Kitts and Nevis	112	33.6	Guatemala	157	22.0
Ireland	23	55.8	Botswana	68	41.4	Bhutan	113	33.5	Tanzania	158	22.0
Liechtenstein	24	55.3	Kiribati	69	40.8	Sri Lanka	114	33.5	Cambodia	159	21.7
Russia	25	54.4	Timor-Leste	70	40.7	Qatar	115	33.4	Gabon	160	21.6
Slovakia	26	53.4	Armenia	71	40.5	Algeria	116	32.9	Equatorial Guinea	161	21.5
Croatia	27	52.9	Tajikistan	72	40.4	Lesotho	117	32.8	Burkina Faso	162	21.5
Estonia	28	52.9	Venezuela	73	40.3	Lebanon	118	32.3	Bangladesh	163	21.0
Portugal	29	52.6	Bosnia and Herzegovin	74	39.9	Philippines	119	32.2	Mauritania	164	21.0
Bulgaria	30	52.1	Bolivia	75	39.8	Cape Verde	120	32.2	Afghanistan	165	20.5
Brunei	31	52.1	Mongolia	76	39.8	Grenada	121	31.9	Guinea-Bissau	166	20.4
Luxembourg	32	52.1	United Arab Emirates	77	39.7	Swaziland	122	31.4	Rwanda	167	19.4
Italy	33	52.0	Moldova	78	39.6	Burma	123	31.3	Democratic Republic o	168	19.0
Malaysia	34	51.9	Kenya	79	39.6	Nicaragua	124	31.2	Angola	169	18.9
Lithuania	35	51.5	Ukraine	80	39.2	Cote d'Ivoire	125	31.0	Liberia	170	18.9
Turkey	36	51.1	Argentina	81	39.0	Guyana	126	30.8	Eritrea	171	18.7
Latvia	37	50.5	Sao Tome and Principe	82	38.8	Tonga	127	30.6	Guinea	172	18.5
Hungary	38	49.8	Kuwait	83	38.8	Samoa	128	30.3	Iraq	173	17.8
Greece	39	49.7	Colombia	84	38.6	Haiti	129	30.1	Yemen	174	17.1
Kazakhstan	40	49.3	West Bank and Gaza	85	38.4	Syria	130	29.7	Pakistan	175	16.9
Canada	41	49.1	Jordan	86	38.1	Fiji	131	29.5	South Sudan	176	16.7
Vietnam	42	48.4	Maldives	87	38.1	El Salvador	132	29.4	Uganda	177	16.7
Tunisia	43	47.3	Mauritius	88	37.9	Malawi	133	29.3	Central African Republ	178	15.1
Serbia	44	46.5	Bahamas	89	37.4	Comoros	134	29.3	Madagascar	179	14.4
Albania	45	45.6	Suriname	90	37.2	Vanuatu	135	29.2	Zambia	180	12.1

_6

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.

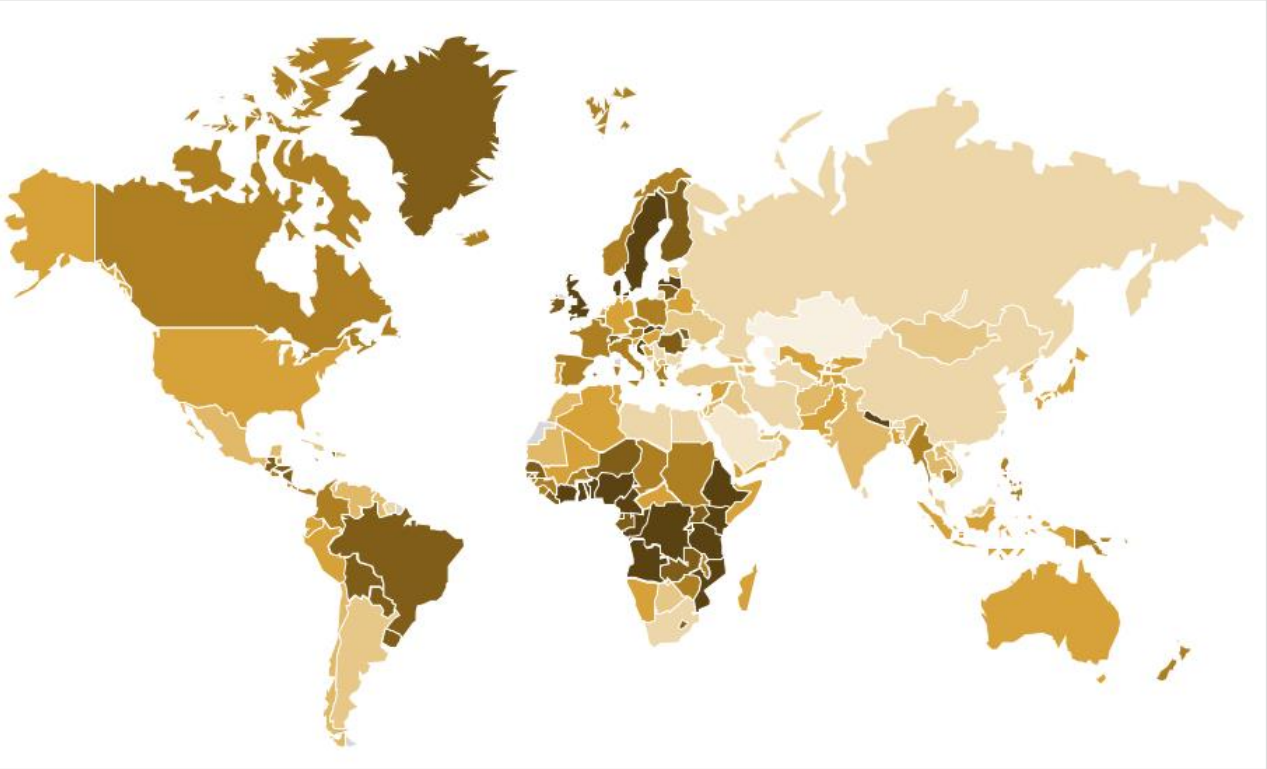
Resource Management World Map

The resource intensity ranking is topped by less developed countries, with no OECD nation or developed economy in the top 20. Ireland and Sweden, the highest ranking of the developed economies, are placed 21 & 26, followed by Latvia (33), and Luxembourg (35). The UK, thanks to a near-complete de-industrialisation ranks 39. World's economic powerhouses score comparable low: Germany is ranked 149, Japan 162, and the USA at 161. Brazil is positioned the highest among the large emerging economies (66), while India (138), China (166) and Russia (152) have a distinctive potential for improving their sustainable competitiveness through improving resource intensity and resource management – i.e. reducing costs, at the end of the day.

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 lower than that of higher developed countries - despite the weighting (as calculated by relevance) for scores measured against economic output (GDP) being significantly higher than for absolute intensity scores (measured against capita).

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.

Reducing resource intensity

Countries with high resource intensity and low efficiency are likely to face a number of challenges, including higher costs compared to other nations to achieve or sustain growth and wealth, faster depletion of domestic resources, and higher dependency on imports of energy and raw materials form the distinctively volatile global commodity markets.

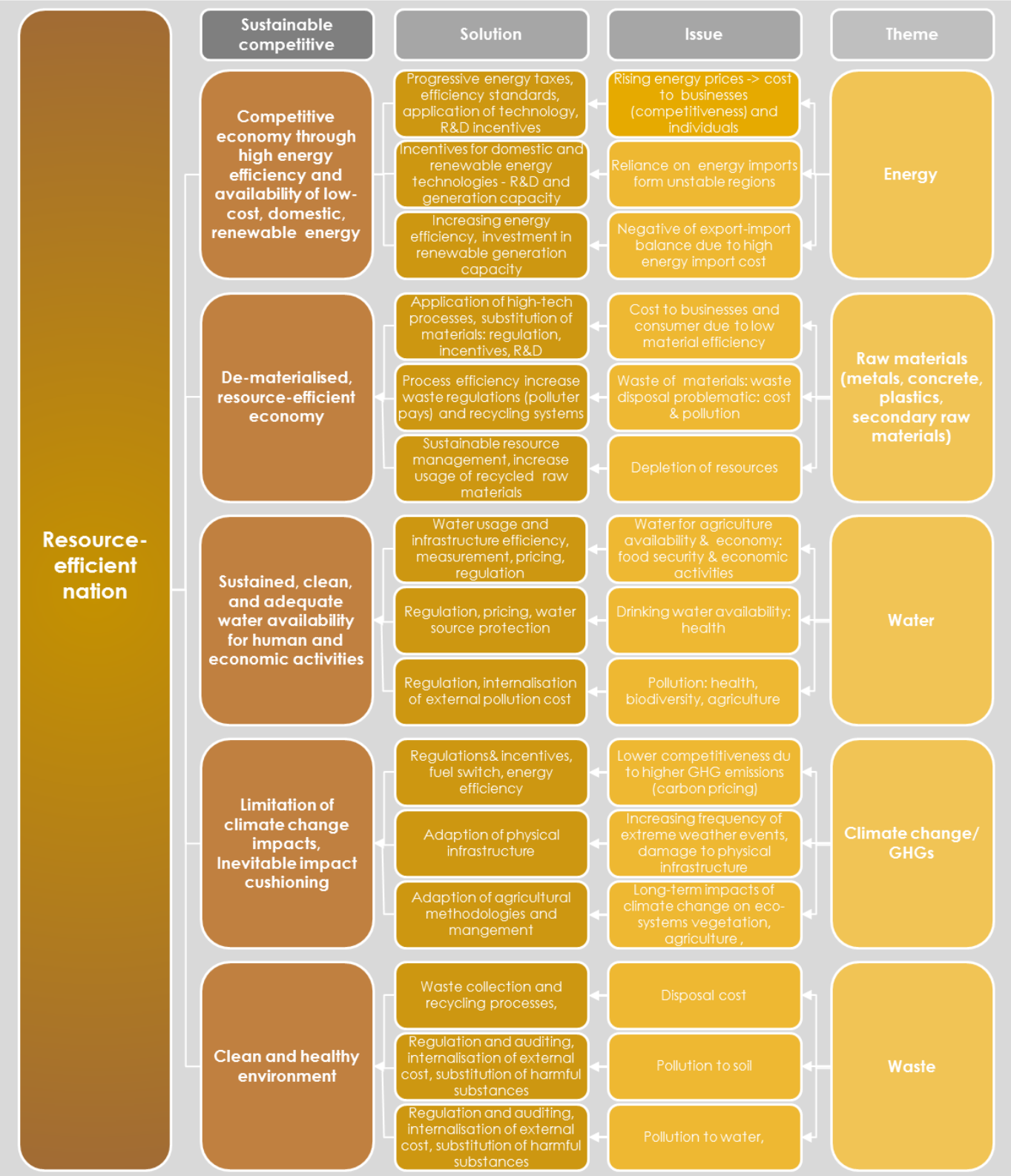
While the top of the resource intensity rankings are dominated by countries that are generally referred to as "less developed", the analysis of the overall rankings finds countries from all regions and all development levels next to each other in the ranking with no obvious correlation to the economic or financial power. In other words, countries that would be expected to have a similar resource intensity based on development level and characteristic of their economies have fairly different resource intensity scores. This inclines that the resource intensity and resource efficiency is not directly correlated to the level of economic development and output. The absence of such correlations suggests that resource intensity and resource efficiency are to a considerable degree influenced by the nature of economic and industrial policies, regulations and incentives, and technology applied.

