the global sustainable competitiveness index 2013

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About this report

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About SolAbility

SolAbility is a sustainability advisory consultancy based in Korea, providing sustainable management tools & services to corporate clients and advanced sustainable investment research covering Pan-Asian equities for institutional investors.

Three corporate clients who have implemented sustainability strategies and management systems developed and designed by SolAbility have been recognised as global sustainability leaders ("global super-sector leader") in their respective industry sector by the Dow Jones Sustainability Index (DJSI), an honour that is awarded to only 19 of the annually evaluated 2'500 companies world-wide.

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Inclusive alternative to the GDP

The wealth of nations is commonly expressed in the "Gross Domestic Product" (GDP), expressed in a monetary value. The GDP is composed of the economic output of a country, in turn composed of financial transactions in exchange for goods and services.

However, economic activities do have certain adverse side-effects on the natural environment, resources, and on the socio-cultural fabric of a society. In addition, natural resources are not renewable and many vital resources – water, energy, but also certain minerals and metals – are scarce (or are set to become scarce goods in the near/medium future). Yet none of these adverse effects, external, or "non-financial" aspects are factored into the commonly expression of wealth of Nations, the GDP. In other words – the GDP is a very limited expression of a national balance sheet. GDP growth rates and changes in growth rates are often used as an indicator for an economy's well-being and development. However, due to the lack of integrating all aspects of development drivers – natural resources, efficiency, innovation capabilities and social cohesion - the GDP describes a moment in time. Current GDP levels therefore have limited informative value relating to the future potential of achieving and sustaining inclusive development and creation of wealth.

It is not suspiring that where the money rolls – in the real economy – that corporations have long started to incorporate sustainability factors in their corporate score cards, and are actively pursuing new opportunities related to sustainable development. In the financial world, models have been developed aiming at evaluating a company's capability to mange future risks and to capitalise on new opportunities for investment decision purposes, most often referred to as "ESG" models (environment , social, governance).

The Sustainable Competitiveness Index is based on a sustainable competitiveness model that incorporates all relevant pillars of sustained growth and wealth creation of a nation – natural capital availability, resource intensity, innovation and business capabilities, and social cohesion. In addition to the full integration of sustainability performance data, it also analyses and incorporates the data trends over time to allow for a better expression of the future development potential. The results aim at serving as an alternative to the GDP, and to be used to analyse future development prospects of nations.

What is competitiveness ?

The definition of competitiveness of nations is a controversially discussed issue, unfortunately and too often impaired by ideological prejudice or economic theories developed in a aseptic theoretical environment. By comparing the outcomes of the sustainable competitiveness analysis with the probably best recognised conventional competitiveness index – The WEF's "Davos Man" Competitiveness Report – the Sustainable Competitiveness Index aims at contributing to the discussion of what policies can help a country to identify and develop suitable development models adapted to its special characteristics in order to achieve sustainable wealth creation.

We hope you find this report informative.

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sustainable competitiveness

Sustainable development and sustainable competitiveness

It is now more than 20 years ago that the Brundtland Commission formulated the definition of sustainable development in the run-up to the Rio 92' summit: "Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs". While there is some controversy surrounding this definition – in particular the definition of "needs" – the definition is widely accepted and often quoted.

However, there is no agreed indicator to measure "sustainable development" of nations. Countries are ranked against each other in numerous indexes, but they tend to either concentrate on economic performance or else on sustainability indicators while excluding or omitting the other. There is no agreed model to comprehensively measure sustainability of nations, i.e. a model that integrates economic and sustainability (financial and "non-financial" performance) – the sustainable competitiveness of a country.

It is now widely accepted that economic growth and wealth creation can have adverse impacts or side-effects on the non-financial assets of a country and the region (depletion of resources is normally affecting the country itself, while pollution can have wider regional impacts in other countries, or global impacts like climate change). The negative impacts of economic activities - including negative impacts on the social fabric and cohabitation within a society - can undermine or even reverse future wealth creation. Economic competitiveness indicators alone are therefore a measurement of current wealth levels, but bear limited informative value for future developments due to the omission of key fundamentals required for the smooth functioning of economies.

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.

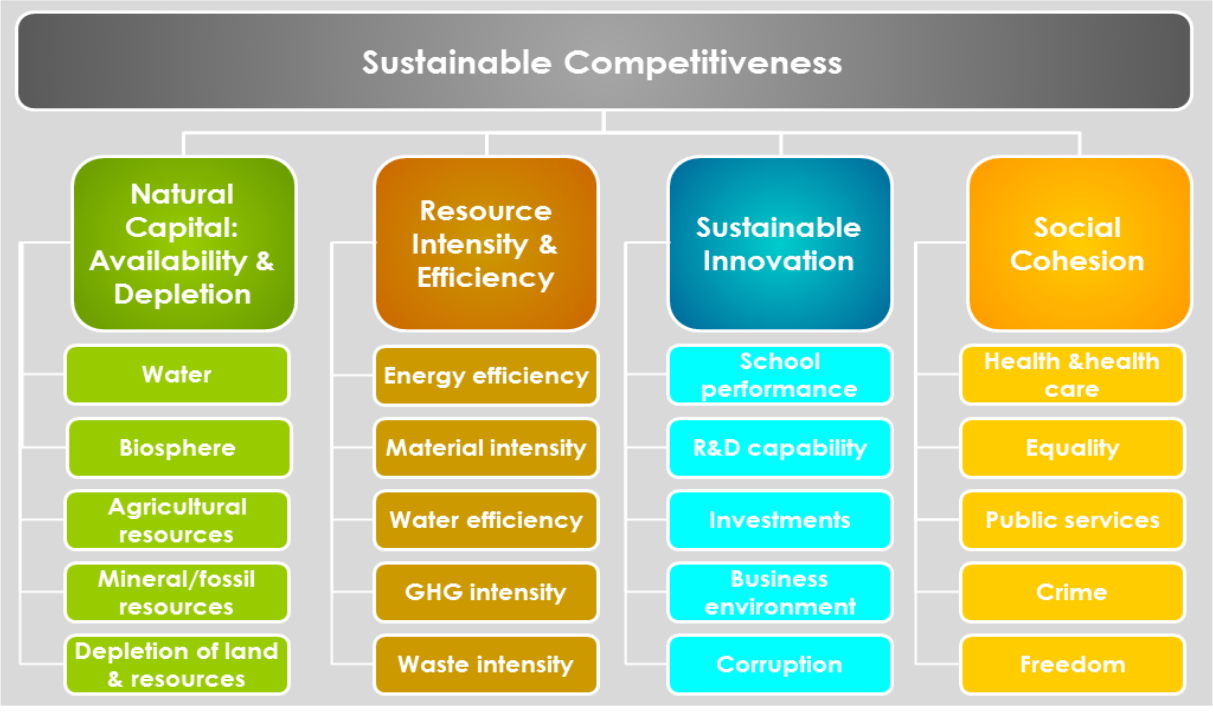
In the financial market realm, the ESG (*E*nvironment, *S*ocial, *G*overnance) model has become a accepted standard to measure sustainability of corporations for investment purposes. While there are significant methodological differences between the different corporate sustainability Indexes and rankings depending on the issuing organisation, the main pillars of the model are widely established. The Sustainable Competitiveness Index is based on the adaption of the ESG model to country level, with adjustments to fundamental pillars and indicators to measure sustainability-based competitiveness of a country. A distinctive difference between countries and corporations is that corporations are mobile. Countries are bound within their frontiers, and therefore depend, for good or for worse, on the geographical and climatic environment within their given physical boundaries. The environmental component has therefore been divided into two separate pillars of competitiveness: the Natural Capital, and Resource Intensity, where the Natural Capital stands for availability of resources and Resource Intensity for the efficient use of available resources.

The "G" for "Governance" in ESG might be somewhat misleading, because it encompasses all economic aspects, including governance and management, and are therefore also referred to as "economic" aspects. In the context of a country, the economic pillar refers to the ability of a country to generate and sustain wealth in a globalised economy.

4 sustainable competitiveness pillars, 73 data sets

The Sustainable Competitiveness model is based on four fundamental pillars that together from the base capability of a country to generate and sustain sustainable wealth, i.e. wealth that is not in danger of being reduced or diminished through overexploitation of resources (natural and human), the lack of innovative edge required to competed in the globalised markets, or the exploitation of segments of a society. These four pillars are:

- Natural Capital: 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: the efficiency of using available resources(domestic or imported) as a measurement of operational competitiveness in a resource-constraint World.
- Sustainable Innovation: the capability of a country to generate wealth and jobs through innovation and value-added industries in the globalised markets
- Social Cohesion: the health of populations, equality, security and freedom within a country



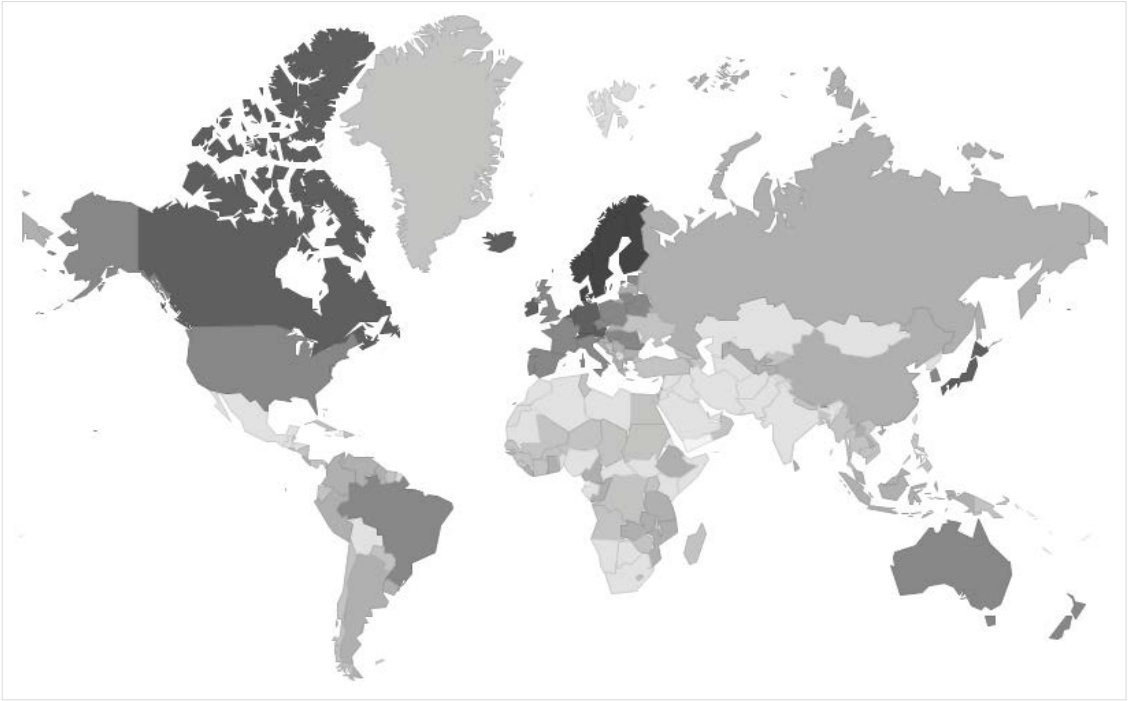
In order to calculate the Sustainable Competitiveness, a total of 73 indicators have been analyses against latest available performance data. A 5-year trend of the same indicators (whether the development shows positive or negative trends) has also been incorporated in the index calculation.

65 of the 73 indicators are based on pure data (quantitative indicators) collected by the World Bank, the IMF and various UN agencies (UNEP, UNDP, WHO, WTO, FAO, UNESCO). The remaining 7 have been calculated by external agencies or are based on perception surveys in the different countries.

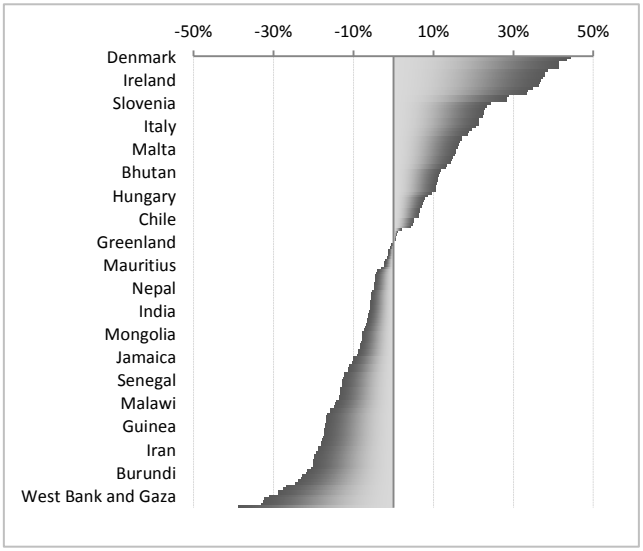
The Sustainable Competitiveness World Map

The Sustainable Competitiveness score is based on scoring current performance data as well as the trend analysis (increase/decrease) over the past 5 years. The combination of absolute comparison and trend analysis reflects a momentary picture as well as being an indication of the long-term sustainable development potential of countries. The Sustainable Competiveness Ranking reveals some surprising, and other not-so-surprising results:

- The Sustainable Competitiveness Index is topped by the four Scandinavian countries, followed by other North-Western European Nations. The only non-European country in the top 20 are Canada (9), Japan (12), and New Zealand (14).
- The Worlds largest economy, the US, is ranked 27th. Of the booming emerging economies, Brazil is ranked 28th, South Korea 30st, China 38th, Russia 48th, and India 126h.
- The Natural Capital and Resource Intensity rankings are topped by countries with a rich biodiversity, favourable climate and sufficient water resources. Distinctions are also visible between the more industrialised countries, indicating that some countries will face lower obstacles with the coming raw material and energy scarcity
- Asian nations (Singapore, South Korea, Japan, China) lead the Sustainable Innovation Competitiveness 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 countries, indicating that Social Cohesion is the result of economic growth combined with social consensus



The Sustainable Competitiveness World map: dark colour indicates high, light colour limited Sustainable Competitiveness



Regional spread

Scandinavia as a region achieves the highest Sustainable Competitiveness score, followed by North-Western Europe, Australia & New Zealand, North America and North-East Asia – all areas in the Northern hemisphere. Central Asia is the only region that doesn't fit into the North-South divide. 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, joined by Central America and the Middle East. 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 subsidies.

Part of the objective of this index was to evaluate whether the commonly poor outlook of African nations would look different when measured against non-financial indicators. Unfortunately, this seems not to be the case.

Average deviation

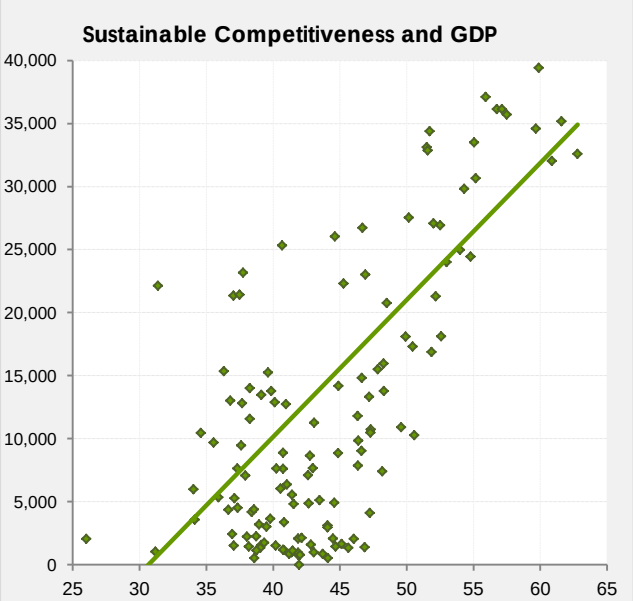
Only 38% of the 176 countries assessed Sustainable Competitiveness score is above the average score, i.e. nearly two thirds (62%) are below the average score. The large difference means that there is large gap between the leading scores (the top 40 nations) and the rest of the World.

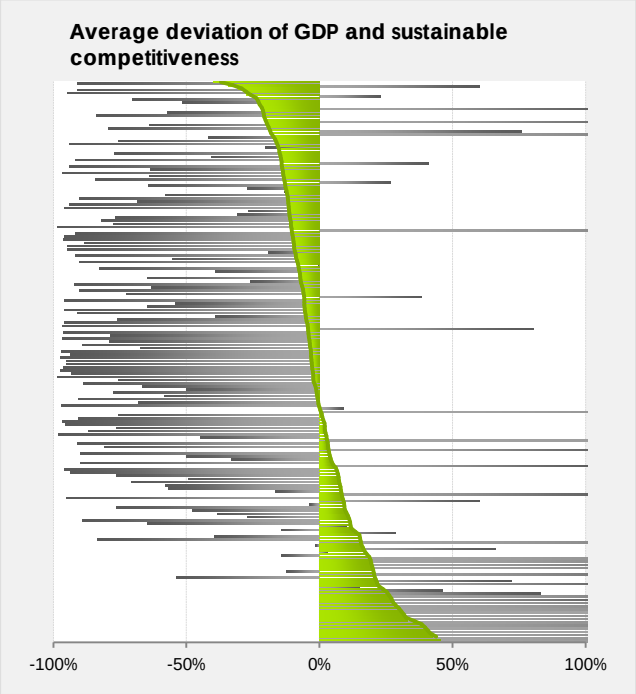
High sustainability = high income levels

The leading nations in the Sustainable Competitiveness ranking are mostly (current) 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.