A decade of intelligent polices can therefore make immense differences to the national efficiency and resource intensity of a country – an ultimately, the economic competitiveness of an economy. Amongst the tools available to increase resource efficiency are:

- Taxes: higher resource taxes increase incentives to increase efficiency. Countries that have introduced resource taxes in the past have higher resource efficiency (e.g. Japan) than similar economies with lower taxes. Economic actors in countries where resources (in particular energy) have been or are subsidised have even less incentives to increase efficiency. In addition, countries with higher taxes have more room for leveraging fluctuations and spikes in the global energy markets through temporary easing of taxes. However, it might be argued that this measurement is currently not opportune considering the expected rise of costs of resources in the near- to mid-term future
- Infrastructure investment: upgrading existing or building new efficient infrastructure (transport, power, buildings) increases efficiency, while lowering long-term operational cost and reduces dependency on resource imports. In addition, this measurements can have positive impacts on the job market and unemployment figures
- Targeted R&D support and other measurements for key growth industries
- Mandatory efficiency standards (cars, electronic appliances, buildings, etc.)
- Mandatory efficiency labels, public awareness campaigns

Achieving Sustainable competitiveness

Issues and potential solutions



The Global Sustainable Competitiveness Index - Resource Intensity Rankings

Scores and rankings of the level of Resource Management Sub-Index by country:

Country	Rank	Score	Country	Rank	Score	Country	Rank	Score	Country	Rank	Score
Kenya	1	63.2	Kiribati	46	51.0	Germany	91	46.6	Israel	136	41.9
Togo	2	62.9	El Salv ador	47	51.0	Syria	92	46.4	Thailand	137	41.9
Nigeria	3	61.6	Belgium	48	51.0	Slov enia	93	46.3	United Arab Emirates	138	41.6
Ethiopia	4	60.7	South Sudan	49	51.0	Central African Republ	94	46.3	Guyana	139	41.5
Democratic Republic o	5	60.0	Gambia	50	50.8	Timor-Leste	95	46.3	Venezuela	140	41.1
Tanzania	6	60.0	Comoros	51	50.6	Bangladesh	96	46.2	Dominican Republic	141	41.0
Cameroon	7	59.7	Burkina Faso	52	50.6	Australia	97	46.2	Samoa	142	40.9
Benin	8	59.6	Djibouti	53	50.5	Tonga	98	46.0	Botswana	143	40.9
Sweden	9	59.2	Eritrea	54	50.5	Tajikistan	99	46.0	Lebanon	144	40.6
Republic of Congo	10	59.0	Colombia	55	50.5	Portugal	100	45.9	Vanuatu	145	40.3
Luxembourg	11	58.6	New Zealand	56	50.5	Brunei	101	45.8	Argentina	146	40.3
United Kingdom	12	57.9	Burma	57	50.4	Namibia	102	45.7	Cuba	147	40.2
Cote d'Iv oire	13	57.6	Italy	58	50.4	Kyrgistan	103	45.7	Montenegro	148	40.2
Nepal	14	57.0	Czech Republic	59	50.3	Belarus	104	45.6	Turkey	149	40.1
Latv ia	15	56.7	Iceland	60	49.9	Fiji	105	45.5	Trinidad and Tobago	150	40.0
Mozambique	16	56.7	Guinea-Bissau	61	49.6	Japan	106	45.1	Mauritius	151	39.5
Ghana	17	56.1	Zimbabwe	62	49.5	Yemen	107	45.0	Ukraine	152	39.5
Denmark	18	55.8	France	63	49.3	Mali	108	45.0	Mongolia	153	39.4
Croatia	19	55.8	Cambodia	64	49.1	Tunisia	109	44.9	Singapore	154	39.3
Slov akia	20	55.3	Papua New Guinea	65	49.1	USA	110	44.8	Iraq	155	39.0
Angola	21	55.1	Sierra Leone	66	49.0	Bosnia and Herzegov in	111	44.7	Maldiv es	156	38.4
Nicaragua	22	54.7	Spain	67	49.0	Ecuador	112	44.7	South Korea	157	38.4
Moldov a	23	54.6	Costa Rica	68	48.8	Netherlands	113	44.7	Malaysia	158	38.2
Ireland	24	54.0	Philippines	69	48.8	Madagascar	114	44.4	Bulgaria	159	37.7
Lithuania	25	53.5	Solomon Islands	70	48.7	Indonesia	115	44.3	Swaziland	160	37.7
Sao Tome and Principe	26	53.4	Burundi	71	48.6	Algeria	116	44.1	China	161	37.4
Bolivia	27	53.4	Austria	72	48.6	Hungary	117	44.1	Bahrain	162	37.3
Lesotho	28	53.3	West Bank and Gaza	73	48.5	Pakistan	118	44.0	Turkmenistan	163	37.3
Liberia	29	53.2	Poland	74	48.1	Qatar	119	43.8	Egypt	164	37.3
Gabon	30	53.1	Liechtenstein	75	48.1	Afghanistan	120	43.6	Suriname	165	37.3
Uruguay	31	52.7	Malawi	76	48.0	Albania	121	43.4	South Africa	166	37.1
Senegal	32	52.4	Guinea	77	48.0	Laos	122	43.3	St. Kitts and Nev is	167	37.1
Niger	33	52.4	Norway	78	47.9	Mexico	123	43.3	Russia	168	37.0
Guatemala	34	52.4	Dominica	79	47.8	Jordan	124	43.2	Sri Lanka	169	36.8
Romania	35	52.4	Greece	80	47.7	Azerbaijan	125	42.7	Iran	170	36.4
Paraguay	36	52.3	Sudan	81	47.7	Mauritania	126	42.6	Libya	171	36.2
Rwanda	37	51.8	Jamaica	82	47.7	Georgia	127	42.5	Bahamas	172	36.0
Switzerland	38	51.7	Chad	83	47.5	India	128	42.4	Kuwait	173	36.0
Zambia	39	51.7	Canada	84	47.4	Oman	129	42.3	Vietnam	174	35.8
Equatorial Guinea	40	51.6	Cyprus	85	47.2	Armenia	130	42.2	Bhutan	175	35.6
Finland	41	51.5	Panama	86	47.0	Estonia	131	42.2	Serbia	176	35.1
Haiti	42	51.4	Uzbekistan	87	46.9	Cape Verde	132	42.1	Saudi Arabia	177	34.5
Brazil	43	51.3	Belize	88	46.8	Morocco	133	42.0	Grenada	178	31.9
Honduras	44	51.3	Malta	89	46.7	Macedonia	134	42.0	Kazakhstan	179	30.7
Uganda	45	51.2	Peru	90	46.6	Chile	135	42.0	Seychelles	180	29.1

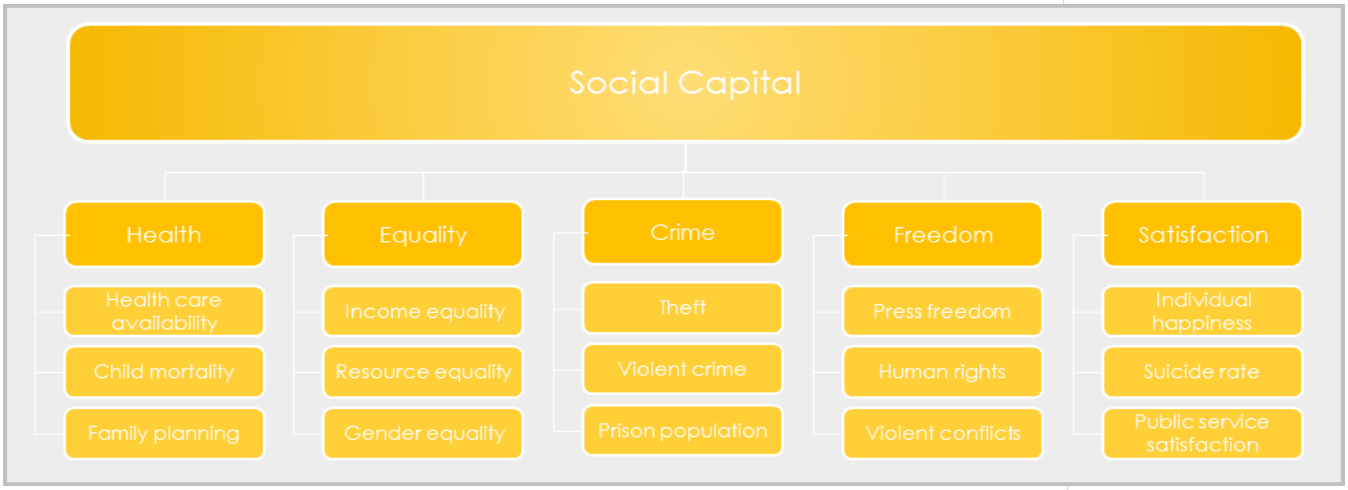
social

_7 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).

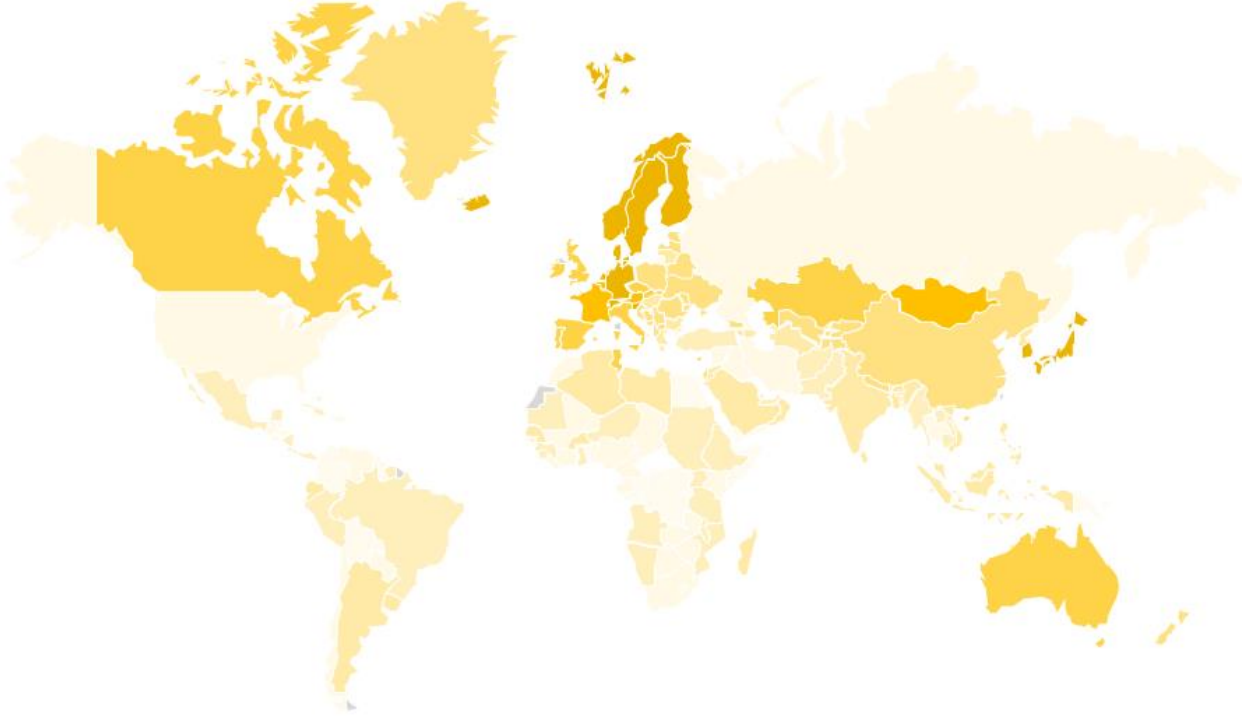
For the full list of used indicators, please refer to the methodology section.

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 (7), South Korea (8), and Singapore (15) break into the ranks
- The USA, due to comparable high crime rates and low availability of health services, is ranked 129, just below Liberia and before El Salvador.
- Germany is ranked 5, the UK 28.
- China is ranked 37, India 84, Brazil 115.
- The highest ranked South American country is Ecuador (71, the highest ranking African country Algeria (75).

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

Competitiveness through equal opportunities

Social Cohesion does not seem to be an absolute necessary ingredient for short-term economic development, but facilitates economic growth. It is questionable, however, to what extend long-term economic development can be sustained without a certain level social cohesion.

The calculated social cohesion scores show a certain correlation to GDP per capita level, raising the question whether social cohesion is the result or the cause of increased economic wealth. However, the correlation cannot be observed throughout all countries. The exceptions to the rule, such as the USA (high GDP per capita, but comparably low social cohesion score) seem to indicate that social cohesion is not a default outcome of economic success – or an indication of the beginning decline of a society. Leaving aside the individual human tragedies, countries with a low social cohesion are likely to face constraints in achieving sustainable and sustained development and wealth:

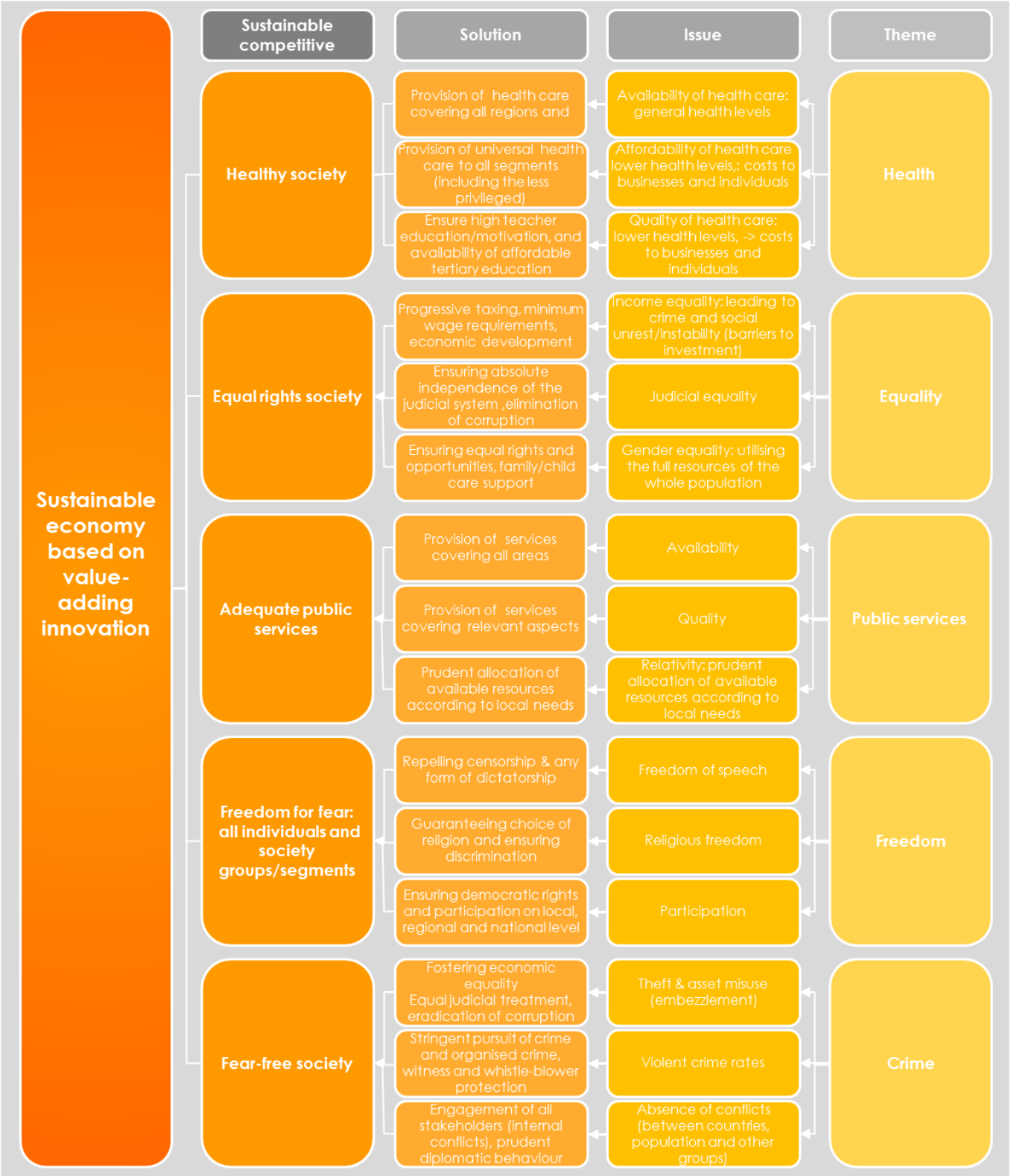
- Higher cost of labour and lower labour efficiency to businesses due to ill health both on the lower end (poor man's sicknesses, e.g. malaria etc.) and at the higher end (e.g. obesity, frequency of cardiac diseases)
- Lack of economic equality and equal opportunities leads to lack of incentives to follow an ambitious career path and low work motivation and identification, which in turn negatively affects the efficiency and profitability of economic entities. Combined with large income and asset ownership gaps, lack of economic opportunities is likely to increase crime rates. In extreme cases this can lead to the breakdown of order, effectively rendering development impossible.
- Unbalanced demographic structure (aging population) affects a country's social structure and constraints social services.