While a certain similarity between GDP rankings and sustainability levels seems to be visible, the correlation is superficial and refuted by too many exceptions to the rule. 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.*

However, the correlation or the influence of the sustainable competitiveness on GDP or income level is not immediate; it is time deferred. Like every endeavor or project, an upfront investment is required to achieve the desired results. The seeds have to be planted, the plants need to be cared for before the harvest can be collected. In addition, sustainable competitiveness can be temporarily "cheated on" in the presence of large natural resources trough 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 in the absence of development of an adequate alternative sustainable economy and the underlying fundament requirements to achieve sustainable wealth that does not depend on the exploitation of non-renewable resources.





Country	Rank	Score	2012
Denmark	1	62.8	-
Sweden	2	61.6	-
Finland	3	60.9	+2
Norway	4	60.8	-1
Switzerland	5	59.9	+1
Germany	6	59.7	+1
Canada	7	57.5	+5
Ireland	8	57.1	+2
Austria	9	56.7	-5
Luxembourg	10	56.3	+3
Netherlands	11	55.9	-3
Japan	12	55.2	-3
Iceland	13	55.1	-2
New Zealand	14	54.8	-
France	15	54.3	-
Slovenia	16	54.0	+3
Czech Republic	17	53.0	+1
Estonia	18	52.6	+6
Spain	19	52.5	+3
Portugal	20	52.2	-
Belarus	21	52.1	-4
Italy	22	52.0	+6
Lithuania	23	51.9	+6
Australia	24	51.7	-1
United Kingdom	25	51.6	+1
Belgium	26	51.5	-10
USA	27	51.2	+3
Brazil	28	50.6	-3
Hungary	29	50.4	+16
South Korea	30	50.1	+3
Poland	31	49.9	+11
Singapore	32	49.9	-11
Bhutan	33	49.8	+13
Romania	34	49.6	+1
Slovakia	35	48.5	-3
Latvia	36	48.3	-5
Croatia	37	48.3	-10
China	38	48.2	-2
Uzbekistan	39	47.9	+6
Argentina	40	47.8	-6
Costa Rica	41	47.3	-3
Montenegro	42	47.3	+8
Indonesia	43	47.2	+18
Uruguay	44	47.2	-3

Country	Rank	Score
Malta	45	46.9
Timor-Leste	46	46.9
Israel	47	46.7
Russia	48	46.6
Peru	49	46.6
Serbia	50	46.4
Albania	51	46.4
Bulgaria	52	46.3
Republic of Congo	53	46.1
Tajikistan	54	46.0
Tanzania	55	45.6
Greece	56	45.3
Ghana	57	45.1
Malaysia	58	44.9
Colombia	59	44.9
Zambia	60	44.7
Cyprus	61	44.6
Sri Lanka	62	44.6
Cameroon	63	44.5
Qatar	64	44.4
Dominica	65	44.3
Liberia	66	44.1
Moldova	67	44.1
Guyana	68	44.1
Guinea-Bissau	69	44.0
Mozambique	70	43.7
Laos	71	43.7
Armenia	72	43.5
Macao	73	43.3
Venezuela	74	43.1
Ethiopia	75	43.0
Ecuador	76	43.0
Cote d'Ivoire	77	42.8
Dominican Republic	78	42.8
Paraguay	79	42.7
Suriname	80	42.6
Tunisia	81	42.3
Sudan	82	42.2
Kosovo	83	42.2
Democratic Republic of Congo	84	42.2
Kyrgistan	85	42.1
Sierra Leone	86	42.0
Gambia	87	42.0
Zimbabwe	88	41.9

Sustainable Competitiveness Rankings
89-176

Country	Rank	Score
Mali	89	41.9
Malawi	90	41.9
Cambodia	91	41.9
Niger	92	41.7
Belize	93	41.7
Papua New Guinea	94	41.7
Georgia	95	41.5
Nepal	96	41.5
Egypt	97	41.4
Guinea	98	41.4
Greenland	99	41.3
Madagascar	100	41.2
Togo	101	41.1
Ukraine	102	41.0
Mauritius	103	41.0
Nicaragua	104	40.8
Burkina Faso	105	40.8
Bosnia and Herzegovina	106	40.7
Azerbaijan	107	40.7
Uganda	108	40.7
Oman	109	40.7
El Salvador	110	40.5
Djibouti	111	40.5
Thailand	112	40.3
Lesotho	113	40.2
Lebanon	114	40.1
Angola	115	40.1
Burma	116	40.0
Panama	117	39.8
Philippines	118	39.8
Chile	119	39.6
Vietnam	120	39.5
Cuba	121	39.3
Senegal	122	39.3
Turkey	123	39.1
Bangladesh	124	39.1
Chad	125	39.1
India	126	38.9
Central African Republic	127	38.9
Rwanda	128	38.8
Mauritania	129	38.7
Kuwait	130	38.6
Burundi	131	38.6
Morocco	132	38.6

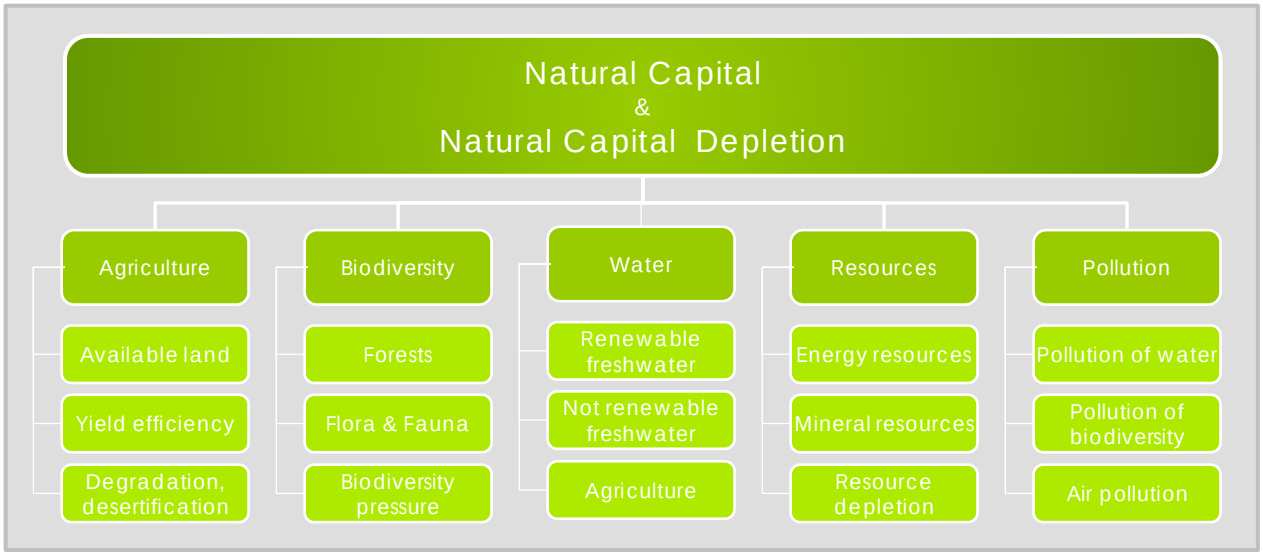
Country	Rank	Score
Mongolia	133	38.4
Syria	134	38.4
Gabon	135	38.3
Kazakhstan	136	38.3
Afghanistan	137	38.2
Benin	138	38.2
Turkmenistan	139	38.0
Nigeria	140	38.0
Jamaica	141	37.9
Seychelles	142	37.8
Mexico	143	37.7
Macedonia	144	37.6
Saudi Arabia	145	37.5
Bolivia	146	37.4
Algeria	147	37.3
Eritrea	148	37.2
Jordan	149	37.1
Kenya	150	37.1
Bahrain	151	37.0
Pakistan	152	36.9
Botswana	153	36.8
Guatemala	154	36.6
North Korea	155	36.6
Libya	156	36.3
Comoros	157	36.1
Swaziland	158	35.9
South Africa	159	35.6
United Arab Emirates	160	35.2
Bahamas	161	35.1
Iraq	162	34.8
Iran	163	34.6
Hong Kong	164	34.4
South Sudan	165	34.2
Honduras	166	34.1
Namibia	167	34.0
Brunei	168	33.7
Somalia	169	33.3
Maldives	170	33.2
Fiji	171	32.7
Trinidad and Tobago	172	31.4
Haiti	173	31.2
West Bank and Gaza	174	30.0
Equatorial Guinea	175	28.4
Yemen	176	26.0

natural capital

Elements of the national natural capital

The "Natural Capital" of a country is the capital that is given to a country in the form of land and its geography, climate, biodiversity, fertility, water availability, and the availability of mineral and fossil resources.

The number of data points available from a variety of sources is nearly endless. The main challenge is therefore 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 a natural capital model. The natural capital model incorporates the essence of resources available that in effect would allow a country to be completely self-sustaining: land, water, food production, capacity, and energy and mineral resources. In addition, the level of depletion, or degradation of those resources that could endanger future self-efficiency have also been taken into account.



Natural capital indicators

Based on the definition of the key natural capital sustainability 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 analyzed for the latest data point available as well as their development over time, reflecting the current status and the future outlook of a country based on the natural capital and the level of its depletion due to human activities.

As some of the above key areas are difficult to express in numerical values, quantitative scores compiled by GEF (Global Environment Facility, a sub-division of the UNEP) have been used for certain indicators, such as biodiversity potential, resource depletion, and the ecological footprint.

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

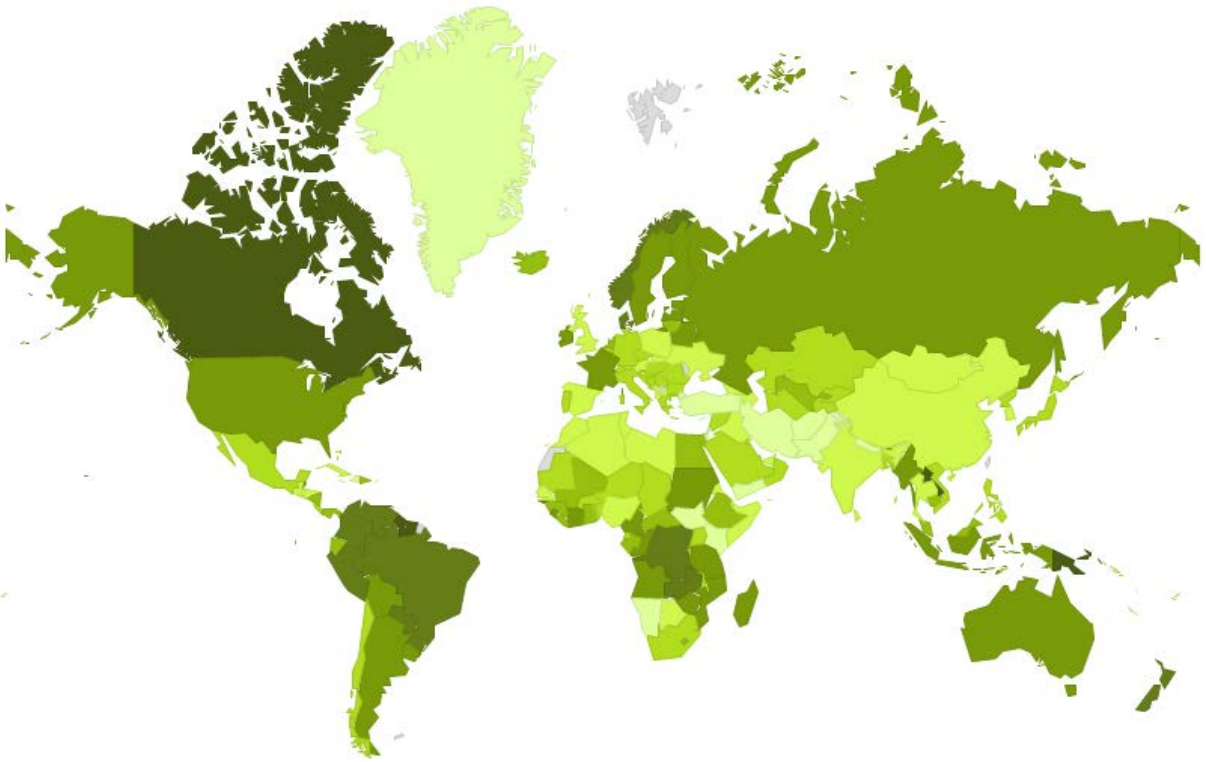
Biodiversity, water and raw materials determine natural capital competitiveness

The potential for sustaining natural capital as a basis for sustained competitiveness is composed of two main factors: the characteristics of geography and climate, combined with the extend of human activities that have or will affect the ability of natural factors to sustain the population and the economy.

Because the natural capital is a given value – it is as it is – there are limitations to improve or change the available 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.

The natural capital sustainability map below indicates a certain correlation with the level of human activities and population density. Large countries with a comparably small population density and rich biodiversity are on top of the Natural Capital ranking (North America, Scandinavia, Brazil). A large number of countries located in tropical areas (at the intersection of Central and South America, West Africa, South-East Asia) also seem to have the potential to achieve sustainable development based on their respective natural capital. Both of these observations underline the overarching importance of the availability of water for humanity.

The top ten according to natural capital indicators contains some surprising and not well known countries like Papua New Guinea, Suriname, Guyana, and Laos - whereas the OECD's representation in the top twenty is limited to Canada, Ne Zealand, Denmark and Norway. The ranking of China (149) and India (126) are affected by a combination of arid climate, high population density, and depletion levels, raising some concerns to these countries ability to sustain their large populations.



The Natural Capital World map: dark colour indicates high, light colour limited availability (or high depletion) of Natural Capital

Natural capital: the importance of water

Regional spread

North America, Scandinavia and Australia & New Zealand come out on top of the regional natural capital ranking – all regions with comparable low population density (one of the factors affecting the level of depletion of the natural capital), coupled with sufficient availability of renewable freshwater resources and a rich biodiversity. South America and Western Africa are following the top three regions thanks to a rich biodiversity and favorable climatic circumstance. The same applies for South-East Asia. However, higher depletion levels somewhat lowers the natural capital sustainability level of this region.

Eastern Africa, Southern Europe, Central Asia and the Middle East (despite rich fossil resources) are forming the bottom of the Natural Capital ranking. Common to all of these regions is the arid climate, underlining the fundamental - and until recently grossly underestimated and neglected importance of sufficient and renewable water resources and the stable supply of clean water for all purposes (irrigation, human, industrial). Water availability is also strongly correlated to the level and richness of the local biodiversity.

Average deviation

Only 39% of all countries are above the absolute World average (i.e. 61% are below average). The unequal spread between above and below average indicates that a comparable small number of countries reach a relative high score, while the majority of the countries are somewhere in the middle. Some countries at the very bottom, affected by the combination of arid climate, high population density, and absence of other natural resources possess very little natural capital levels even compared to the average.