Social cohesion and the social consensus within a society or country is determined by a number of factors, including history and culture, i.e. there is no on-size-fits all solution to improve social cohesion in a specific country. However, countries with high social cohesion and high income levels have some common characteristics that can be influenced through adequate policies:

- Increasing access to adequate health care in geographical terms (i.e. in rural areas), using modern technology and communication coupled with innovative business/financing models to simultaneously increase affordability of health care
- Increase the affordability and quality of public services, including family and child care support to fully capitalise on the capabilities of the female population
- Designing intelligent policies that limit income and asset ownership gaps. However, such policies have to be designed to allow sufficient room for awarding individual performance and accomplishments that serve as drivers for the overall economy and development
- Increasing community development programs with a focus on fostering alternatives to criminal career paths
- Adapt legislation to reduce criminality and incentives for criminal behaviour (for example treating drug addiction as a sickness rather than a crime)
- Introducing incentives to increase birth rate in aging societies resp. incentives to decrease birth rate in countries with high birth rates
- Avoiding unnecessary confrontations with internal minorities and in terms of geo-political engagement and foreign relations

Social Capital

Issues and potential solutions



The Global Sustainable Competitiveness Index - Social Capital Rankings

Scores and rankings of the level of Social Capital Sub-Index by country:

Country	Rank	Score	Country	Rank	Score	Country	Rank	Score	Country	Rank	Score
Norway	1	58.6	Kuwait	46	46.2	Sudan	91	39.8	Rwanda	136	35.7
Luxembourg	2	58.4	Belarus	47	46.2	Mozambique	92	39.8	Venezuela	137	35.6
Iceland	3	58.1	Georgia	48	46.2	Panama	93	39.8	Mali	138	35.6
Finland	4	57.1	Lebanon	49	46.0	Namibia	94	39.8	Eritrea	139	35.2
Germany	5	56.6	Montenegro	50	46.0	Tonga	95	39.6	Zimbabwe	140	35.2
Switzerland	6	56.4	Latv ia	51	46.0	Burma	96	39.5	Nigeria	141	35.1
Japan	7	56.4	Armenia	52	45.6	Sierra Leone	97	39.5	South Sudan	142	35.1
South Korea	8	56.3	Romania	53	45.5	Costa Rica	98	39.4	Chile	143	34.9
Slov enia	9	56.0	Macedonia	54	45.5	Comoros	99	39.3	Cameroon	144	34.7
Netherlands	10	55.5	Israel	55	45.5	West Bank and Gaza	100	39.2	Thailand	145	34.5
Sweden	11	55.1	Tajikistan	56	45.4	Laos	101	39.0	Burundi	146	34.4
Denmark	12	55.0	Ukraine	57	45.3	St. Kitts and Nev is	102	38.9	Chad	147	34.2
Austria	13	54.9	Uzbekistan	58	45.1	Afghanistan	103	38.9	Gabon	148	34.1
Belgium	14	54.0	Greece	59	44.9	Pakistan	104	38.8	Vanuatu	149	34.0
Singapore	15	53.7	Libya	60	44.7	Niger	105	38.7	Iraq	150	33.6
France	16	53.0	Oman	61	44.5	Suriname	106	38.6	Morocco	151	33.6
Mongolia	17	52.8	Saudi Arabia	62	44.3	Nicaragua	107	38.5	Belize	152	33.6
Liechtenstein	18	52.6	Sri Lanka	63	44.2	Mauritania	108	38.4	Guatemala	153	33.5
Maldiv es	19	52.1	Lithuania	64	44.2	Malawi	109	38.4	Botswana	154	33.5
Portugal	20	51.1	Malaysia	65	44.1	Cuba	110	38.3	Benin	155	33.1
Slov akia	21	50.9	Azerbaijan	66	43.4	Tanzania	111	38.1	Cote d'Iv oire	156	33.1
Kazakhstan	22	50.7	Jordan	67	43.1	Cambodia	112	38.1	Seychelles	157	33.0
Czech Republic	23	50.2	Vietnam	68	43.1	Bahamas	113	38.0	Djibouti	158	33.0
Cyprus	24	50.2	Burkina Faso	69	42.9	Ghana	114	37.9	Solomon Islands	159	32.8
Ireland	25	49.9	Qatar	70	42.8	Brazil	115	37.9	Samoa	160	32.6
Italy	26	49.9	Ecuador	71	42.7	Guinea	116	37.9	Togo	161	32.5
Tunisia	27	49.8	Indonesia	72	42.7	Dominica	117	37.8	Colombia	162	32.4
United Kingdom	28	49.8	Turkmenistan	73	42.6	Uganda	118	37.7	Boliv ia	163	32.4
Spain	29	49.7	Hungary	74	42.5	Turkey	119	37.6	Papua New Guinea	164	32.4
Canada	30	49.4	Algeria	75	42.1	Angola	120	37.3	Honduras	165	32.3
Australia	31	49.1	Madagascar	76	41.8	Cape Verde	121	37.0	Republic of Congo	166	32.3
Bosnia and Herzegov in	32	49.0	Uruguay	77	41.7	Paraguay	122	36.9	Equatorial Guinea	167	32.3
Moldov a	33	48.7	Philippines	78	41.6	Syria	123	36.9	Guinea-Bissau	168	32.1
Brunei	34	48.4	Argentina	79	41.5	Dominican Republic	124	36.9	Jamaica	169	32.0
Serbia	35	48.4	Bhutan	80	41.5	Zambia	125	36.7	Egypt	170	31.8
Malta	36	48.4	Bangladesh	81	41.3	Iran	126	36.6	Haiti	171	31.0
China	37	48.3	Mauritius	82	41.2	Russia	127	36.6	Yemen	172	30.9
Poland	38	47.9	Senegal	83	41.1	Liberia	128	36.6	Lesotho	173	30.9
Estonia	39	47.6	India	84	41.1	USA	129	36.4	Gambia	174	30.7
New Zealand	40	47.6	Bulgaria	85	41.1	El Salv ador	130	36.3	Guyana	175	30.2
Croatia	41	46.7	Bahrain	86	41.0	South Africa	131	36.3	Fiji	176	29.5
Nepal	42	46.6	Peru	87	40.6	Kenya	132	36.2	Swaziland	177	29.5
Timor-Leste	43	46.5	Mexico	88	40.3	Grenada	133	36.1	Kiribati	178	29.5
Kyrgistan	44	46.3	United Arab Emirates	89	40.2	Trinidad and Tobago	134	36.0	Democratic Republic o	179	29.3
Albania	45	46.2	Ethiopia	90	40.2	Sao Tome and Principe	135	35.7	Central African Republ	180	28.7

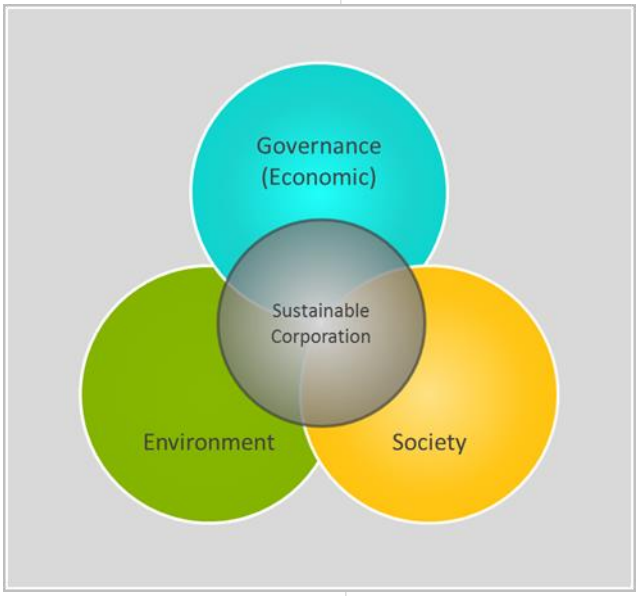
methodology

7 Sustainable Competitiveness Model & Index Methodology

7.1 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.

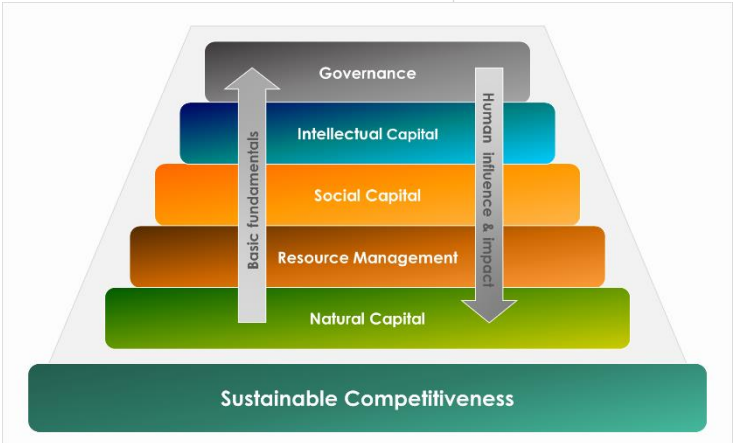


Model of sustainable development often applied in ESG research

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).

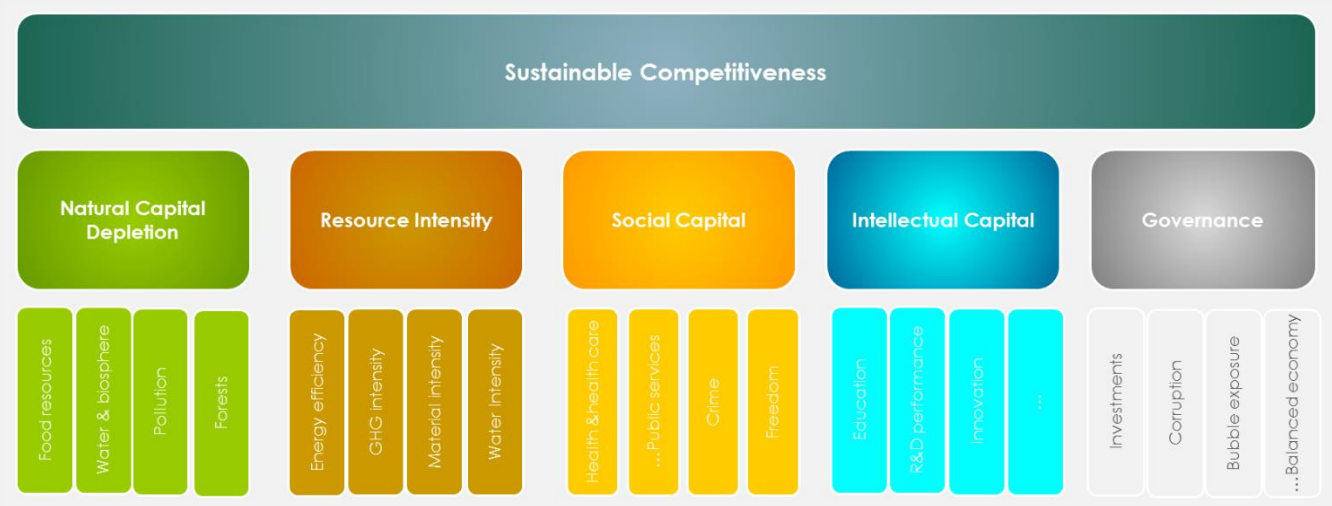


The Sustainable Competitiveness Pyramid

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. For the 2014 Index, the methodology has been overhauled significantly with a redesign of the Sustainable Competitiveness model and additional indicators added (71 in 2013, 104 in 2014). The changes to the Sustainable Competitiveness Model and indicators have been undertaken based on past experiences, new research, data availability, and back-track analysis.

Due to the changes in the methodology, rankings of the current rankings prior to 2014 are not fully compatible with current rankings. While vast majority of countries remain in the same bracket of ranking despite the changes methodology, direct comparison of rankings have a 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.

7.2 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)	

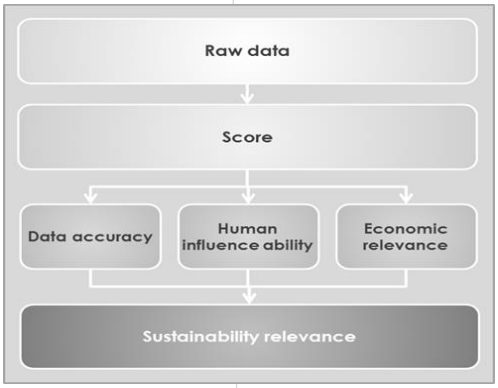
Governance Efficiency

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

7.3 Index calculation

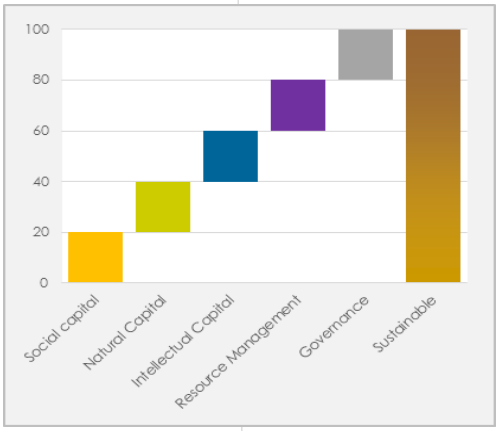
The raw data consist of numerical values. While values can be ranked against each other, they cannot be compared or added to other values (two apples plus three oranges are not equal to five pineapples). It is therefore necessary to extract a scalable and comparable score from the raw data as a first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



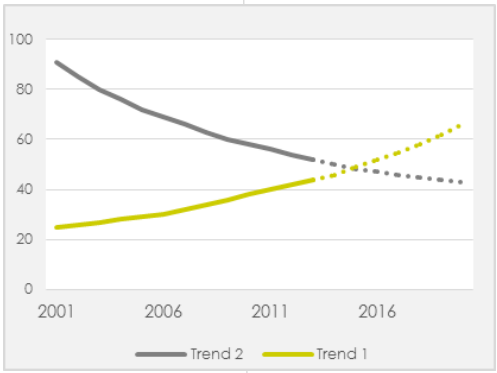
Each level of the Sustainable Competitiveness Pyramid is equally important and therefore equally weighted

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

Methodology Details

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) 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 73 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 2016 is based on the latest available data. For most data series, the latest data available (October 2016) dates 2015 or 2014. Where 2015 data was available, 2015 data has been used. Where 2015 or 2015 data was not available, 2013 data was used, and in a few cases 2012 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.

tables

8 Data Tables

The Global Sustainable Competitiveness Index

Rank	Country	Score	Rank	Country	Score	Country	Rank	Score	Country	Rank	Score
1	Sweden	60.5	46	Bulgaria	47.2	Ukraine	91	43.0	Fiji	136	39.7
2	Norway	58.2	47	Costa Rica	47.1	Cuba	92	43.0	Bahrain	137	39.6
3	Iceland	57.6	48	Greece	46.9	Guyana	93	43.0	Trinidad and Tobago	138	39.6
4	Finland	57.4	49	Moldova	46.9	Dominica	94	42.9	Jordan	139	39.5
5	Denmark	57.2	50	Serbia	46.8	Maldives	95	42.5	Rwanda	140	39.4
6	Ireland	55.4	51	Malaysia	46.7	Mongolia	96	42.4	South Africa	141	39.2
7	Switzerland	55.3	52	Colombia	46.6	Cyprus	97	42.3	Malawi	142	39.1
8	Austria	54.8	53	Albania	46.6	Mozambique	98	42.0	West Bank and Gaza	143	39.0
9	Latvia	54.2	54	Singapore	46.5	Mauritius	99	42.0	Botswana	144	39.0
10	Estonia	53.7	55	Laos	46.2	Saudi Arabia	100	42.0	Turkmenistan	145	38.9
11	Slovenia	53.7	56	Bosnia and Herzegovin	46.2	Democratic Republic o	101	41.9	Guinea-Bissau	146	38.8
12	Luxembourg	53.6	57	Bolivia	45.9	Togo	102	41.7	Egypt	147	38.7
13	New Zealand	53.6	58	Montenegro	45.8	Namibia	103	41.7	Tonga	148	38.6
14	Germany	53.4	59	Kazakhstan	45.5	Bahamas	104	41.6	Madagascar	149	38.6
15	Croatia	53.4	60	Burma	45.4	Philippines	105	41.6	Burkina Faso	150	38.5
16	South Korea	53.3	61	Argentina	45.4	Qatar	106	41.6	Mali	151	38.5
17	Liechtenstein	53.1	62	Kyrgistan	45.2	United Arab Emirates	107	41.4	Benin	152	38.3
18	Slovakia	53.0	63	Turkey	45.1	Nigeria	108	41.3	Bangladesh	153	38.1
19	France	52.9	64	Ethiopia	45.1	Thailand	109	41.2	Comoros	154	38.1
20	Japan	52.8	65	Chile	44.9	Kuwait	110	41.2	Honduras	155	37.9
21	Czech Republic	52.7	66	Indonesia	44.7	Senegal	111	41.1	Uganda	156	37.8
22	United Kingdom	51.9	67	Mexico	44.7	Zambia	112	41.0	Libya	157	37.4
23	Lithuania	51.8	68	Ghana	44.5	Sierra Leone	113	41.0	Jamaica	158	37.3
24	Canada	51.4	69	Suriname	44.5	Angola	114	41.0	Gambia	159	37.1
25	Poland	51.2	70	Panama	44.4	Algeria	115	41.0	Morocco	160	37.1
26	Belgium	49.9	71	Timor-Leste	44.4	Iran	116	40.9	Burundi	161	37.1
27	Romania	49.7	72	Venezuela	44.3	Solomon Islands	117	40.9	Djibouti	162	37.0
28	Netherlands	49.6	73	Macedonia	44.3	Sudan	118	40.7	Central African Republ	163	36.9
29	USA	49.2	74	Tunisia	44.3	Dominican Republic	119	40.5	Swaziland	164	36.9
30	Peru	49.2	75	Vietnam	43.9	El Salvador	120	40.5	Lebanon	165	36.8
31	Italy	49.0	76	Nepal	43.9	India	121	40.5	Pakistan	166	36.6
32	China	48.9	77	Cote d'Ivoire	43.9	Zimbabwe	122	40.4	Afghanistan	167	36.6
33	Portugal	48.9	78	Bhutan	43.9	Guatemala	123	40.3	Syria	168	36.2
34	Belarus	48.9	79	Tajikistan	43.8	Cambodia	124	40.3	Samoa	169	36.2
35	Paraguay	48.2	80	Kenya	43.7	Sri Lanka	125	40.2	Vanuatu	170	36.0
36	Australia	48.2	81	Republic of Congo	43.6	Azerbaijan	126	40.2	Chad	171	35.6
37	Spain	48.1	82	Nicaragua	43.6	Guinea	127	40.2	Mauritania	172	35.4
38	Malta	48.1	83	Ecuador	43.4	St. Kitts and Nevis	128	40.1	Grenada	173	35.2
39	Uruguay	47.9	84	Armenia	43.4	Papua New Guinea	129	40.1	Eritrea	174	35.1
40	Hungary	47.8	85	Uzbekistan	43.3	Lesotho	130	40.0	Kiribati	175	34.9
41	Georgia	47.8	86	Tanzania	43.2	Equatorial Guinea	131	39.9	Haiti	176	34.5
42	Brazil	47.6	87	Cameroon	43.2	Cape Verde	132	39.9	South Sudan	177	32.3
43	Russia	47.5	88	Gabon	43.2	Sao Tome and Principe	133	39.8	Seychelles	178	32.0
44	Israel	47.2	89	Belize	43.2	Niger	134	39.7	Yemen	179	31.0
45	Brunei	47.2	90	Oman	43.2	Liberia	135	39.7	Iraq	180	30.2