Natural capital and depletion indicators 19 data points	
Indicator	Relative to
Renewable freshwater resources	Population
Inland water	Population
Population density	Area
Arable land	Population
Potentially arable land	Population
Cereal yield	Absolute
Land degradation	Area
Desertification & desertification risks	Area
Forest area & forest loss	Area
Biodiversity potential	Absolute
Extreme weather events	Time
Endangered species	Absolute
Fossil resources	Population, GDP
Mineral resources	Population, GDP
Energy self-sufficiency	Absolute
Resource depletion	Absolute
Pollution levels	Absolute
SO_2 emissions	Population
Hazardous waste	Population

Country	Rank	Score
Papua New Guinea	1	63.8
Suriname	2	63.8
Guyana	3	62.1
Laos	4	61.5
Canada	5	60.6
Colombia	6	59.9
Brazil	7	59.7
New Zealand	8	58.6
Peru	9	57.3
Venezuela	10	57.0
Democratic Republic of Congo	11	56.2
Denmark	12	55.3
Guinea-Bissau	13	55.2
Zambia	14	55.0
Paraguay	15	54.9
Norway	16	54.0
Latvia	17	53.9
Cote d'Ivoire	18	53.2
Belarus	19	53.1
Bhutan	20	52.9
Burma	21	52.7
USA	22	52.6
Russia	23	52.4
Republic of Congo	23	52.4
Argentina	25	52.2
Madagascar	26	52.1
Tanzania	27	52.0
Ireland	28	51.8
Indonesia	29	51.5
Sweden	30	51.5
Australia	31	51.4
Sierra Leone	32	51.4
Uruguay	33	51.2
Bolivia	34	51.1
Zimbabwe	35	51.0
Finland	36	50.8
Mozambique	37	50.7
Belize	38	50.4
Estonia	39	50.2
Cameroon	40	49.3
Sudan	41	49.2
France	42	49.2
Angola	43	49.0
Gabon	44	47.2

Country	Rank	Score
Lithuania	45	46.6
Mali	46	46.4
Liberia	47	46.1
Cambodia	48	45.9
Uzbekistan	49	45.1
Guinea	50	45.0
Central African Republic	51	44.9
Dominican Republic	52	44.9
Netherlands	53	44.8
Lesotho	54	44.6
Egypt	55	44.4
Trinidad and Tobago	56	44.4
Qatar	57	44.3
Ethiopia	58	44.2
Rwanda	59	43.8
Ghana	60	43.7
Ecuador	61	43.4
Gambia	62	43.2
Panama	63	42.9
Iceland	64	42.9
Nicaragua	65	42.7
Malaysia	66	42.7
Luxembourg	67	42.7
Burkina Faso	68	42.0
Germany	69	41.9
Bahamas	70	41.8
Czech Republic	71	41.8
South Africa	72	41.7
Equatorial Guinea	73	41.6
Malawi	74	41.4
Vietnam	75	41.4
Uganda	76	41.3
Costa Rica	77	40.9
Bangladesh	78	40.6
Timor-Leste	79	40.5
North Korea	80	40.5
Hungary	81	40.4
Switzerland	82	40.4
Croatia	83	40.1
Japan	84	40.1
Tajikistan	85	40.0
Slovenia	86	39.8
Swaziland	87	39.7
Italy	88	39.7

Natural Capital Rankings
89-176

Country	Rank	Score
Kuwait	89	39.5
Mauritius	90	39.5
Bosnia and Herzegovina	91	39.5
Chad	92	39.4
Fiji	93	39.4
Togo	94	39.2
Niger	95	39.1
Philippines	96	38.7
Oman	97	38.4
Benin	98	38.4
Bulgaria	99	38.4
Greece	100	38.3
Kyrgistan	101	38.2
Chile	102	38.1
Seychelles	103	38.0
Portugal	104	38.0
Romania	105	37.8
Belgium	106	37.5
Mexico	107	37.4
Kazakhstan	108	37.4
Saudi Arabia	109	37.4
Turkmenistan	110	37.4
Mauritania	111	37.3
Serbia	112	37.2
Austria	113	36.9
Albania	114	36.8
Syria	115	36.6
Moldova	116	36.3
Sri Lanka	117	36.2
Montenegro	118	36.1
Burundi	119	36.0
Mongolia	120	35.7
Malta	121	35.6
Poland	122	35.6
Algeria	123	35.4
Thailand	124	35.2
El Salvador	125	35.0
Senegal	126	35.0
Honduras	127	34.9
South Korea	128	34.9
Georgia	129	34.8
Spain	130	34.7
Slovakia	131	34.6
Djibouti	132	34.2

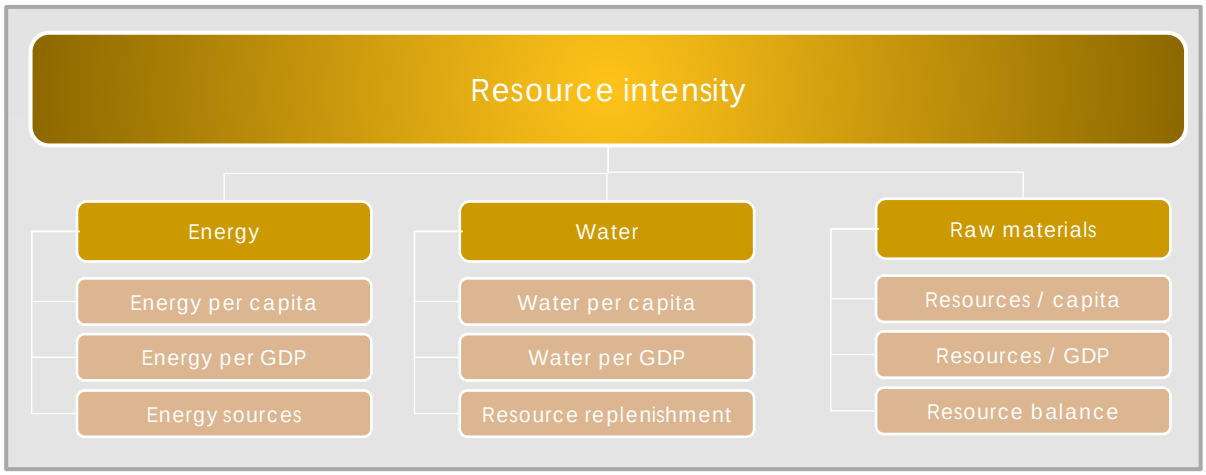
Country	Rank	Score
Botswana	133	34.0
Morocco	134	33.8
United Arab Emirates	135	33.8
Guatemala	136	33.6
Dominica	137	33.3
Eritrea	138	32.9
Cuba	139	32.8
Tunisia	140	32.7
Nigeria	141	32.6
China	142	32.5
Macedonia	143	32.4
India	144	32.2
Bahrain	145	31.9
Iraq	146	31.8
United Kingdom	147	31.8
Somalia	148	31.7
Ukraine	149	31.6
Libya	150	31.5
Azerbaijan	151	31.1
Afghanistan	152	30.8
Comoros	153	30.0
Yemen	154	30.0
Nepal	155	29.7
Kenya	156	29.0
Armenia	157	28.9
Namibia	158	28.7
Brunei	159	28.3
West Bank and Gaza	160	28.3
Israel	161	28.0
South Sudan	162	28.0
Jamaica	163	27.8
Haiti	164	27.5
Cyprus	165	26.9
Greenland	166	26.2
Iran	167	26.0
Turkey	168	25.8
Pakistan	169	25.4
Kosovo	170	24.8
Lebanon	171	24.7
Maldives	172	22.5
Singapore	173	21.7
Hong Kong	174	21.0
Jordan	175	19.2

resource intensity & efficiency

Resource efficiency

One element of sustainability is having resources at ones disposal. Another element is how efficient the available resources are used. Whether a country does or does not posses natural resources within its boundaries, efficiency in using resources – whether domestic or imported - is a cost factor, affecting the competitiveness and thus wealth of nations. In addition, non-renewable resources that are used today will not be available tomorrow, affecting competitiveness, wealth and quality of life in the future.

A number of factors are pointing to rising cost of resources in the future: 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 efficiency element is therefore to evaluate a countries' ability to deal with rising cost and sustain economic growth in the face of rising prices in the global commodity markets as expected.



Indicators

Vital 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 to wealth, GDP). The availability of accurate global data to measure resource intensity and efficiency 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 a the full list of indicators, refer to the methodology section.

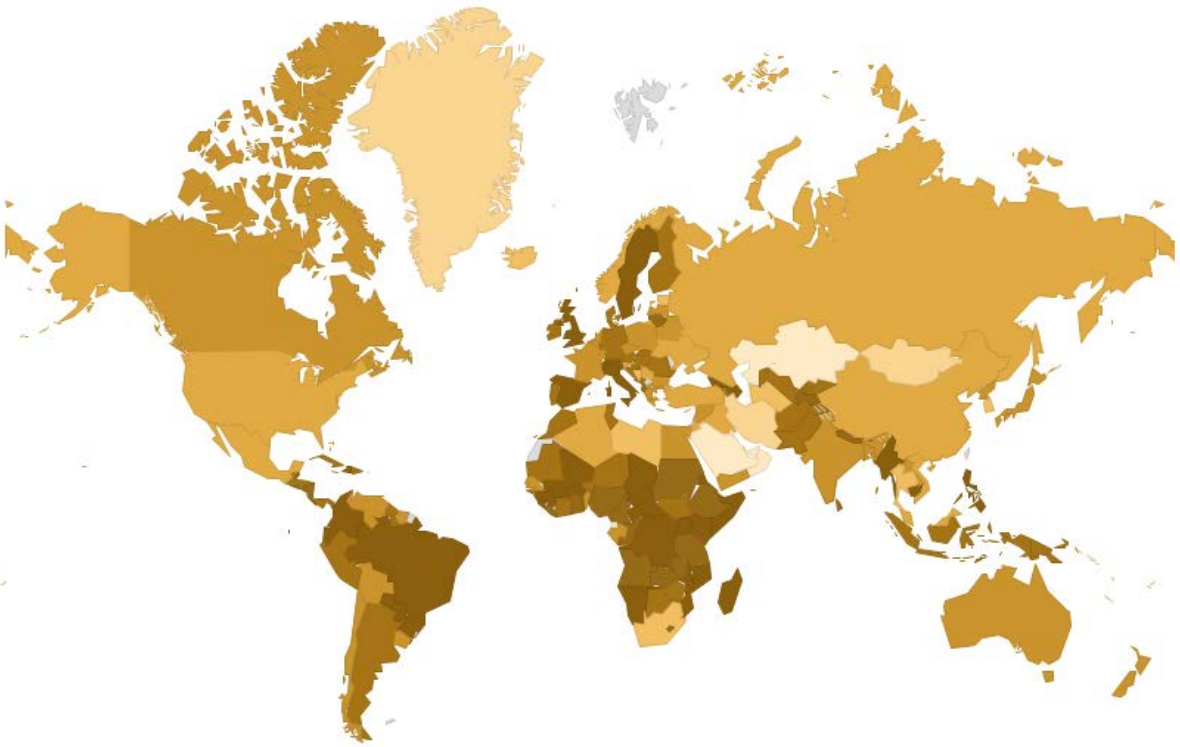
Resource intensity World map

The resource intensity pillar is composed of indicators scored relative to population (e.g. GHG measured per capita) as well as relative to economic output (e.g. energy consumption measured per GDP) in order to incorporate both absolute intensity and relative intensity (i.e. economic resource efficiency). While the indicators measured against population (per capita) clearly favour countries with low resource and raw material consumption, which are mostly equal to less developed countries), the indicators scored relative to GDP measure economic efficiency.

The resource intensity ranking is topped by less developed countries, with no OECD nation in the top 20 – Switzerland, the highest ranking of the developed economies, coming in on rank 31. The World's economic powerhouses score comparable low - Germany in rank 86, Japan at 107, and the USA at 133. Brazil (rank 43) is positioned the highest among the large emerging economies, while India at 120, China (141) and Russia (151) have a distinctive potential for improving their resource intensity.

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).

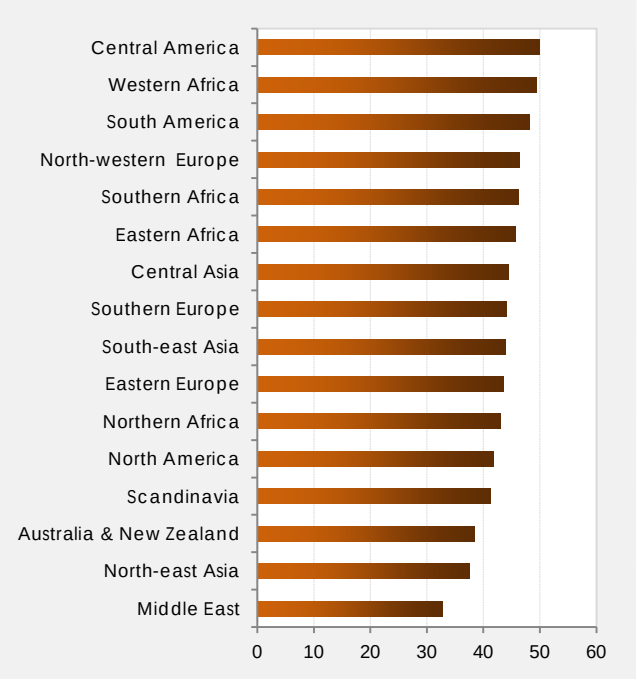
The main implication of the rankings are related to stability of economic growth: should global prices for raw materials and energy rise significantly in the future (as the majority of available research suggests), the countries in the lower ranks will face substantial higher challenges to maintain their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



The Resource Intensity World map: dark colour indicates low, light colour high resource intensity

Regional spread

Central America and Western Africa top the resource intensity ranking, a small margin ahead of South America. The first two regions consist mainly of less developed nations in economic terms or GDP, while South America consists of economies in different stages of development. Western Europe (excluding Scandinavia and Southern Europe) made the fourth spot – indicating that the methodology applied indeed is capable of incorporating both absolute and economic relative resource intensity. If only absolute intensity (i.e. per capita consumption of resources) was incorporated, Westerns Europe most likely would be found on the bottom of the ranking. Scandinavia is amongst the lower ranks, possibly due to the abundant availability of domestic energy (hydro-energy, oil) that allowed for efficiency management to be considered a somewhat marginal consideration in the past.



Average Deviation

53% of all countries are above the World average (i.e. 47% are below average), representing a fairly even distribution. However, the lowest negative deviation is close to -70%, whereas the highest deviation is less than +40%. The equal spread and the diverse allotment of countries of similar natural characteristics and regions indicate that there is no direct correlation between geography, location and climate to resource intensity, or economic development level to natural resource intensity and efficiency. The only manifestation of a visible correlation seems to be a correlation of abundant local availability of resources with low efficiency (i.e. where resources are cheap, efficiency is low). In the absence of rich local resources, efficiency and intensity are the result of economic activities, policies, and investments.

Resource efficiency indicators
14 data points0

Indicator	Relative to
Energy consumption	Population
Energy consumption	GDP
Water consumption	Population
Water productivity	GDP
Steel & metal usage	Population
Steel & metal usage	GDP
Ecological footprint	Absolute
Electricity consumptions	Population
Electricity consumption	GDP
Renewable electricity generation	%
Coal electricity generation	%
Transmission losses	Time
GHG emissions	Population
GHG emissions	GDP

Country	Rank	Score
Republic of Congo	1	70.0
Lesotho	2	68.6
Gambia	3	66.8
Ghana	4	66.6
Nicaragua	5	66.2
Dominica	6	65.3
Sudan	7	65.3
Bhutan	8	64.9
Costa Rica	9	64.3
Guinea-Bissau	10	64.3
Comoros	11	64.2
Nepal	12	64.2
Nigeria	13	64.1
El Salvador	14	64.1
Albania	15	63.8
Timor-Leste	16	63.7
Togo	17	63.0
Angola	18	62.9
Zambia	19	62.7
Sri Lanka	20	62.7
Djibouti	21	62.6
Lithuania	22	62.0
Burundi	23	62.0
Liberia	24	61.9
Ethiopia	25	61.8
Cameroon	26	61.7
Tajikistan	27	61.5
Tanzania	28	61.5
Belize	29	60.1
Cambodia	30	59.8
Switzerland	31	59.7
Madagascar	32	59.7
Rwanda	33	59.5
Azerbaijan	34	59.5
Malawi	35	59.2
Eritrea	36	58.5
Guinea	37	58.2
Spain	38	58.2
Chad	39	58.2
Central African Republic	40	58.1
Democratic Republic of Congo	41	57.6
Burma	42	57.6
Brazil	43	57.5
Italy	44	57.5

Country	Rank	Score
Philippines	45	57.5
Mozambique	46	57.2
Paraguay	47	56.9
Mali	48	56.3
Sierra Leone	49	56.3
United Kingdom	50	56.1
Haiti	51	56.0
Namibia	52	56.0
Burkina Faso	53	55.7
Uganda	54	55.6
Sweden	55	55.3
Colombia	56	55.2
Georgia	57	55.1
Kenya	58	54.8
Somalia	59	54.7
Swaziland	60	54.6
Ecuador	61	54.2
Romania	62	53.9
Afghanistan	63	53.8
Guatemala	64	53.5
Dominican Republic	65	53.3
Armenia	66	53.3
South Sudan	67	53.2
Panama	68	53.0
Croatia	69	53.0
Zimbabwe	70	52.9
Austria	71	52.8
Slovakia	72	52.7
Hungary	73	52.2
Indonesia	74	51.9
Niger	75	51.8
Morocco	76	51.8
Portugal	77	51.7
Uzbekistan	78	51.5
Pakistan	79	51.3
Cote d'Ivoire	80	51.2
Denmark	81	51.2
Luxembourg	82	51.0
Honduras	83	51.0
Kyrgistan	84	50.8
Finland	85	50.8
Germany	86	50.7
Botswana	87	50.7
Peru	88	50.7

Resource Intensity Rankings
89-176

Country	Rank	Score
Mauritania	89	50.4
Argentina	90	50.4
Cuba	91	50.0
Guyana	92	49.8
Ireland	93	49.7
Papua New Guinea	94	49.5
Tunisia	95	49.4
Montenegro	96	49.1
Syria	97	48.9
New Zealand	98	48.9
Uruguay	99	48.8
Bangladesh	100	48.6
Mauritius	101	48.3
Moldova	102	48.3
Senegal	103	48.1
West Bank and Gaza	104	47.5
Chile	105	47.4
Gabon	106	47.4
Japan	107	47.3
Greece	108	47.2
France	109	47.1
Belgium	110	46.9
Poland	111	46.3
Bolivia	112	46.3
Yemen	113	46.1
Benin	114	45.7
Laos	115	45.6
North Korea	116	45.5
Suriname	117	45.0
Belarus	118	45.0
Malta	119	45.0
India	120	44.9
Fiji	121	44.9
Australia	122	44.7
Venezuela	123	44.6
Canada	124	44.5
Jamaica	125	44.5
Lebanon	126	44.1
Macedonia	127	44.1
Latvia	128	43.9
Netherlands	129	43.7
Egypt	130	43.6
Bulgaria	131	43.6
Kosovo	132	42.9