Natural Capital Competitiveness Scores

Country	Rank	Score	Country	Rank	Score	Country	Rank	Score	Country	Rank	Score
Laos	1	71.2	Fiji	46	52.9	Slovenia	91	44.0	Thailand	136	35.6
Guyana	2	70.5	Sudan	47	52.9	Ukraine	92	43.9	Senegal	137	35.5
Democratic Republic of C	3	66.9	Australia	48	52.5	Spain	93	43.8	Vanuatu	138	35.5
Cameroon	4	63.8	USA	49	52.2	Nigeria	94	43.8	Moldova	139	35.4
Sweden	5	63.6	Bulgaria	50	51.9	Poland	95	43.6	Netherlands	140	35.3
Peru	6	63.5	Panama	51	51.3	Chad	96	43.5	El Salvador	141	35.3
Papua New Guinea	7	63.4	Mozambique	52	51.2	Greece	97	43.0	Saudi Arabia	142	34.9
Brazil	8	63.4	Ecuador	53	51.1	Tajikistan	98	42.9	Comoros	143	34.7
Estonia	9	63.3	France	54	51.0	Swaziland	99	42.9	United Kingdom	144	34.7
Colombia	10	62.4	Ethiopia	55	50.9	Sao Tome and Principe	100	42.8	Philippines	145	34.1
Canada	11	61.9	Solomon Islands	56	50.9	Luxembourg	101	42.6	Mauritius	146	33.9
New Zealand	12	61.9	Chile	57	50.5	Lesotho	102	42.3	Eritrea	147	33.5
Venezuela	13	61.4	Romania	58	50.5	Vietnam	103	41.8	South Korea	148	33.4
Paraguay	14	61.3	Cambodia	59	50.3	Dominica	104	41.6	Sri Lanka	149	33.3
Suriname	15	61.1	Bosnia and Herzegovina	60	49.8	Japan	105	41.4	Pakistan	150	33.2
Finland	16	60.8	Denmark	61	49.7	Gambia	106	41.2	Egypt	151	33.2
Central African Republic	17	60.5	Georgia	62	49.7	Namibia	107	41.0	India	152	32.4
Sierra Leone	18	59.9	Liechtenstein	63	49.1	Honduras	108	40.9	China	153	32.1
Republic of Congo	19	59.9	Malaysia	64	48.9	Burundi	109	40.7	Azerbaijan	154	31.9
Iceland	20	59.8	Ireland	65	48.8	Samoa	110	40.7	Yemen	155	31.8
Angola	21	59.6	Malawi	66	48.5	Italy	111	40.6	South Sudan	156	31.5
Zambia	22	59.3	Zimbabwe	67	48.3	Afghanistan	112	39.9	Oman	157	31.3
Equatorial Guinea	23	59.1	Timor-Leste	68	48.3	Kazakhstan	113	39.8	Belgium	158	31.1
Burma	24	58.7	Serbia	69	48.0	Uzbekistan	114	39.8	Morocco	159	31.0
Latvia	25	58.4	Austria	70	47.8	St. Kitts and Nevis	115	39.3	Kiribati	160	30.5
Tanzania	26	58.3	Switzerland	71	47.8	Trinidad and Tobago	116	39.0	Bangladesh	161	30.4
Norway	27	57.8	Costa Rica	72	47.6	Macedonia	117	39.0	Kuwait	162	30.2
Uruguay	28	57.6	Brunei	73	47.5	Armenia	118	38.8	Qatar	163	30.2
Madagascar	29	57.6	South Africa	74	47.3	Dominican Republic	119	38.8	Grenada	164	29.7
Russia	30	57.3	Kyrgistan	75	47.2	Algeria	120	38.8	Maldives	165	29.3
Gabon	31	57.1	Mexico	76	47.0	Niger	121	38.6	United Arab Emirates	166	28.3
Bolivia	32	56.8	Albania	77	46.9	Syria	122	38.6	Seychelles	167	28.1
Cote d'Ivoire	33	56.6	Nepal	78	46.7	Czech Republic	123	37.9	Jamaica	168	28.0
Guinea	34	55.8	Bahamas	79	46.3	Benin	124	37.7	Tunisia	169	28.0
Bhutan	35	55.5	Togo	80	46.1	Tonga	125	37.6	Haiti	170	27.5
Belize	36	55.5	Hungary	81	45.9	Botswana	126	37.6	Turkmenistan	171	27.3
Lithuania	37	55.4	Slovakia	82	45.6	Cape Verde	127	37.2	Malta	172	27.1
Guinea-Bissau	38	55.0	Guatemala	83	45.0	Germany	128	37.2	Singapore	173	26.9
Croatia	39	54.7	Burkina Faso	84	45.0	Mongolia	129	37.1	Iraq	174	25.3
Nicaragua	40	54.4	Uganda	85	44.8	Iran	130	36.9	Israel	175	24.4
Liberia	41	54.2	Indonesia	86	44.7	Turkey	131	36.7	West Bank and Gaza	176	23.8
Argentina	42	54.1	Montenegro	87	44.6	Libya	132	36.4	Bahrain	177	22.6
Mali	43	53.8	Mauritania	88	44.2	Cuba	133	36.3	Jordan	178	21.9
Belarus	44	53.7	Portugal	89	44.2	Kenya	134	36.1	Cyprus	179	20.4
Ghana	45	53.5	Rwanda	90	44.1	Djibouti	135	36.1	Lebanon	180	18.4