Country	Rank	Score
Czech Republic	133	42.5
USA	134	41.9
Seychelles	135	41.6
Slovenia	136	41.1
Hong Kong	137	41.0
Turkey	138	40.8
Cyprus	139	40.5
Malaysia	140	40.5
Iraq	141	40.3
Israel	142	40.2
China	143	40.0
Serbia	144	39.5
Mexico	145	39.5
Bahamas	146	39.5
Ukraine	147	39.5
Norway	148	39.2
Algeria	149	38.3
Jordan	150	37.5
Macao	151	36.7
Russia	152	36.6
Vietnam	153	36.1
Qatar	154	35.2
Turkmenistan	155	35.2
Singapore	156	35.1
Maldives	157	35.1
Iceland	158	34.7
Equatorial Guinea	159	34.5
Libya	160	34.3
Thailand	161	33.4
Bosnia and Herzegovina	162	32.3
South Africa	163	31.2
South Korea	164	31.2
Estonia	165	30.0
Greenland	166	28.4
Mongolia	167	26.5
Iran	168	26.3
Brunei	169	24.7
United Arab Emirates	170	22.5
Bahrain	171	19.8
Trinidad and Tobago	172	19.3
Kazakhstan	173	18.3
Oman	174	17.9
Saudi Arabia	175	17.1
Kuwait	176	13.6

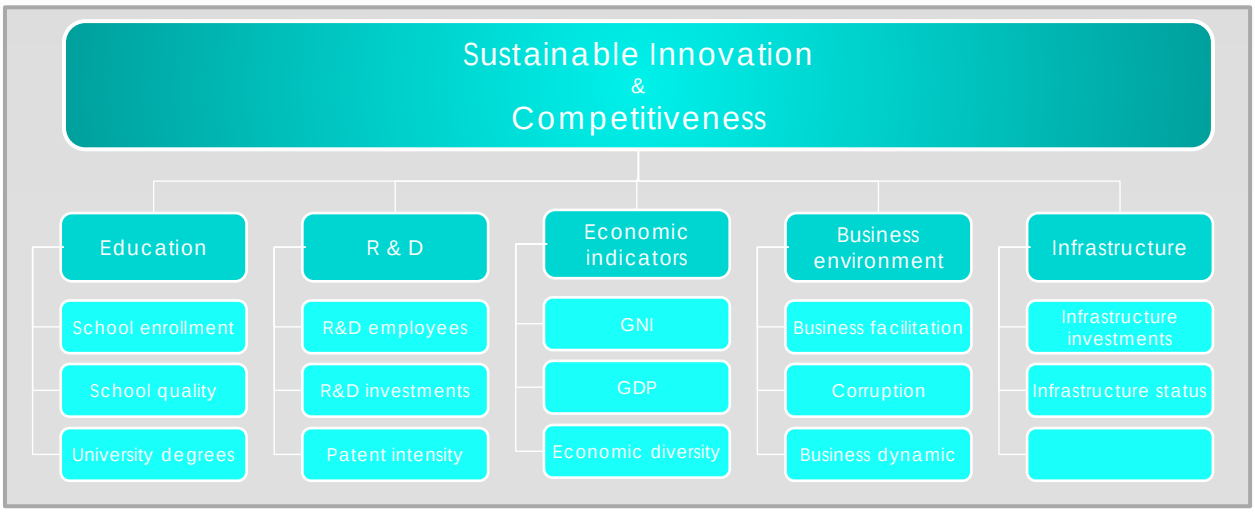
sustaining innovation

sustainable innovation & the economy

Sustainable innovation & economy

In order to create and sustain wealth, nations need to provide jobs and income to their populations. 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 terms of quality and price against global competition. And in order to maximise the domestic benefits, the value chain is idyllically covered within the boundaries of a national economy (the largest share of adding value is contained in processing raw materials to finished products).

Sustainable competitiveness requires a number of elements: the basic structures (infrastructure, and the maintenance of infrastructure), business environment, and last but not least, quality education and R&D capabilities.



Innovation measuring

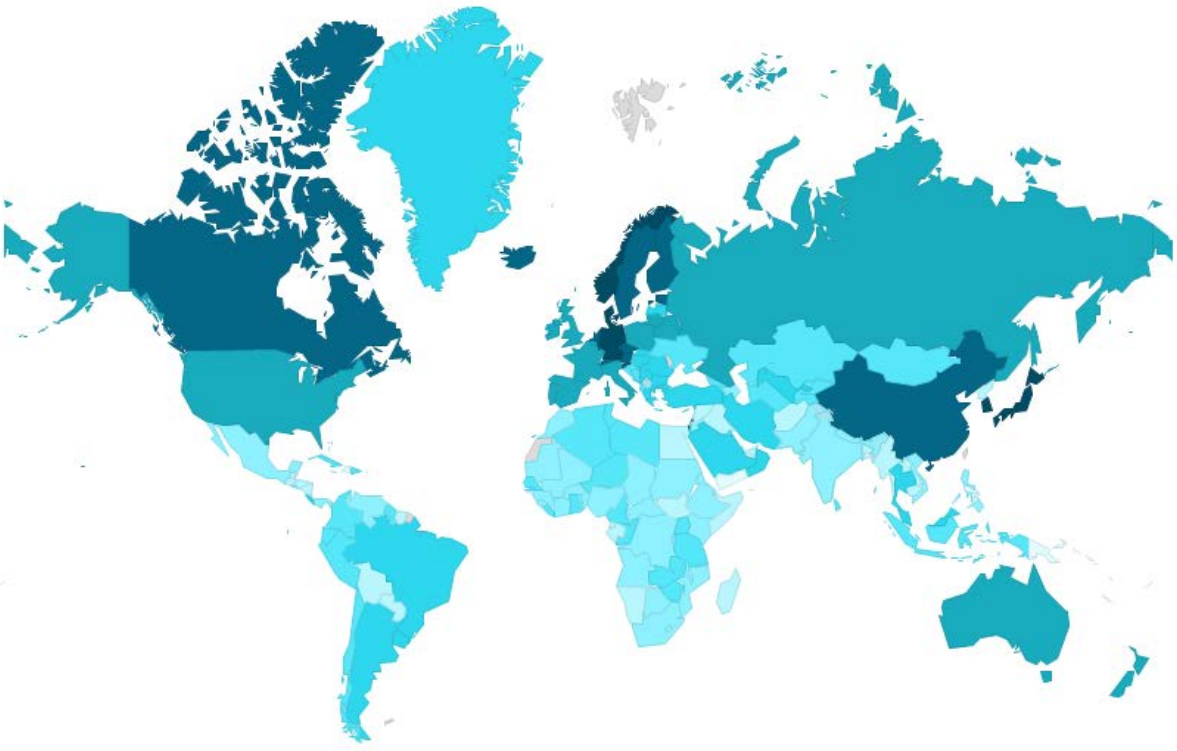
Quality and availability of education in the past are an indication for today's R&D and innovation capabilities, and today's education performance reflect future innovation capabilities. Strength and depth of R&D activities is the basis for the development of value-added technologies and services. Educational performance indicators are therefore highly important to predict sustained innovation and competitiveness. Additional indicators include performance data on R&D (employees in R&D functions, capital allocation, patent applications), and infrastructure investments (infrastructure investments today are an indication of the quality (and efficiency) of tomorrows infrastructure). The Gross National Income (GNI) has been chosen as an economic indicator due to more appropriately reflecting the full economic capability compared to the GDP.

Further indicators relate to the actual business environment – new business registration, business legislation, corruption, and the health of the balance between agricultural, industrial and service sectors of an economy.

Asian countries top innovation rankings

The indicators used for assessing innovation capability and sustainability competitiveness are composed of data points relating to education, innovation capabilities, business environment, economic development, and infrastructure. Countries with a high score in this ranking are more likely than others to develop successful economies through research and know-ledge driven industries, i.e. the 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.

The innovation and competitiveness ranking is dominated by Asian nations and OECD countries from the Northern hemisphere. The innovation and competitiveness ranking is topped by Asian countries (Singapore, South Korea, Japan, China), with all other top-ten places (Germany, Denmark, Norway, Switzerland, Finland, Sweden, in order of ranking) and top twenty spots going to European countries expect for Israel (12) and Canada (19). The USA is ranked 22th, the UK 31st, followed by Brazil (35th) as the highest ranked country of the Southern hemisphere. The only other nations from outside Europe or North-East Asia in the top 50 are New Zealand, Australia, Russia, Costa Rica, Oman, Uzbekistan, Thailand and Bahrain. Other than Oman, Uzbekistan and Thailand, there is no representation from Africa, Central Asia or South-East Asia within the leading 50 nations in terms of innovation capability and sustainable competitiveness.



The Sustainable Innovation World map: dark colour indicates high, light colour limited sustainable innovation & competitiveness

Innovation & investment lead development

Regional spread

North-East Asia is the leading region in terms of sustainable innovation and economic development, followed by Scandinavia and North-Western Europe. A significant gap is visible between the leading countries to countries from Southern, Eastern Europe and South America. Another significant gap opens to countries in Central Asia, Central America and Africa.

Coincidently, this rankings shows a fair amount of similarity to the findings of the PISA Study (comparison of student test levels across OECD countries, which could not be used for this index due to lack of coverage of non-OECD countries), underlying the fundamental importance of education availability and quality for achieving sustainable development.

All African regions are on the bottom of this list, indicating that the continent is still some distance off to lifting itself out of the cycle of poverty and lack of resources for innovation and investments to eradicate poverty.

Average Deviation

Only 38% of all countries are above the World average (i.e. 62% are below average), indicating a significant gap between the leading and above average nations to the lower performing countries. This notion is also supported by the high average deviation, both on the positive and the negative ends of the scale (i.e. the leading and the last countries in this ranking) of plus/minus 70%.

Sustainable innovation indicators
21 data points

Indicator	Relative to
Primary school completion	%
Primary school repetitions	%
Secondary school completion	%
Tertiary education completion	%
Mean school years	%
Total investments	GDP
Roads	Area, population
Railroads	Area, population
Austerity & public spending	GDP growth
R&D FTEs	Population
R&D expenditure	GDP
High tech exports	GDP
Patent registrations	Population
Patent registrations	GDP
Trademark registrations	Population
New business registrations	Population
Industry-service-sector balance	%
Unemployment	%
Obesity rate	%
Corruption index	Population
Corporate bribery	Population

Country	Rank	Score
Singapore	1	74.7
South Korea	2	70.1
Germany	3	68.8
Japan	4	68.5
Denmark	5	66.1
Norway	6	65.9
Switzerland	7	64.9
Finland	8	64.2
Estonia	9	63.7
Sweden	10	63.4
China	11	62.8
Israel	12	62.7
Luxembourg	13	62.5
Iceland	14	62.1
Austria	15	61.8
Slovenia	16	60.4
Czech Republic	17	60.2
Netherlands	18	59.5
Canada	19	58.1
Portugal	20	57.2
France	21	56.8
USA	22	56.3
Belgium	23	56.2
Ireland	24	55.5
Italy	25	55.1
Australia	26	55.0
Belarus	27	54.9
New Zealand	28	54.1
Spain	29	54.0
Russia	30	53.9
United Kingdom	31	53.2
Poland	32	52.8
Lithuania	33	51.0
Hungary	34	51.0
Brazil	35	50.2
Romania	36	49.9
Montenegro	37	48.5
Cyprus	38	48.1
Slovakia	39	47.7
Malaysia	40	47.7
Serbia	41	47.5
Costa Rica	42	47.3
Malta	43	47.1
Oman	44	47.0

Country	Rank	Score
Uzbekistan	45	46.9
Latvia	46	46.0
Thailand	47	45.9
Bulgaria	48	45.4
Turkey	49	45.2
Bahrain	50	45.1
Hong Kong	51	45.0
Iran	52	45.0
Greenland	53	44.8
Argentina	54	44.3
Greece	55	44.1
Uruguay	56	44.0
Saudi Arabia	57	44.0
Peru	58	43.4
Croatia	59	43.4
Dominica	60	43.2
Kosovo	61	42.6
Sri Lanka	62	42.4
Tunisia	63	42.3
Indonesia	64	42.3
Kazakhstan	65	42.0
Georgia	66	41.9
Moldova	67	41.8
Timor-Leste	68	41.6
Albania	69	41.5
Kuwait	70	41.3
Mauritius	71	41.2
Cuba	72	40.8
Armenia	73	40.6
Colombia	74	40.1
Mongolia	75	40.0
Ukraine	76	39.8
Brunei	77	39.8
Lebanon	78	39.7
Ecuador	79	39.5
Qatar	80	39.5
Seychelles	81	39.3
Dominican Republic	82	39.1
Libya	83	39.0
Niger	84	38.9
Tanzania	85	38.6
Zimbabwe	86	38.6
Turkmenistan	87	38.6
Ghana	88	38.0

Sustainable Innovation Rankings
89-175

Country	Rank	Score
Chile	89	37.9
Bhutan	90	37.9
Kyrgistan	91	37.8
Guyana	92	37.8
Republic of Congo	93	37.7
Algeria	94	37.6
Zambia	95	37.5
Tajikistan	96	37.4
Bosnia and Herzegovina	97	37.3
Senegal	98	37.3
Uganda	99	37.1
Liberia	100	37.1
Cameroon	101	37.0
Cote d'Ivoire	102	36.9
Jordan	103	36.7
Venezuela	104	36.5
Mozambique	105	36.5
Djibouti	106	36.3
South Africa	107	36.2
Jamaica	108	36.1
Benin	109	36.0
India	110	35.9
Kenya	111	35.5
El Salvador	112	35.3
Mauritania	113	35.3
Democratic Republic of Congo	114	35.3
Mexico	115	35.3
Rwanda	116	35.2
Central African Republic	117	35.2
Angola	118	34.5
Botswana	119	34.5
Eritrea	120	34.4
Pakistan	121	34.2
Mali	122	34.2
Gambia	123	34.1
Macedonia	124	34.0
Azerbaijan	125	33.9
Malawi	126	33.9
Nepal	127	33.7
Sierra Leone	128	33.6
Chad	129	33.5
Nigeria	130	33.5
Burkina Faso	131	33.4
Guinea	132	33.4

Country	Rank	Score
Sudan	133	33.4
Ethiopia	134	33.4
Vietnam	135	33.1
Morocco	136	33.0
Togo	137	32.8
Panama	138	32.6
Swaziland	139	32.3
Philippines	140	32.2
Lesotho	141	32.1
Iraq	142	31.9
Belize	143	31.8
Cambodia	144	31.7
Suriname	145	31.7
Guinea-Bissau	146	31.6
Syria	147	31.2
Afghanistan	148	31.2
Paraguay	149	31.0
United Arab Emirates	150	31.0
Maldives	151	31.0
Guatemala	152	30.8
Egypt	153	30.8
North Korea	154	30.2
Laos	155	30.2
Bahamas	156	29.8
Burundi	157	29.8
Comoros	158	29.6
Bolivia	159	29.1
Trinidad and Tobago	160	28.9
Madagascar	161	28.9
South Sudan	162	28.7
Bangladesh	163	28.3
Namibia	164	27.8
Somalia	165	27.8
Honduras	166	27.7
Gabon	167	27.5
Nicaragua	168	27.3
Burma	169	26.5
Equatorial Guinea	170	26.1
Haiti	171	24.6
Papua New Guinea	172	24.3
Fiji	173	22.9
West Bank and Gaza	174	21.4
Yemen	175	15.6

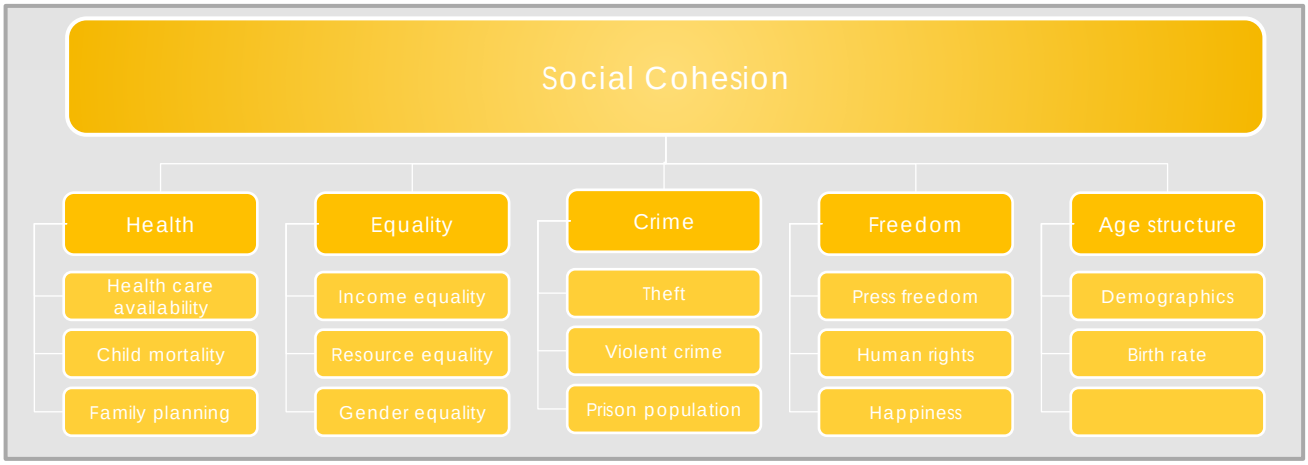
social cohesion

Social cohesion are the basis for smooth economic activities

Elements of Social Cohesion

Social Cohesion is not a tangible value and therefore hard to measure and evaluate in numeric values. In addition to historical and cultural influences, the social consensus in a society is influenced by several factors: health care systems and their universal availability/affordability to measure physical health; income and asset equality, which are correlated to crime levels; demographic structure to assess the future balance within a society; and freedom of expression, freedom from fear and the absence of violent conflicts.