Resource Intensity Competitiveness Scores

Country	Rank	Score	Country	Rank	Score	Country	Rank	Score	Country	Rank	Score
Kenya	1	63.2	Kiribati	46	51.0	Germany	91	46.6	Israel	136	41.9
Togo	2	62.9	El Salv ador	47	51.0	Syria	92	46.4	Thailand	137	41.9
Nigeria	3	61.6	Belgium	48	51.0	Slov enia	93	46.3	United Arab Emirates	138	41.6
Ethiopia	4	60.7	South Sudan	49	51.0	Central African Republ	94	46.3	Guyana	139	41.5
Democratic Republic o	5	60.0	Gambia	50	50.8	Timor-Leste	95	46.3	Venezuela	140	41.1
Tanzania	6	60.0	Comoros	51	50.6	Bangladesh	96	46.2	Dominican Republic	141	41.0
Cameroon	7	59.7	Burkina Faso	52	50.6	Australia	97	46.2	Samoa	142	40.9
Benin	8	59.6	Djibouti	53	50.5	Tonga	98	46.0	Botswana	143	40.9
Sweden	9	59.2	Eritrea	54	50.5	Tajikistan	99	46.0	Lebanon	144	40.6
Republic of Congo	10	59.0	Colombia	55	50.5	Portugal	100	45.9	Vanuatu	145	40.3
Luxembourg	11	58.6	New Zealand	56	50.5	Brunei	101	45.8	Argentina	146	40.3
United Kingdom	12	57.9	Burma	57	50.4	Namibia	102	45.7	Cuba	147	40.2
Cote d'Iv oire	13	57.6	Italy	58	50.4	Kyrgistan	103	45.7	Montenegro	148	40.2
Nepal	14	57.0	Czech Republic	59	50.3	Belarus	104	45.6	Turkey	149	40.1
Latv ia	15	56.7	Iceland	60	49.9	Fiji	105	45.5	Trinidad and Tobago	150	40.0
Mozambique	16	56.7	Guinea-Bissau	61	49.6	Japan	106	45.1	Mauritius	151	39.5
Ghana	17	56.1	Zimbabwe	62	49.5	Yemen	107	45.0	Ukraine	152	39.5
Denmark	18	55.8	France	63	49.3	Mali	108	45.0	Mongolia	153	39.4
Croatia	19	55.8	Cambodia	64	49.1	Tunisia	109	44.9	Singapore	154	39.3
Slov akia	20	55.3	Papua New Guinea	65	49.1	USA	110	44.8	Iraq	155	39.0
Angola	21	55.1	Sierra Leone	66	49.0	Bosnia and Herzegov in	111	44.7	Maldiv es	156	38.4
Nicaragua	22	54.7	Spain	67	49.0	Ecuador	112	44.7	South Korea	157	38.4
Moldov a	23	54.6	Costa Rica	68	48.8	Netherlands	113	44.7	Malaysia	158	38.2
Ireland	24	54.0	Philippines	69	48.8	Madagascar	114	44.4	Bulgaria	159	37.7
Lithuania	25	53.5	Solomon Islands	70	48.7	Indonesia	115	44.3	Swaziland	160	37.7
Sao Tome and Principe	26	53.4	Burundi	71	48.6	Algeria	116	44.1	China	161	37.4
Boliv ia	27	53.4	Austria	72	48.6	Hungary	117	44.1	Bahrain	162	37.3
Lesotho	28	53.3	West Bank and Gaza	73	48.5	Pakistan	118	44.0	Turkmenistan	163	37.3
Liberia	29	53.2	Poland	74	48.1	Qatar	119	43.8	Egypt	164	37.3
Gabon	30	53.1	Liechtenstein	75	48.1	Afghanistan	120	43.6	Suriname	165	37.3
Uruguay	31	52.7	Malawi	76	48.0	Albania	121	43.4	South Africa	166	37.1
Senegal	32	52.4	Guinea	77	48.0	Laos	122	43.3	St. Kitts and Nev is	167	37.1
Niger	33	52.4	Norway	78	47.9	Mexico	123	43.3	Russia	168	37.0
Guatemala	34	52.4	Dominica	79	47.8	Jordan	124	43.2	Sri Lanka	169	36.8
Romania	35	52.4	Greece	80	47.7	Azerbaijan	125	42.7	Iran	170	36.4
Paraguay	36	52.3	Sudan	81	47.7	Mauritania	126	42.6	Libya	171	36.2
Rwanda	37	51.8	Jamaica	82	47.7	Georgia	127	42.5	Bahamas	172	36.0
Switzerland	38	51.7	Chad	83	47.5	India	128	42.4	Kuwait	173	36.0
Zambia	39	51.7	Canada	84	47.4	Oman	129	42.3	Vietnam	174	35.8
Equatorial Guinea	40	51.6	Cyprus	85	47.2	Armenia	130	42.2	Bhutan	175	35.6
Finland	41	51.5	Panama	86	47.0	Estonia	131	42.2	Serbia	176	35.1
Haiti	42	51.4	Uzbekistan	87	46.9	Cape Verde	132	42.1	Saudi Arabia	177	34.5
Brazil	43	51.3	Belize	88	46.8	Morocco	133	42.0	Grenada	178	31.9
Honduras	44	51.3	Malta	89	46.7	Macedonia	134	42.0	Kazakhstan	179	30.7
Uganda	45	51.2	Peru	90	46.6	Chile	135	42.0	Seychelles	180	29.1

Social Capital Competitiveness Scores

Country	Rank	Score	Country	Rank	Score	Country	Rank	Score	Country	Rank	Score
Norway	1	58.6	Kuwait	46	46.2	Sudan	91	39.8	Rwanda	136	35.7
Luxembourg	2	58.4	Belarus	47	46.2	Mozambique	92	39.8	Venezuela	137	35.6
Iceland	3	58.1	Georgia	48	46.2	Panama	93	39.8	Mali	138	35.6
Finland	4	57.1	Lebanon	49	46.0	Namibia	94	39.8	Eritrea	139	35.2
Germany	5	56.6	Montenegro	50	46.0	Tonga	95	39.6	Zimbabwe	140	35.2
Switzerland	6	56.4	Latvia	51	46.0	Burma	96	39.5	Nigeria	141	35.1
Japan	7	56.4	Armenia	52	45.6	Sierra Leone	97	39.5	South Sudan	142	35.1
South Korea	8	56.3	Romania	53	45.5	Costa Rica	98	39.4	Chile	143	34.9
Slovenia	9	56.0	Macedonia	54	45.5	Comoros	99	39.3	Cameroon	144	34.7
Netherlands	10	55.5	Israel	55	45.5	West Bank and Gaza	100	39.2	Thailand	145	34.5
Sweden	11	55.1	Tajikistan	56	45.4	Laos	101	39.0	Burundi	146	34.4
Denmark	12	55.0	Ukraine	57	45.3	St. Kitts and Nevis	102	38.9	Chad	147	34.2
Austria	13	54.9	Uzbekistan	58	45.1	Afghanistan	103	38.9	Gabon	148	34.1
Belgium	14	54.0	Greece	59	44.9	Pakistan	104	38.8	Vanuatu	149	34.0
Singapore	15	53.7	Libya	60	44.7	Niger	105	38.7	Iraq	150	33.6
France	16	53.0	Oman	61	44.5	Suriname	106	38.6	Morocco	151	33.6
Mongolia	17	52.8	Saudi Arabia	62	44.3	Nicaragua	107	38.5	Belize	152	33.6
Liechtenstein	18	52.6	Sri Lanka	63	44.2	Mauritania	108	38.4	Guatemala	153	33.5
Maldives	19	52.1	Lithuania	64	44.2	Malawi	109	38.4	Botswana	154	33.5
Portugal	20	51.1	Malaysia	65	44.1	Cuba	110	38.3	Benin	155	33.1
Slovakia	21	50.9	Azerbaijan	66	43.4	Tanzania	111	38.1	Cote d'Ivoire	156	33.1
Kazakhstan	22	50.7	Jordan	67	43.1	Cambodia	112	38.1	Seychelles	157	33.0
Czech Republic	23	50.2	Vietnam	68	43.1	Bahamas	113	38.0	Djibouti	158	33.0
Cyprus	24	50.2	Burkina Faso	69	42.9	Ghana	114	37.9	Solomon Islands	159	32.8
Ireland	25	49.9	Qatar	70	42.8	Brazil	115	37.9	Samoa	160	32.6
Italy	26	49.9	Ecuador	71	42.7	Guinea	116	37.9	Togo	161	32.5
Tunisia	27	49.8	Indonesia	72	42.7	Dominica	117	37.8	Colombia	162	32.4
United Kingdom	28	49.8	Turkmenistan	73	42.6	Uganda	118	37.7	Bolivia	163	32.4
Spain	29	49.7	Hungary	74	42.5	Turkey	119	37.6	Papua New Guinea	164	32.4
Canada	30	49.4	Algeria	75	42.1	Angola	120	37.3	Honduras	165	32.3
Australia	31	49.1	Madagascar	76	41.8	Cape Verde	121	37.0	Republic of Congo	166	32.3
Bosnia and Herzegovin	32	49.0	Uruguay	77	41.7	Paraguay	122	36.9	Equatorial Guinea	167	32.3
Moldova	33	48.7	Philippines	78	41.6	Syria	123	36.9	Guinea-Bissau	168	32.1
Brunei	34	48.4	Argentina	79	41.5	Dominican Republic	124	36.9	Jamaica	169	32.0
Serbia	35	48.4	Bhutan	80	41.5	Zambia	125	36.7	Egypt	170	31.8
Malta	36	48.4	Bangladesh	81	41.3	Iran	126	36.6	Haiti	171	31.0
China	37	48.3	Mauritius	82	41.2	Russia	127	36.6	Yemen	172	30.9
Poland	38	47.9	Senegal	83	41.1	Liberia	128	36.6	Lesotho	173	30.9
Estonia	39	47.6	India	84	41.1	USA	129	36.4	Gambia	174	30.7
New Zealand	40	47.6	Bulgaria	85	41.1	El Salvador	130	36.3	Guyana	175	30.2
Croatia	41	46.7	Bahrain	86	41.0	South Africa	131	36.3	Fiji	176	29.5
Nepal	42	46.6	Peru	87	40.6	Kenya	132	36.2	Swaziland	177	29.5
Timor-Leste	43	46.5	Mexico	88	40.3	Grenada	133	36.1	Kiribati	178	29.5
Kyrgistan	44	46.3	United Arab Emirates	89	40.2	Trinidad and Tobago	134	36.0	Democratic Republic o	179	29.3
Albania	45	46.2	Ethiopia	90	40.2	Sao Tome and Principe	135	35.7	Central African Republ	180	28.7