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 (whiteout which no American Dream would have ever 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.



Indicators

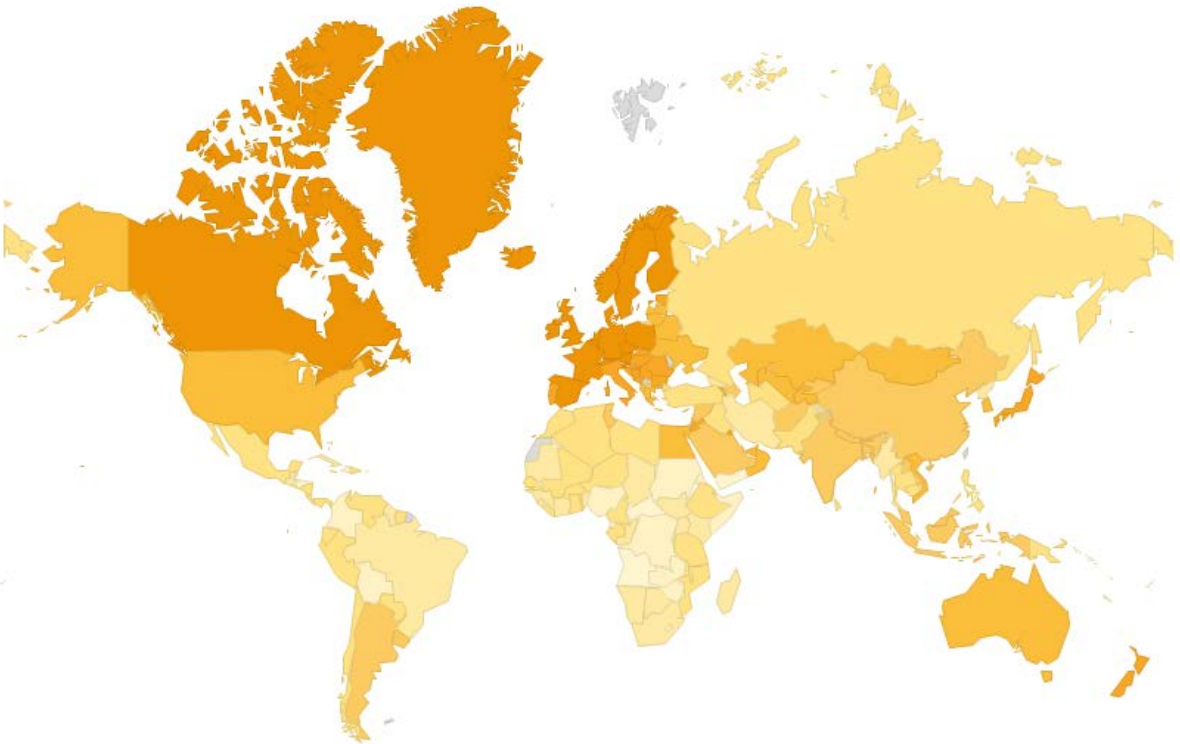
The indicators selected to measure social cohesion have been selected from the 5 themes above (health, equality, crime, freedom and age structure). Some of these indicators (e.g. “happiness”) are qualitative, i.e. not based on performance data that can be measured. Instead, qualitative indicators from 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).

Scandinavia showing the way

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 consensus, the higher the motivation of individuals to contribute to the wider good, i.e. the sustainable development of the nation. The indicators used to calculate the social cohesion 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 four Scandinavian countries occupy the top 4 spots of the Social Cohesion ranking, with other Central and Northern European countries (Iceland, Austria, Switzerland, the Netherlands, Ireland, and Germany,) filling the top ten. The first non-European countries in the Social Cohesion ranking are Canada (13), followed by new Zealand (32). The highest ranked non-OECD country is Qatar (24th), Japan (35) in Asia, Uruguay (67) in South America, while the first African Nation is Tunisia (72). Of the emerging economies, China is ranked 65, India 77, and Russia 114, and Brazil 125. The USA , due to comparable high crime rates and low availability of health services, is ranked 59th.

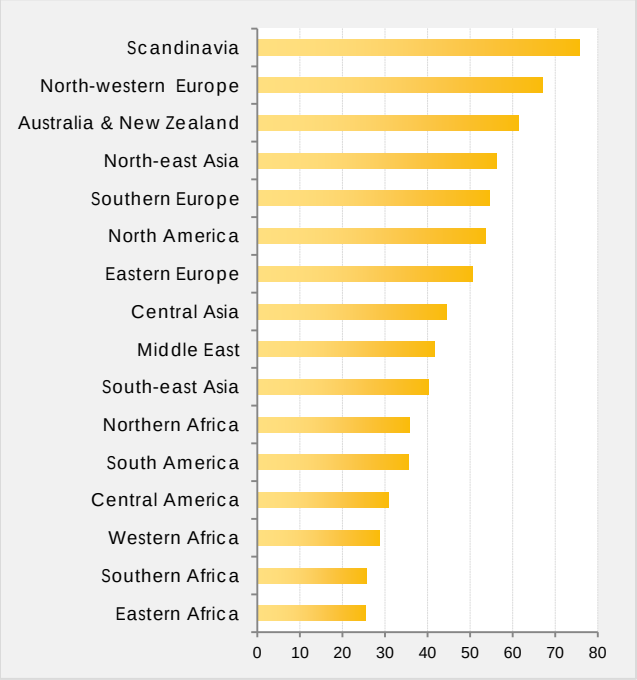
Most African nations, particular below in and South of the Sahel zone, are at the bottom of this list, due to a combination of low availability of health care services and child mortality, limited freedom of expression and unstable human rights situation.



The Social Cohesion World map: dark colour indicates high, light colour limited social cohesion.

Regional spread

Scandinavia tops the social cohesion ranking by a considerable margin, followed by North-Western Europe. Both are regions with high average GDP per capita. The high ranking of regions with medium or high GDP seems to indicate a certain correlation of income levels and social consensus. Central America and all African regions are found at the bottom of this regional ranking, while Eastern Europe, Central Asia and the Middle East occupy the middle ranks. The only ranking not fitting into this pattern is North America's classification below Southern Europe due to higher crime levels. There is also a distinct differentiation between North and South visible here, whereby the Northern hemisphere makes the top of the list, while the Southern hemisphere is located at the bottom (expect Australia & New Zealand, which, depending on the definition, are often included in the definition of the North).



Average Deviation

Only 42% of countries are above the absolute average of all countries (i.e. 58% are below average), representing an uneven distribution. The high positive deviation amongst the top ten countries of between 70-90% also indicates significant gaps between the countries on the top of the ranking (i.e. between the top ten and the top twenty countries, for example). On the other end of the scale, the deviation is 70% below the average. The high deviation at the top and bottom end indicate a big spread between leading and trailing countries. In other words, the countries at the bottom of the ranking are facing an significant barriers to improve social cohesion and catch up with currently higher ranked countries.

Social cohesion indicators 19 data points	
Indicator	Relative to
Child mortality	%
Doctor availability	Population
Nurse availability	Population
Hospital bed availability	Population
Birth rate	Per woman
Teenage pregnancy	%
Population over 65	%
GINI coefficient	Absolute
Income quintile ratio	Absolute
Poverty index	Population
Gender equality index	
Public service quality perception	
Life satisfaction	
Press freedom index	
Peace index	
Theft	Population
Conflict with laws	Population
Prison population	Population
Homicide rate	Population

Country	Rank	Score
Norway	1	77.2
Denmark	2	74.6
Sweden	3	74.0
Finland	4	73.9
Iceland	5	72.9
Austria	6	71.8
Switzerland	7	71.5
Netherlands	8	71.4
Ireland	9	71.3
Germany	10	70.3
Slovenia	11	68.5
United Kingdom	12	64.9
Canada	13	64.2
Luxembourg	14	64.1
Spain	15	63.0
Poland	16	62.6
Belgium	17	61.7
Greenland	18	61.5
France	19	61.4
Czech Republic	20	61.3
Croatia	21	60.3
Cyprus	22	60.2
Slovakia	23	60.2
Qatar	24	60.0
Serbia	25	59.6
Malta	26	59.5
Portugal	27	58.7
Kosovo	28	58.5
Hungary	29	58.1
Bulgaria	30	57.9
Romania	31	57.2
New Zealand	32	57.0
Estonia	33	55.8
Jordan	34	55.3
Japan	35	55.3
Montenegro	36	55.0
Italy	37	54.7
Armenia	38	54.6
Bosnia and Herzegovina	39	54.5
Kuwait	40	54.2
United Arab Emirates	41	53.9
Ukraine	42	53.7
Egypt	43	53.7
Bhutan	44	53.2

Country	Rank	Score
Tajikistan	45	53.0
Lebanon	46	52.8
Belarus	47	52.6
Australia	48	52.6
Greece	49	52.5
Moldova	50	52.0
Oman	51	51.6
Macao	52	51.0
Vietnam	53	50.7
Singapore	54	50.3
Latvia	55	50.1
Lithuania	56	50.0
Kazakhstan	57	49.7
Albania	58	49.4
USA	59	49.2
Uzbekistan	60	49.2
South Korea	61	49.1
Mongolia	62	48.4
Timor-Leste	63	47.6
Bangladesh	64	47.2
China	65	47.1
Indonesia	66	47.0
Uruguay	67	47.0
Nepal	68	46.9
Argentina	69	46.8
Malaysia	70	46.3
Laos	71	45.9
Tunisia	72	45.9
Maldives	73	45.8
Azerbaijan	74	45.8
Kyrgistan	75	45.8
Jamaica	76	45.6
India	77	45.5
Israel	78	44.9
Saudi Arabia	79	44.1
Afghanistan	80	43.8
Bahrain	81	43.5
Macedonia	82	43.3
Syria	83	42.8
Thailand	84	41.8
Ethiopia	85	41.7
Sri Lanka	86	41.3
Morocco	87	41.2
Turkey	88	41.2

Social Cohesion Rankings
89-176

Country	Rank	Score
Papua New Guinea	89	40.9
Pakistan	90	40.9
Malawi	91	40.7
Niger	92	40.6
Turkmenistan	93	40.3
Mexico	94	40.3
Ghana	95	40.0
Dominica	96	39.8
Senegal	97	39.7
Costa Rica	98	39.6
Nicaragua	99	39.5
Cambodia	100	39.1
Burkina Faso	101	39.1
Gabon	102	39.1
Ecuador	103	38.7
Venezuela	104	38.5
Liberia	105	38.4
Libya	106	38.4
Philippines	107	38.3
Togo	108	37.9
Algeria	109	37.9
Peru	110	37.8
Iraq	111	37.7
Mali	112	37.7
Dominican Republic	113	37.7
Russia	114	37.5
Chile	115	37.4
Panama	116	37.4
Cameroon	117	37.4
Tanzania	118	37.3
Paraguay	119	37.3
Mozambique	120	37.2
Suriname	121	37.0
Brunei	122	36.6
Guinea	123	36.6
Georgia	124	36.4
Brazil	125	36.3
Mauritania	126	35.9
Burundi	127	35.9
Guinea-Bissau	128	35.8
Mauritius	129	35.8
North Korea	130	35.7
Djibouti	131	35.5
Cote d'Ivoire	132	35.0

Country	Rank	Score
Guatemala	133	35.0
Benin	134	35.0
El Salvador	135	34.9
Madagascar	136	34.8
Cuba	137	34.6
Sierra Leone	138	34.4
Burma	139	34.2
Republic of Congo	140	33.5
Uganda	141	33.5
Belize	142	33.5
South Sudan	143	33.4
Iran	144	33.3
Bahamas	145	33.2
Gambia	146	32.9
Kenya	147	32.8
Trinidad and Tobago	148	32.4
South Africa	149	32.0
Seychelles	150	31.9
Fiji	151	31.8
Botswana	152	31.8
Chad	153	31.7
Guyana	154	31.3
Namibia	155	31.2
West Bank and Gaza	156	30.9
Zambia	157	30.9
Sudan	158	30.3
Honduras	159	29.6
Comoros	160	29.5
Bolivia	161	29.5
Zimbabwe	162	29.2
Nigeria	163	29.1
Colombia	164	29.0
Eritrea	165	28.3
Democratic Republic of Congo	166	26.3
Somalia	167	26.2
Lesotho	168	25.2
Hong Kong	169	25.1
Haiti	170	24.8
Central African Republic	171	23.0
Swaziland	172	22.4
Yemen	173	22.1
Rwanda	174	22.1
Angola	175	21.2
Equatorial Guinea	176	13.7

measuring sustainable competitiveness
index methodology

Changes to the Sustainable Competitiveness Index methodology

The Sustainable Development Index was first developed and published in 2012.

20 years after Rio, the concept of "Sustainability" is widely used and applied. "Sustainability" or "Sustainable development" is a broad concept, encompassing a large number of themes and issues. In addition, many of the issues are dependent on each other and inter-acting. Factors determining the development level of a country can and should to be viewed from a long-term (sustainable) perspective in order to achieve a comprehensive view-point of competitiveness. Given the complexity – the number of issues, inter- relationships and changes over time - it might be argued that "sustainability" is better described in qualitative than quantitative terms. However, a qualitative description is always subject to the values, believes and background of the describer. Numeric values (single data points), in contrast, are not subjective. The data collected by various global institutions across all countries contain numerous single indicators (quantitative indicators) that are an expression of the current sustainability level of a certain aspect of sustainability. In order to exclude subjectivity, this Index has been calculated purely based on quantitative indicators. The quantitative indicators are carefully chosen as expressions of relevant aspects of sustainable development, based on a sustainability model that ensures inclusion of all relevant aspects of sustainability that can be measured in numbers. The sum of all these indicators together reflect the overall sustainability and sustainable competitiveness level of a country.

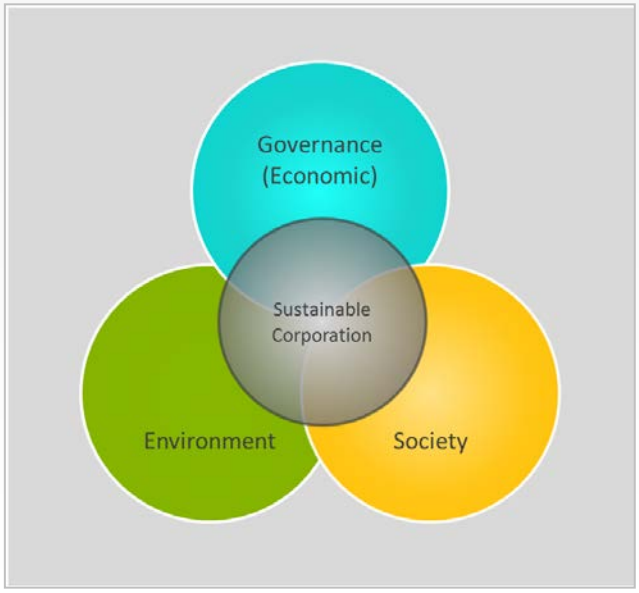
The initial approach consisted of adapting corporate sustainability evaluation methodology based on the 3 pillars of sustainability – economic, environment, social (often referred to as "ESG") – to evaluate the sustainability of a nation rather than a corporation. While the origins are found in corporate ESG evaluation, it is clear that the resulting methodology applied to evaluate sustainable competitiveness of countries is entirely different from the corporate sustainability ESG methodologies.

Certain improvements have been applied in for the 2013 edition. Due to better data availability, three more indicators have been included. In addition, the methodology to generate scores from performance data and the methodology to calculate weightings of indicators have been reviewed and improved where necessary. The changes do not materially affect scorings and rankings, but allow for a better differentiation between countries within the same or comparable development levels or stages. Because of the changes in methodology, scoring and weight calculation, it is nevertheless not completely plausible to directly compare 2012 and 2013 rankings. For this reasons, the direct comparison of 2012 and 2013 rankings have been omitted from this report other than for overall rankings.

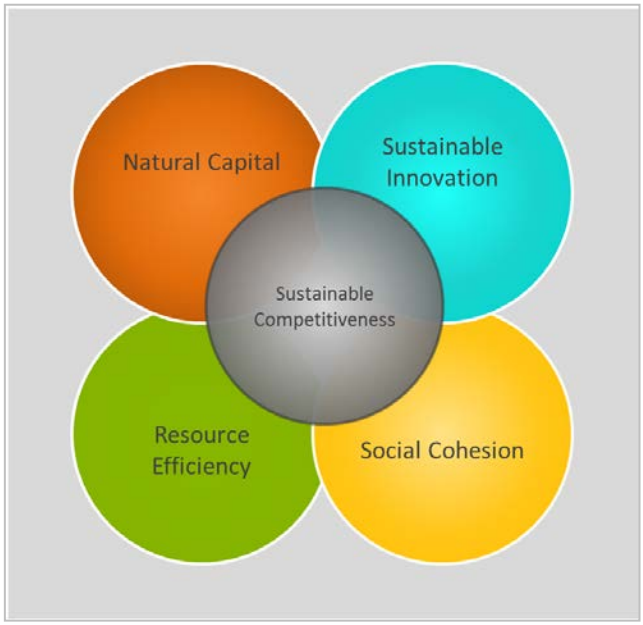
While we believe that the methodology underlying the Sustainable Competitiveness Index is an accurate mirror of the sustainable competitiveness of a country, data availability is constantly improving and the concept of sustainability is still evolving. The methodology therefore remains work in progress. At the same time, we believe that a comprehensive evaluation of countries integrating both financial and "non-financial" aspects is a helpful tool to provide an inclusive picture of a country, its current sustainable development level, and potential to increase or sustain the current development and wealth levels.

In this context, we hope that this Index can contribute to the on-going discussion of what drives success for countries and their populations.

Sustainability models



Sustainability model usually applied in corporate sustainability evaluation



Sustainability model of nations: an additional element is added: natural capital as the basis for a countries ability for self-sustaining existence

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.

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, and therefore can move any given moment to where the external conditions are most favorable, 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 on 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 live off, the natural capital of their environment for better or worse.

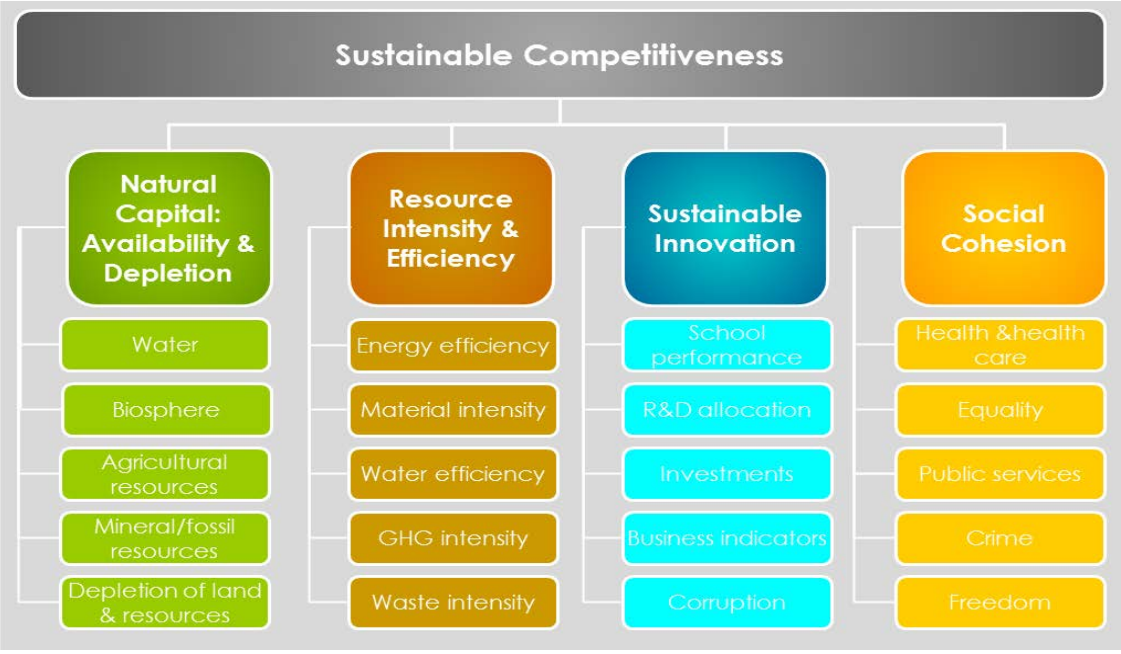
For the purpose of evaluating the sustainability and sustainable development level of a country (which is equal to sustained economic development), a fourth element – the natural capital – has therefore been added to the three elements of innovation competitiveness, resource efficiency and social sustainability.

National sustainability & competitiveness

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 73 data indicators grouped in 4 pillars:



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

Natural capital and depletion indicators 19 data points	
Indicator	Relative to
Renewable freshwater resources	Population
Inland water	Population
Population density	Area
Arable land	Population
Potentially arable land	Population
Cereal yield	Absolute
Land degradation	Area
Desertification & desertification risks	Area
Forest area & forest loss	Area
Biodiversity potential	Absolute
Extreme weather events	Time
Endangered species	Absolute
Fossil resources	Population, GDP
Mineral resources	Population, GDP
Energy self-sufficiency	Absolute
Resource depletion	Absolute
Pollution levels	Absolute
SO_2 emissions	Population
Hazardous waste	Population

Resource efficiency indicators 14 data points	
Indicator	Relative to
Energy consumption	Population
Energy consumption	GDP
Water consumption	Population
Water productivity	GDP
Steel & metal usage	Population
Steel & metal usage	GDP
Ecological footprint	Absolute
Electricity consumptions	Population
Electricity consumption	GDP
Renewable electricity generation	%
Coal electricity generation	%
Transmission losses	Time
GHG emissions	Population
GHG emissions	GDP

Natural Capital

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

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

Resource Intensity

The more efficient a nation is using resources, the smaller the negative impacts of a potential supply scarcity of resources (food, energy, water, and minerals). Higher efficiency is also equal to lower cost per production unit in agriculture, industrial production, and to a lesser extend also in the service sector. 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 scenario as well as under changing external economic or geo-political circumstances and influences that might affect raw material and resource prices.

Indicators used cover water usage and intwnsity, energy usage, energy 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.

Sustaining Innovation & Competitiveness

The backbone of sustained economic success is the ability to continuously improve and innovate on all levels, and throughout all institutions (not limited to industrial or technology R&D). Sustaining competitiveness also requires a long-term view beyond momentary individual or political interests and opinions, and long-term investments in crucial areas (education, infrastructure) are needed. 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 cover educational levels, R&D performance indictors, infrastructure investment levels, employment indexes, the balance of the agricultural-industrial-service sectors, business environment indicators, obesity (as a measurement of worker efficiency), and business indicators, including corruption levels affecting business development.

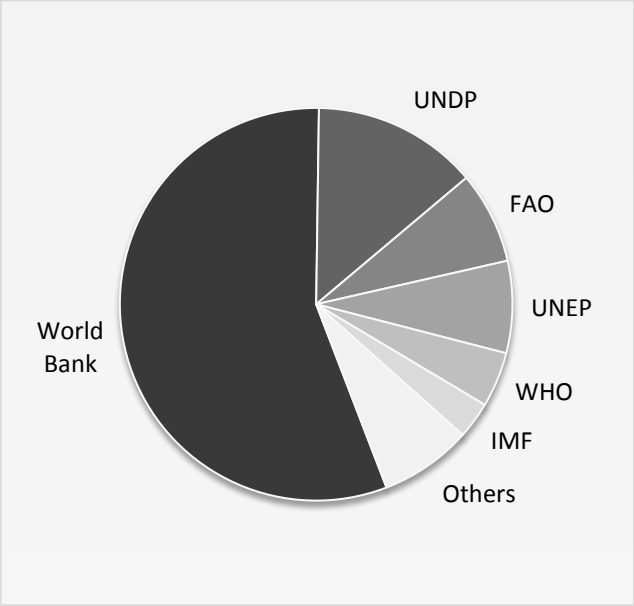
Social Cohesion

Last but not least, nations and societies need some minimum level of social cohesion, coherence, and solidarity between different regions, between authorities and the people, between interest groups, between income levels, between generations, and between individuals. A lack of social cohesion in any of the above aspects can seriously undermine the long-term stability which an economy requires as a basis to thrive in the long run.

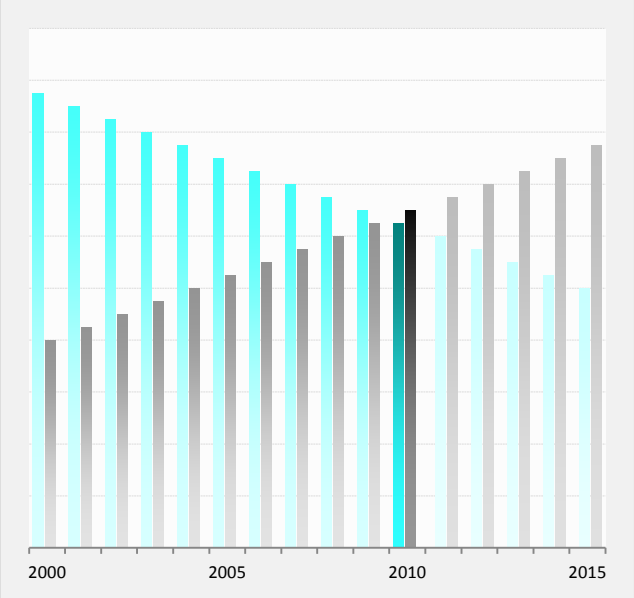
Indictors used cover health performance indicators, birth statistics, income differences, equal opportunities (gender, economic), freedom of press, human rights considerations, and the level of crime against both possession and humans.

Sustainable innovation indicators 21 data points	
Indicator	Relative to
Primary school completion	%
Primary school repetitions	%
Secondary school completion	%
Tertiary education completion	%
Mean school years	
Total investments	GDP
Railroad	Area, population
Roads	Area, population
Austerity & public spending	GDP growth
R&D FTEs	Population
R&D expenditure	GDP
High tech exports	GDP
Patent registrations	Population
Patent registrations	GDP
Trademark registrations	Population
New business registrations	Population
Industry-service-sector balance	%
Unemployment	%
Obesity rate	%
Corruption index	
Corporate bribery	%

Social cohesion indicators 19 data points	
Indicator	Relative to
Child mortality	%
Doctor availability	Population
Nurse availability	Population
Hospital bed availability	Population
Birth rate	Per woman
Teenage pregnancy	%
Population over 65	%
GINI coefficient	Absolute
Income quintile ratio	Absolute
Poverty index	Population
Gender equality index	
Public service quality perception	
Life satisfaction	
Press freedom index	
Peace index	
Theft	Population
Conflict with laws	Population
Prison population	Population
Homicide rate	Population



Data sources used for the Sustainable Competitiveness Index



Integrating trend analysis: while the momentary picture of the two series might be equal in 2010, the grey series is likely to improve in the future, whereas the blue line is likely to decrease

Data sources

Data sources were chosen according to their reputation and reliability (as well as availability of global data). The largest percentage of indicators was derived from the immense wealth of the World Bank's indicator database, followed by data sets and indicators provided by various UN agencies.

Converting data to scores

The raw data as provided by the various databases 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. In the second step, the relative importance of the indicator is assessed against other indicators to calculate the sustainability performance.

Inclusion of trends: analysis over time

Current or recent data on its own 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 development and recent trends of the indicators and their performance. 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.

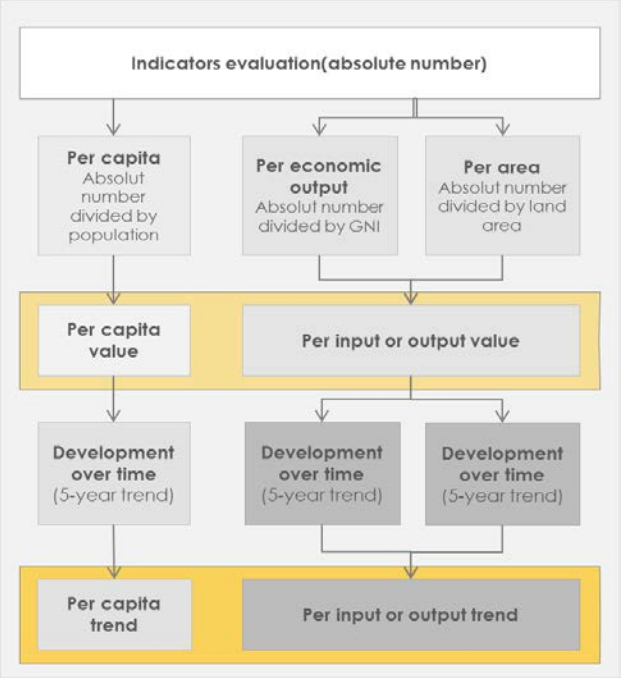
Scoring data indicators

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 practice score, as is usually the practiced in corporate sustainability performance evaluation. For the purpose of this index, the raw data was analysed and then ranked for each indicator individually.

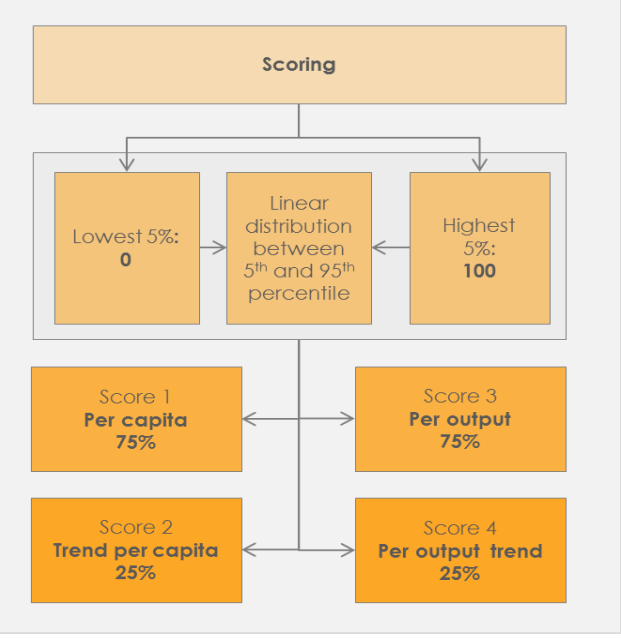
In addition, data has to be analysed in perspective: 500 ha of forest might be a large area for a country like Andorra, but it is a small area for China. Depending on the indicator, the denominator might be the land area, the size of the population, or for intensity measurements, GDP. For certain indicators, (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.

Trough calculation of the average deviation, the best performing 5% is attached the highest possible, and the lowest 5% receives the lowest possible score, where the maximum score is 100, while the lowest score is 0. Scores between the highest and the lowest 5% are linearly assigned according to the respective country's performance relative to the best 5% and the worst 5%.

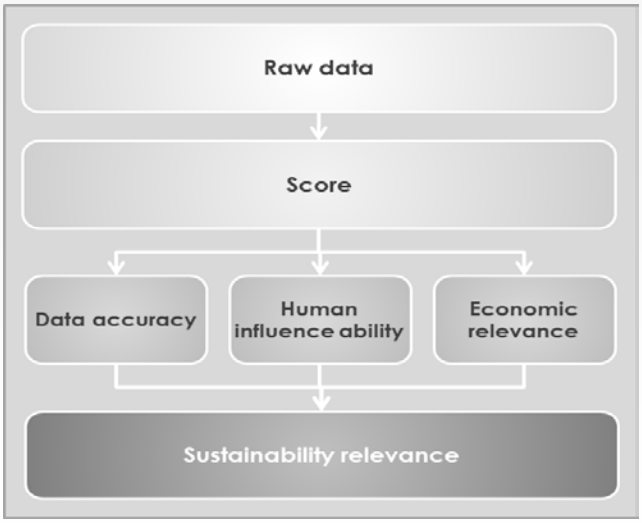
In addition to the scoring indicators based on the latest available data, a trend analysis for the period of the most recent 5 years of data is conducted and scored in the same way as described above. The latest available performance score accounts for between 60 an 80% and the trend for 40-60% of the total score for each indicator, depending on the barriers to change (time and assets required to improve intensity performance).