Intellectual Capital Competitiveness Scores

Country	Rank	Score	Country	Rank	Score	Country	Rank	Score	Country	Rank
South Korea	1	79.0	Peru	46	45.4	Turkmenistan	91	37.2	Republic of Congo	136
Sweden	2	69.3	Spain	47	45.2	Namibia	92	37.1	Panama	137
Norway	3	66.7	Costa Rica	48	45.1	Uruguay	93	36.4	Nepal	138
China	4	66.7	Cuba	49	45.0	Morocco	94	36.4	Benin	139
Denmark	5	66.5	Saudi Arabia	50	44.9	Azerbaijan	95	36.1	Niger	140
Germany	6	64.2	Brazil	51	44.6	Belize	96	35.7	Togo	141
Switzerland	7	64.0	Thailand	52	44.3	Romania	97	35.2	Honduras	142
Finland	8	63.9	Cyprus	53	44.0	Dominica	98	35.1	Mozambique	143
Japan	9	63.2	Chile	54	43.8	Egypt	99	35.1	Ethiopia	144
Israel	10	63.0	New Zealand	55	43.8	Dominican Republic	100	35.1	Libya	145
United Kingdom	11	62.7	Iran	56	43.6	Senegal	101	34.9	Sudan	146
Austria	12	61.6	Bahrain	57	43.5	South Africa	102	34.8	Burundi	147
Belgium	13	61.5	Solomon Islands	58	43.4	Ecuador	103	34.7	Sierra Leone	148
Slovenia	14	61.2	Belarus	59	43.2	India	104	34.4	Seychelles	149
Singapore	15	60.7	Montenegro	60	43.2	Ghana	105	34.4	Djibouti	150
Malta	16	60.6	Oman	61	42.8	Laos	106	34.2	Chad	151
Netherlands	17	60.5	Macedonia	62	42.8	Uzbekistan	107	34.0	Gambia	152
Iceland	18	60.3	Georgia	63	42.7	Indonesia	108	33.9	Papua New Guinea	153
USA	19	59.3	Paraguay	64	42.4	Jamaica	109	33.8	Nigeria	154
France	20	58.0	Mexico	65	42.3	Trinidad and Tobago	110	33.7	Mali	155
Czech Republic	21	57.0	Australia	66	42.1	Zimbabwe	111	33.6	Cameroon	156
Poland	22	56.2	Kyrgistan	67	41.8	St. Kitts and Nevis	112	33.6	Guatemala	157
Ireland	23	55.8	Botswana	68	41.4	Bhutan	113	33.5	Tanzania	158
Liechtenstein	24	55.3	Kiribati	69	40.8	Sri Lanka	114	33.5	Cambodia	159
Russia	25	54.4	Timor-Leste	70	40.7	Qatar	115	33.4	Gabon	160
Slovakia	26	53.4	Armenia	71	40.5	Algeria	116	32.9	Equatorial Guinea	161
Croatia	27	52.9	Tajikistan	72	40.4	Lesotho	117	32.8	Burkina Faso	162
Estonia	28	52.9	Venezuela	73	40.3	Lebanon	118	32.3	Bangladesh	163
Portugal	29	52.6	Bosnia and Herzegovin	74	39.9	Philippines	119	32.2	Mauritania	164
Bulgaria	30	52.1	Bolivia	75	39.8	Cape Verde	120	32.2	Afghanistan	165
Brunei	31	52.1	Mongolia	76	39.8	Grenada	121	31.9	Guinea-Bissau	166
Luxembourg	32	52.1	United Arab Emirates	77	39.7	Swaziland	122	31.4	Rwanda	167
Italy	33	52.0	Moldova	78	39.6	Burma	123	31.3	Democratic Republic o	168
Malaysia	34	51.9	Kenya	79	39.6	Nicaragua	124	31.2	Angola	169
Lithuania	35	51.5	Ukraine	80	39.2	Cote d'Ivoire	125	31.0	Liberia	170
Turkey	36	51.1	Argentina	81	39.0	Guyana	126	30.8	Eritrea	171
Latvia	37	50.5	Sao Tome and Principe	82	38.8	Tonga	127	30.6	Guinea	172
Hungary	38	49.8	Kuwait	83	38.8	Samoa	128	30.3	Iraq	173
Greece	39	49.7	Colombia	84	38.6	Haiti	129	30.1	Yemen	174
Kazakhstan	40	49.3	West Bank and Gaza	85	38.4	Syria	130	29.7	Pakistan	175
Canada	41	49.1	Jordan	86	38.1	Fiji	131	29.5	South Sudan	176
Vietnam	42	48.4	Maldives	87	38.1	El Salvador	132	29.4	Uganda	177
Tunisia	43	47.3	Mauritius	88	37.9	Malawi	133	29.3	Central African Republ	178
Serbia	44	46.5	Bahamas	89	37.4	Comoros	134	29.3	Madagascar	179
Albania	45	45.6	Suriname	90	37.2	Vanuatu	135	29.2	Zambia	180

Governance Efficiency Competitiveness Scores

Country	Rank	Score	Country	Rank	Score	Country	Rank	Score	Country	Rank	Score
Ireland	1	68.7	Finland	46	53.7	Canada	91	49.2	Vanuatu	136	40.8
Czech Republic	2	67.8	Bahrain	47	53.6	Greece	92	49.2	Lesotho	137	40.7
Romania	3	65.0	Bhutan	48	53.5	Colombia	93	49.2	Ghana	138	40.5
New Zealand	4	64.1	Sri Lanka	49	53.4	Guatemala	94	48.6	South Africa	139	40.3
Germany	5	62.7	USA	50	53.4	Paraguay	95	48.2	Togo	140	40.3
Estonia	6	62.6	France	51	53.2	Suriname	96	48.0	Timor-Leste	141	40.1
Israel	7	61.3	Chile	52	53.2	Bosnia and Herzegov in	97	47.6	Afghanistan	142	40.0
Slov enia	8	61.0	Bulgaria	53	53.2	Ethiopia	98	47.3	Tonga	143	39.3
Austria	9	60.9	Spain	54	52.8	Burma	99	47.2	Nicaragua	144	39.0
Liechtenstein	10	60.4	Macedonia	55	52.3	Ukraine	100	47.2	Gambia	145	39.0
China	11	60.2	Italy	56	52.2	Boliv ia	101	47.1	Honduras	146	38.8
Iceland	12	60.1	Belgium	57	52.1	Azerbaijan	102	47.0	Uganda	147	38.5
Turkey	13	60.0	India	58	52.1	Algeria	103	46.9	Sudan	148	37.9
Poland	14	59.9	Russia	59	52.1	Lebanon	104	46.6	Tanzania	149	37.9
Norway	15	59.7	Netherlands	60	52.0	Grenada	105	46.5	Republic of Congo	150	37.8
Slov akia	16	59.6	Dominica	61	51.9	Rwanda	106	46.3	Eritrea	151	37.5
South Korea	17	59.5	Argentina	62	51.9	Zambia	107	45.3	Guinea-Bissau	152	36.8
Latv ia	18	59.3	St. Kitts and Nev is	63	51.8	West Bank and Gaza	108	45.2	Burundi	153	36.4
Denmark	19	58.9	Singapore	64	51.7	Kyrgistan	109	45.0	Comoros	154	36.4
Japan	20	58.0	Tunisia	65	51.6	Jamaica	110	44.9	Samoa	155	36.3
Indonesia	21	58.0	Bangladesh	66	51.5	Namibia	111	44.7	Mozambique	156	35.8
Malta	22	57.8	Jordan	67	51.3	Seychelles	112	44.7	Liberia	157	35.7
Georgia	23	57.8	Iran	68	51.2	Belize	113	44.3	Cameroon	158	35.6
Qatar	24	57.5	Philippines	69	51.2	Tajikistan	114	44.1	Iraq	159	35.4
Mauritius	25	57.4	Australia	70	51.1	Ecuador	115	44.0	Mali	160	35.4
Kazakhstan	26	57.2	Saudi Arabia	71	51.1	Libya	116	44.0	Zimbabwe	161	35.4
United Arab Emirates	27	57.0	Dominican Republic	72	51.0	Laos	117	43.5	Equatorial Guinea	162	35.1
Switzerland	28	56.8	Cape Verde	73	50.9	Kenya	118	43.4	Madagascar	163	34.7
Croatia	29	56.7	Uruguay	74	50.9	Venezuela	119	43.4	Benin	164	34.3
Hungary	30	56.7	Portugal	75	50.9	Swaziland	120	43.1	Democratic Republic o	165	34.3
Luxembourg	31	56.4	Albania	76	50.8	Nigeria	121	42.9	Central African Republ	166	34.2
Panama	32	56.3	Uzbekistan	77	50.7	Mongolia	122	42.7	Angola	167	34.0
Serbia	33	56.2	Vietnam	78	50.6	Morocco	123	42.4	Burkina Faso	168	32.6
Egypt	34	56.1	Mexico	79	50.5	Brunei	124	42.3	Haiti	169	32.4
Moldov a	35	56.0	El Salv ador	80	50.5	Niger	125	42.1	Papua New Guinea	170	31.6
Belarus	36	55.9	Malaysia	81	50.4	Cambodia	126	42.0	Sierra Leone	171	31.5
Sweden	37	55.4	Bahamas	82	50.3	Guyana	127	41.8	Malawi	172	31.3
Cuba	38	55.3	Pakistan	83	50.2	Nepal	128	41.8	Mauritania	173	31.0
Montenegro	39	54.9	Gabon	84	50.1	Senegal	129	41.7	Yemen	174	30.3
Oman	40	54.8	Turkmenistan	85	50.0	Botswana	130	41.4	Syria	175	29.5
Costa Rica	41	54.8	Armenia	86	50.0	Cote d'Iv oire	131	41.3	Solomon Islands	176	28.6
Kuwait	42	54.6	Peru	87	49.9	Fiji	132	41.1	Sao Tome and Principe	177	28.3
Maldiv es	43	54.5	Thailand	88	49.8	Brazil	133	41.1	Chad	178	27.9
Lithuania	44	54.2	Cyprus	89	49.6	Djibouti	134	40.9	South Sudan	179	27.1
United Kingdom	45	54.2	Trinidad and Tobago	90	49.3	Guinea	135	40.9	Kiribati	180	22.7

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