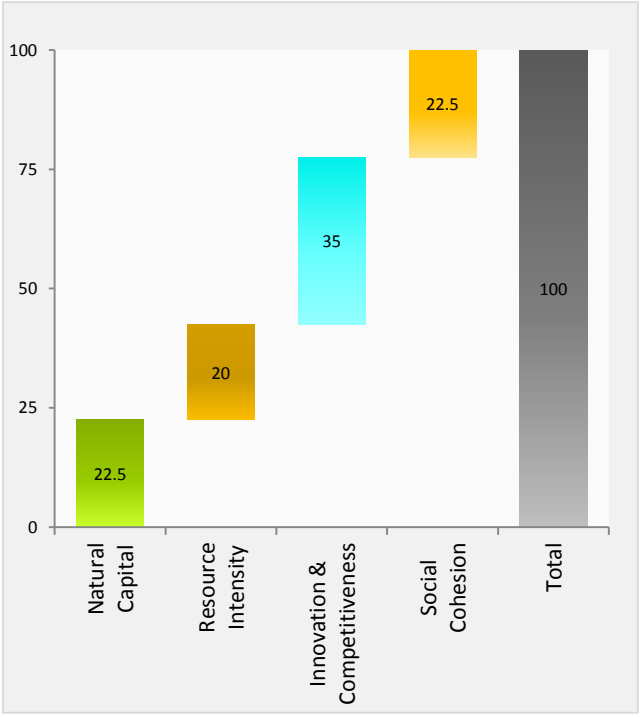
Raw data is evaluated in relation to country specifics



Indicator scores are calculated based on averages across all countries



From raw data to weighted sustainability scores criteria to calculate indicator weightings



Weightings of the four pillars of sustainable competitiveness

Weightings

The simplest mathematical methodology to calculate the sustainability performance from individual scores would be to average all indicators. However, some indicators have a higher importance to the long-term development and competitiveness of a country than others. For some indicators, the data is accurate, for other less accurate. Yet other indicators can be influenced trough government policies or other measurements (provided sufficient political will or economic incentives), while the performance of other indicators are beyond the influence and manageability of current human powers. It is therefore necessary to define a formula for calculating the sustainable competitiveness taking into account the relevance of each indicator.

The sustainability relevance (weighting) of individual indicators are calculated based on three criteria:

- relevance to economic development and sustaining eco-systems
- data accuracy
- human ability and resources (time, financial) to influence the variable trough policies (targeted investment, regulation, and other policy measurements, etc.)

The application of this formula leads to an individual relevance weighting for each score. Scores are added according to their relevance, which leads to the score in each of the four identified sustainable competitiveness pillars.

The application of this methodology led to the weightings of the four sustainability criteria as presented in the graph to the left.

Data Sources

Only data from reliable sources was included in the index. Most data points and data series were extracted from the World Banks statistical database as well as from the combined UN database that contains statistical data across several UN agencies.

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 enrollment(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 ben included, e.g. for the quality of public services, or perceived life satisfaction.

Time frame

The Sustainable Competitiveness Index 2013 is based on the latest available data. For most data series, the latest data available (March 2013) is 2011 data. Where 2012 data was available, 2012 data has been used. Where 2012 or 2011 data was not available, 2010 data was used, and in a few cases 2009 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.

sustainable competitiveness
vs.
davos man competitiveness

Competitiveness indexes: different competitiveness definitions = different results

Why a sustainable competitiveness Index? There are many different "indexes", published by different organisations, ranking nations against each other in all possible (and, sometimes, impossible) different criteria. Amongst them are several indexes that in some way or another refer to "competitiveness" - in other words, indexes that rank countries according to their ability to create wealth, and the outlook for sustaining or increasing current wealth. However, the definition of competitiveness in a conventional approach tends to focus on economic an financial aspects of any given economy, and are based on momentary pictures in time. This approach has two main limitations:

- The focus on economic/financial performance aspects assumes that an economy works within an air-tight space independent of its physical environment (i.e. independent of the actual land it is built on)
- Does not take into account the ramifications of current economic activities on the future economic development and wealth creation capabilities

Through the inclusion of the so-called "non-financial" characteristics of national economies (the land that an economy is built upon, resource efficiency, and the way societies ensure equal opportunities, and distribute wealth and services amongst its citizens), the Sustainable Competitiveness Index aims at developing a broader picture of competitiveness that incorporates the normally omitted factors, which are essential pillars of an economy that is not built on borrowed time but is able to sustain growth and wealth into the future.

Different interpretations of different data sets or surveys analysed and put into indexes or rankings can open interesting new perspectives, regardless of the accuracy and real-life relevance of the index. However, real-life relevance and correlations to actual success factors depend on a) the source and reliability of the raw data, and b) - maybe more importantly - the definition of "competitiveness" that underlies a specific index. The definition or understanding of the term "competitiveness" guides the selection of competitiveness indicators and their analysis, i.e. the aspects of an economy that define the competitiveness of a nation according the point of view of the publishing organisation or the individuals behind the index. It is therefore not really surprising that different "competitiveness" rankings come up with very different results.

Probably the most famous "competitiveness" index is the "**Global Competitiveness Report**", annually published by and at the **World Economic Forum** (WEF). The WEF, and its annual forum held in Davos, enjoy a very good reputation amongst business executives and high-ranking politicians (the "Davos Man") whose jets clog the runways of Zurich Airport each January.

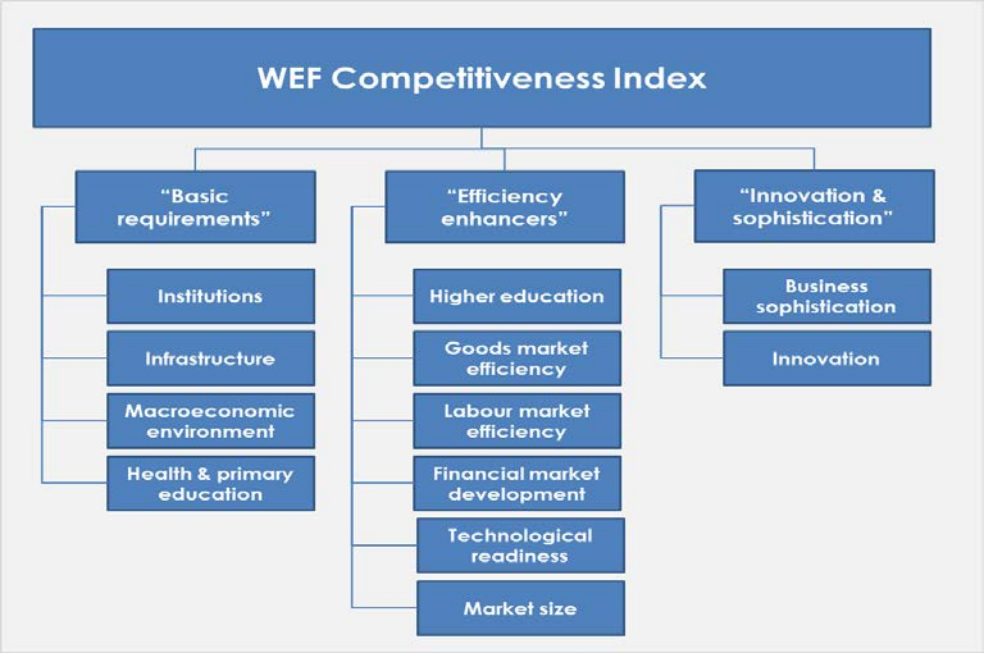
The WEF Report aims to "help understand of the key factors that determine economic growth, helps to explain why some countries are more successful than others in raising income levels, (...), and offers an important tool in the formulation of improved economic policies and institutional reforms". These are very noble intentions, indeed. The interesting question is whether this holds true - in particular whether the competitiveness index correlates to actual wealth creation capabilities. The WEF's Global Competitiveness Report shall therefore be compared by methodology and results to the Sustainable Competitiveness Index on the following pages.

The Davos Man Global Competitiveness Report: 3 main criteria, 12 pillars

The WEF (in the Global Competitiveness Report) defines competitiveness "as the set of institutions, policies, and factors that determine the level of productivity of a country". It is further argues that the level of productivity sets the level of prosperity that can be earned by an economy, as well as the rates of return obtained by investments in an economy. Productivity and returns of investments of an economy are considered "the fundamental drivers of its growth rates", leading to "a more competitive economy which is likely to sustain growth." Based on this definition, the WEF definest 3 main criteria, subdivided in 12 pillars of competitiveness, representing a total of 115 indicators. The three main criteria are "basic requirements" (institutions and infrastructure), "efficiency enhancers" (education levels, market mechanism and size, labor flexibility, financial market liberalization, technology adaption), and "innovation and sophistication (market maturity, R&D). The indicators are described in detail on the next page.

The index is computed based on indicator performance. The indicators within a category seem to be equally weighted, as are categories within a pillar. However, the weightings of the 3 main criteria differs depending on the level of development of a country (defined as GDP per capita). The weightings of the "basic requirements" indicators is higher for a poor countries ("factor-driven economies" according to the WEF terminology), and decreasing over 5 stages of development (GDP per capita) to mature "innovation-driven" economies. The weightings for the last criteria, "Innovation and sophistication", is highest for the richest countries.

The Sustainable Competitiveness Index does not weight indicators or pillar according to the level of income of a country, but computes each indicator weighting according to its relevance in achieving and sustaining sustainable wealth e.



Composition of the WEF's Competitiveness Index

Pillar	Category	Indicators		Data Source
Institutions	Public	Property rights	2	WEF executive opinion survey
		Ethics and corruption	3	WEF executive opinion survey
		Undue influence	2	WEF executive opinion survey
		Government efficiency	6	WEF executive opinion survey
		Security	4	WEF executive opinion survey
	Private	Corporate ethics	1	WEF executive opinion survey
		Accountability	4	WEF executive opinion survey
Infrastructure	Transport infrastructure	Roads, ports, railways, air	5	WEF executive opinion survey, International Air Transport Association
	Electricity and telephony infrastructure	Electricity supply, mobile/fixed line availability	3	WEF executive opinion survey, International Telecommunication Union
Macroeconomic environment		Budget balance, savings, inflation, debt, credit rating	5	IMF, Institutional Investor
Health and primary education	Health	Malaria, tuberculosis, HIV, life expectancy, child mortality rate	8	WEF executive opinion survey, World Bank
	Primary education	Quality and enrolment	2	WEF executive opinion survey, UNESCO
Higher education and training	Quantity of education	Secondary and tertiary enrolment	2	UNESCO
	Quality of education	Quality of schools and teaching, internet access in schools	4	WEF executive opinion survey
	On-the-job training	Training and availability of training	2	WEF executive opinion survey, UNESCO
Goods market efficiency	Competition	Domestic competition (competition, taxation, business barriers)	8	WEF executive opinion survey, World Bank
		Foreign competition (trade tariffs, custom proceedings, FDI, imports)	6	WEF executive opinion survey, International Trade Centre, WTO
	Quality of demand conditions	Customer orientation, buyer sophistication	2	WEF executive opinion survey
Labour market efficiency	Flexibility	Management-labour relations, hiring/firing freedom, redundancy cost, taxation	5	WEF executive opinion survey, World Bank
	Efficient use of talent	Pay & productivity, brain drain, female participation	4	WEF executive opinion survey, ILO
Financial market development	Efficiency	Availability and affordability of capital and venture capital	5	WEF executive opinion survey
	Trustworthiness and confidence	Soundness of banking systems, security market regulation	3	WEF executive opinion survey, World Bank
Technological readiness	Technological adoption	Technology availability, technology transfers	3	WEF executive opinion survey
	ICT use	Availability and speed of communication infrastructure	6	International Telecommunication Union
Market size	Domestic market size	Domestic market size index	1	WEF calculation
	Foreign market size	Foreign market size index	1	WEF calculation
Business sophistication	Supply, production, value chain utilisation, marketing	Supplier quantity and quality, production sophistication, value chain depth, marketing capabilities	10	WEF executive opinion survey
R&D Innovation	Research availability and spending	Researcher availability & quality, research institutions and capabilities, R&D expenditure, government procurement, patent applications	8	WEF executive opinion survey (7), OECD
Total			**115**	**WEF executive opinion survey: 79, others: 36**

The 115 WEF indicators determining competitiveness

The WEF's Sustainability-adjusted Competitiveness Index

One cannot say that the WEF is not reading the sign of times. The report is full of references to the potentially unsustainable side-effects of economic activity, and concludes that "competitiveness on its own may not lead to sustainable levels of prosperity", and "competitiveness is a necessary but not sufficient condition for prosperity". The WEF has therefore developed an additional index pillar on "sustainable competitiveness" since 2012. The sustainability pillar consists of 20 indicators divided in "social sustainability" and "environmental sustainability" (see table below).

However, it seems the WEF does not yet fully trust its own new insight – rather than fully integrating the sustainability pillars into the Global Competitiveness Index (GCI), the results are used to produce 3 sub-indexes – the Social sustainability-adjusted GCI, the Environment sustainability-adjusted GCI, and the Sustainability-adjusted GCI (combining the former two). It also does not cover the same number of countries/territories – while the GCI covers 144 nations, the Sustainability-adjusted GCI analysis has only be conducted for 126 countries. The Sustainability-adjusted GCI is calculated by applying a "sustainability coefficient" of between 80-120% to the original competitiveness score.

From a sustainable competitiveness view-point, this seems to be work in progress - but nevertheless marking a first step in the right direction. It is arguable whether the chosen indictors cover all relevant aspects of social and environmental sustainability, and some indicators seem to be chosen somewhat randomly, with 40% of the indicators relating to policies and perception rather than performance. In addition, it is questionable whether a survey conducted amongst "executives" and "leaders" (8 of the 20 indicators are based on the WEF's "executive opinion survey") presents a reliable source to accurately and qualitatively assess the level of sustainability of an economy.

Pillar	Indicators		Source
Social sustainability pillar	Income Gini index	1	World Bank
	Youth unemployment	1	ILO
	Access to sanitation	1	WHO
	Access to improved drinking water	1	WHO
	Access to healthcare	1	WEF executive opinion survey
	Social safety net protection	1	WEF executive opinion survey
	Extent of informal economy	1	WEF executive opinion survey
	Social mobility	1	WEF executive opinion survey
	Vulnerable employment	1	World Bank
Environmental sustainability pillar	Stringency of environmental regulation	1	WEF executive opinion survey
	Enforcement of environmental regulation	1	WEF executive opinion survey
	Terrestrial biome protection	1	Environmental Performance Index (EPI) 2012
	No. of ratified international environmental treaties	1	IUCN
	Agricultural water intensity	1	FAO
	CO^2 intensity	1	World Bank
	Fish stocks overexploited	1	Environmental Performance Index (EPI) 2012
	Forest cover change	1	Environmental Performance Index (EPI) 2012
	Forest loss	1	Environmental Performance Index (EPI) 2012
	Particulate matter (2.5) concentration	1	Environmental Performance Index (EPI) 2012
	Quality of the natural environment	1	WEF executive opinion survey
Total		20	WEF executive opinion survey: 7, others: 13

The data source: executive 's opinions

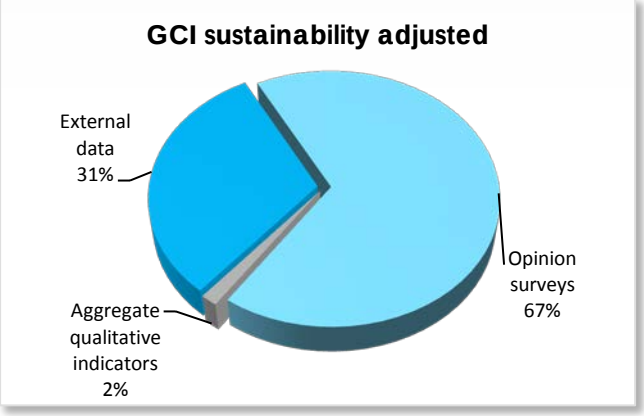
A very interesting – and probably not well know or overlooked factor – is that the Global Competitiveness Rankings are, to a major part, based on a survey conducted by the WEF, named "Executive Opinion Survey" – a stark contrast to the Sustainable Competitiveness Index, which is based on performance data. The executive opinion survey is conducted annually with the help of partner organisations across 150 countries. 14'059 respondents participated in 2012. The yearly responses are adjusted using a moving and discounted average of past surveys in order to reduce "sensitive to the specific point in time when the survey is administered". In addition, answers are adjusted for the economic structure of the country. Target respondents are business leaders from large and small companies in each country.

While the global coverage, computing and data weighting processes seem fairly sophisticated, there remain a some question marks:

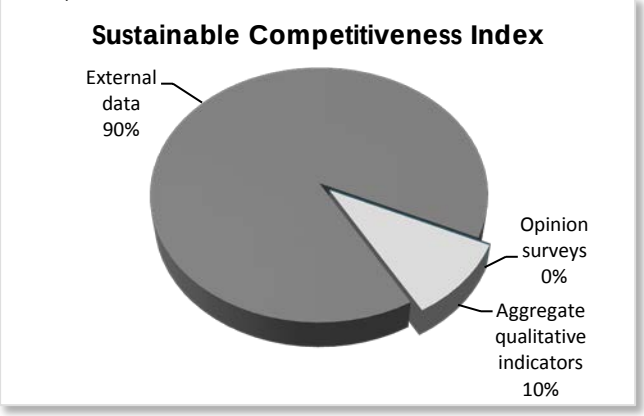
- While "business executives" might have a clear understanding of the business environment and its regulation in their country, do "executives" have the same understanding of services that they perhaps never use, such as public services, public health services, social services, and environmental issues (all of which are part of the survey and basis for the Competitiveness Index)?
- Is a survey – regardless of whether conducted amongst "executives" or "non-executives" – that is based on individual perceptions rather than on facts - a reliable source to compose a ranking?

Considering that 70% of the WEF's GCI are based on perception and opinions of leaders, wouldn't it be more accurate to call the resulting ranking a "Competitiveness Perception Index" rather than "Competitiveness Index"?

The Global Competitiveness Index is to 69% based on perceptions of individuals, and only 30% on performance data



Data sources for the Sustainability-adjusted Global Competitiveness Index



The Sustainable Competitiveness Index is 90% based on performance data, and 10% on aggregated qualitative assessments in turn based on performance data

Few environmental & social indicators

The table below shows the direct comparison of indicators used by the "Sustainable Competitiveness" and the "Global Competitiveness" indexes side-by side.

It is obvious that the Global Competitiveness Index hardly integrates and environmental or social factors, and focusses instead of economic environment and performance factors.

The new framework for a sustainability-adjusted GCI is a step in the right direction, but most indicators are addressing to policy and regulatory levels, which are considered to have limited meaningfulness for performance evaluation amongst sustainability experts.

Environmental & social indicators used for the two indexes. Numbers and indicators in brackets refer to indictors used in the Sustainability-adjusted WEF index, but not the main Competitiveness Index.

Pillar	Criteria	WEF Global Competitiveness Index		Sustainable Competitiveness Index	
		Number	Coverage	Number	Coverage
Natural capital	Water	0	-	4	Availability of freshwater resources, annual rain volumes & historical trends
	Biodiversity	(5)	(SA-GCI: Forest area, overfishing; policy indicators: environmental treaty signatures, protected areas, executive opinion on quality of environment)	4	Forest areas & changes, value of biodiversity, threatened species & historical trends
	Agriculture	0	-	5	Arable land per capita & land area, cereal yield per capita & area, potentially arable land
	Environmental degradation	0	-	4	Arable land under risk of desertification, arable land degradation rate, extreme weather events & historical trends
	Energy	0	-	4	Availability of energy resources (fossil & renewable) and level of depletion
	Minerals	0	-	2	Availability of mineral resources & level of depletion
Resource efficiency	Energy	0	-	5	Energy usage per capita & GDP, energy mix, CO_2 intensity of energy mix
	Climate change	(1)	(SA-GCI: CO_2 emissions per GDP)	4	CO_2 emissions per GDP and capita & their historical trends
	Water	(1)	(SA-GCI: agricultural water intensity)	4	Water productivity, freshwater withdrawal rate and their historical trends
	Waste	0	-	2	Volumes of ordinary and hazardous waste per capita and GDP & historical trends
	Pollution	(1)	(SA-GCI: particle mater pollution)	2	Particle mater pollution, SO_2 emissions & tehir historical trends
Social cohesion	Health	8 (3)	Prevalence and business cost of Malaria, Tuberculosis, and HIV, infant mortality, life expectancy (AS-GCI: access to health care, sanitation and water)	7	Child mortality, availability of nurses, doctors and hospital beds, affordability of medical services and drugs, overweight rates
	Social stability	(3)	(AS-GCI: social safety net, social mobility (as perceived by "executives"),GINI coefficient)	4	GINI coefficient, income quintile rate, life satisfaction perception index, gender equality index, and historical trends
	Public services	(1)	(AS-GCI: police services (as perceived by "executives"))	1	Stakeholder perception of quality of public services
	Crime	3	Cost of crime to businesses	4	Theft cases, homicide rats, prison population, safety perception index
	Freedom	0	-	2	Press freedom index, peace index (absence of violent conflicts and aggression)

Focus on economic criteria

Innovation and economic indicators used for the two indexes. Numbers and indicators in brackets refer to indictors used in the Sustainability-adjusted WEF index, but not the main Competitiveness Index.

Pillar	Criteria	WEF Global Competitiveness Index		Sustainable Competitiveness Index	
		Number	Coverage	Number	Coverage
Sustainable innovation& economics	Education	10	Primary, secondary and tertiary enrolment, internet access in schools, quality of education systems and on-the-job education as perceived by "executives"	6	Primary, secondary and tertiary enrolment & completion rate and gender equality, historical trends
	Infrastructure	15	Air kilometers Internet, fixed line mobile communication usage Perception of quality of roads, ports, air transport infrastructure and electricity supply	5	Infrastructure investments Availability of roads and railways per area & population Internet & mobile communication availability
	Business environment	31	Government regulation, legal framework, government support, accountability, shareholder and investor protection, Market maturity and internal competitiveness, local supplier base, depth of internal value optimisation, export/import regulations and tariffs (all as perceived by "executives"), bribery payments	3	Ease of doing business index, bribery payments, Transparency International Corruption Index
	Innovation	10	Property rights & protection, quality and availability of research personal and institutes, spending on R&D (all as perceived by "executives"), patent applications per capita	7	R&D expenditure (per capita & GDP), R&D personnel, rate of engineering students, patent applications (per capita & GDP), value added through high-tech manufacturing
	Economic indicators	9	Tax rate, start-up requirements, FDI, GNI, Inflation, credit rating, domestic and foreigner market size	7	GNI growth rates, new business registrations, new trademark applications (per capita & GDP), obesity rates, health of balance between different sectors (agriculture, manufacturing, services), financial austerity crises management
	Governments	9	Public trust in politicians, diversion of funds, judicial independence, government miss-spending, transparency all as perceived by "executives") budget balance, debt	0	- Due to the lack of indicators that could measure quality of governments without ideological prejudices, this criteria has been omitted from the SCI
	Labour market	9 (2)	Labour flexibility, hiring/firing cost, taxation, wage flexibility, pay & compensation (all as perceived by "executives"), female labour participation rate (AS-GCI: youth unemployment & vulnerable employment)	3	Unemployment, vulnerable employment, female labour participation rate
	Banking system	6	Soundness of banks, access to, and affordability of, financing and venture capital	0	- A working banking systems providing financing for infrastructure and business investment as well as to guarantee financial transactions is essential to the functioning and development of a national economy. However, due to the lack of indicators that could adequately measure the quality and stability of a banking system, this criteria has been omitted from the SCI
	Financial markets	2	Regulation of securities exchanges, legal rights index	0	- Stock exchanges and trading of derivative products do not create sustainable value or wealth and are therefore not necessary foundations for national prosperity. Due to lack of accurate indicators that quantify the quality of regulation minimising the danger posed by financial markets to national economies, this criteria has not been included in the SCI.

Competitiveness rankings: Sustainable Competitiveness Index (SCI) vs. WEF Competitiveness Index (GCI) vs. adjusted WEF Index (GCI adjusted)

Country	SCI	GCI	+/-	GCI adjusted	
Denmark	1	12	-11	10	-9
Sweden	2	4	-2	4	-2
Finland	3	3	-	2	+1
Norway	4	15	-11	5	-1
Switzerland	5	1	+4	1	+4
Germany	6	6	-	6	-
Canada	7	14	-7	13	-6
Ireland	8	27	-19	18	-10
Austria	9	16	-7	7	+2
Luxembourg	10	22	-12	-	n/a
Netherlands	11	5	+6	3	+7
Japan	12	10	+2	9	+2
Iceland	13	30	-17	16	-4
New Zealand	14	23	-9	11	+2
France	15	21	-6	14	-
Slovenia	16	56	-40	24	-9
Czech Republic	17	39	-22	23	-7
Estonia	18	34	-16	22	-5
Spain	19	36	-17	27	-9
Portugal	20	49	-29	35	-16
Belarus	21	-	n/a	-	n/a
Italy	22	42	-21	33	-13
Lithuania	23	45	-23	26	-5
Australia	24	20	+3	15	+7
United Kingdom	25	8	+16	8	+15
Belgium	26	17	+8	11	+13
USA	27	7	+19	17	+8
Brazil	28	48	-21	30	-4
Hungary	29	60	-32	37	-10
South Korea	30	19	+10	21	+7
Poland	31	41	-11	34	-5
Singapore	32	2	+29	-	n/a
Bhutan	33	-	n/a	-	n/a
Romania	34	78	-46	61	-31
Slovakia	35	71	-38	39	-8
Latvia	36	55	-21	25	+7
Croatia	37	81	-46	45	-12
China	38	29	+7	31	+3
Uzbekistan	39	-	n/a	-	n/a
Argentina	40	94	-57	71	-36
Costa Rica	41	57	-19	28	+8
Montenegro	42	72	-33	-	n/a
Indonesia	43	50	-10	43	-6
Uruguay	44	74	-33	40	-2

Country	SCI	GCI	+/-	GCI adjusted	
Malta	45	47	-5	-	n/a
Timor-Leste	46	136	-93	-	n/a
Israel	47	26	+18	20	+19
Russia	48	67	-22	49	-9
Peru	49	61	-15	53	-12
Serbia	50	95	-48	66	-24
Albania	51	89	-41	-	n/a
Bulgaria	52	62	-13	41	+2
Republic of Congo	53	-	n/a	-	n/a
Tajikistan	54	100	-50	-	n/a
Tanzania	55	120	-69	77	-33
Greece	56	96	-44	62	-17
Ghana	57	103	-50	-	n/a
Malaysia	58	25	+29	19	+27
Colombia	59	69	-14	59	-12
Zambia	60	102	-46	-	n/a
Cyprus	61	58	-1	36	+12
Sri Lanka	62	68	-10	50	-1
Cameroon	63	112	-53	-	n/a
Qatar	64	11	+49	-	n/a
Dominica	65	-	n/a	-	n/a
Liberia	66	111	-50	-	n/a
Moldova	67	87	-25	58	-8
Guyana	68	109	-46	-	n/a
Guinea-Bissau	69	-	n/a	-	n/a
Mozambique	70	138	-74	-	n/a
Laos	71	-	n/a	-	n/a
Armenia	72	82	-17	67	-16
Macao	73	-	n/a	-	n/a
Venezuela	74	126	-60	76	-24
Ethiopia	75	121	-54	-	n/a
Ecuador	76	86	-18	64	-11
Cote d'Ivoire	77	131	-62	-	n/a
Dominican Republic	78	105	-35	75	-21
Paraguay	79	116	-45	74	-19
Suriname	80	114	-42	-	n/a
Tunisia	81	-	n/a	-	n/a
Sudan	82	-	n/a	-	n/a
Kosovo	83	-	n/a	-	n/a
Democratic Republic of Congo	84	-	n/a	-	n/a
Kyrgistan	85	127	-54	-	n/a
Sierra Leone	86	143	-69	-	n/a
Gambia	87	-	n/a	-	n/a
Zimbabwe	88	132	-57	-	n/a

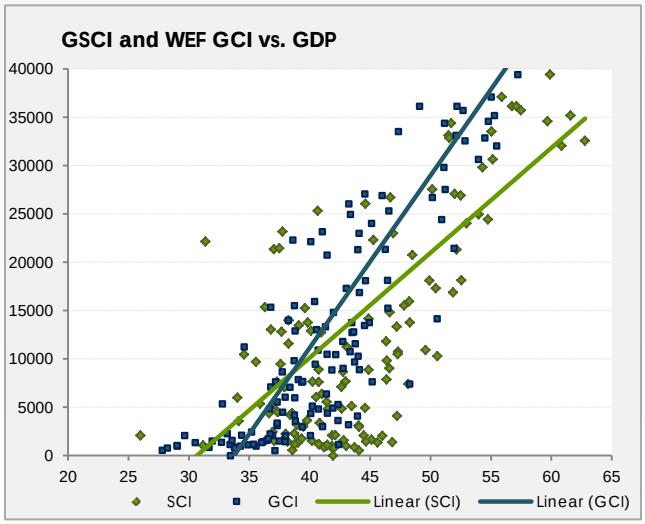
Ranking differences have been adjusted for the number of countries available in each index to allow for direct ranking comparisons

Competitiveness rankings: Sustainable Competitiveness Index (SCI) vs. WEF Competitiveness Index (GCI) vs. adjusted WEF Index (GCI adjusted)

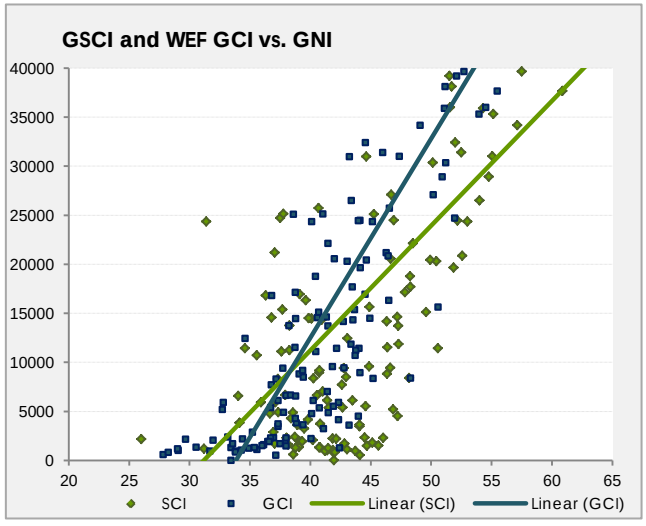
Country	SCI	GCI	+/-	GCI adjusted	
Mali	89	128	-52	-	n/a
Malawi	90	129	-52	-	n/a
Cambodia	91	85	-7	65	-9
Niger	92	-	n/a	-	n/a
Belize	93	-	n/a	-	n/a
Papua New Guinea	94	-	n/a	-	n/a
Georgia	95	77	+2	-	n/a
Nepal	96	125	-45	-	n/a
Egypt	97	107	-26	72	-15
Guinea	98	141	-59	-	n/a
Greenland	99	-	n/a	-	n/a
Madagascar	100	130	-47	-	n/a
Togo	101	-	n/a	-	n/a
Ukraine	102	73	+11	57	+1
Mauritius	103	54	+31	43	+16
Nicaragua	104	108	-22	-	n/a
Burkina Faso	105	133	-46	-	n/a
Bosnia and Herzegovina	106	88	-	-	n/a
Azerbaijan	107	46	+43	51	+9
Uganda	108	123	-33	-	n/a
Oman	109	32	+59	-	n/a
El Salvador	110	101	-9	-	n/a
Djibouti	111	-	n/a	-	n/a
Thailand	112	38	+55	38	+23
Lesotho	113	137	-43	-	n/a
Lebanon	114	91	+4	-	n/a
Angola	115	-	n/a	-	n/a
Burma	116	-	n/a	-	n/a
Panama	117	40	+56	32	+30
Philippines	118	65	+32	48	+15
Chile	119	33	+65	29	+35
Vietnam	120	75	+24	-	n/a
Cuba	121	-	n/a	-	n/a
Senegal	122	117	-17	-	n/a
Turkey	123	43	+58	42	+23
Bangladesh	124	118	-16	-	n/a
Chad	125	139	-36	-	n/a
India	126	59	+45	60	+6
Central African Republic	127	-	n/a	-	n/a
Rwanda	128	63	+42	-	n/a
Mauritania	129	134	-28	-	n/a
Kuwait	130	37	+70	-	n/a
Burundi	131	144	-36	-	n/a
Morocco	132	70	+39	68	-1

Country	SCI	GCI	+/-	GCI adjusted	
Mongolia	133	93	+17	-	n/a
Syria	134	-	n/a	-	n/a
Gabon	135	99	+12	-	n/a
Kazakhstan	136	51	+61	45	+23
Afghanistan	137	-	n/a	-	n/a
Benin	138	119	-6	-	n/a
Turkmenistan	139	-	n/a	-	n/a
Nigeria	140	115	-1	-	n/a
Jamaica	141	97	+18	70	-1
Seychelles	142	76	+40	-	n/a
Mexico	143	53	+64	47	+23
Macedonia	144	80	+38	63	+8
Saudi Arabia	145	18	+101	-	n/a
Bolivia	146	104	+16	-	n/a
Algeria	147	110	+11	78	-6
Eritrea	148	-	n/a	-	n/a
Jordan	149	64	+58	52	+21
Kenya	150	106	+17	72	+2
Bahrain	151	35	+89	-	n/a
Pakistan	152	124	+1	79	-4
Botswana	153	79	+47	-	n/a
Guatemala	154	83	+44	-	n/a
North Korea	155	-	n/a	-	n/a
Libya	156	113	+15	-	n/a
Comoros	157	-	n/a	-	n/a
Swaziland	158	135	-6	-	n/a
South Africa	159	52	+78	56	+20
United Arab Emirates	160	24	+107	-	n/a
Bahamas	161	-	n/a	-	n/a
Iraq	162	-	n/a	-	n/a
Iran	163	66	+66	54	+23
South Sudan	164	-	n/a	-	n/a
Hong Kong	165	9	+124	-	n/a
Honduras	166	90	+44	-	n/a
Namibia	167	92	+43	68	+10
Brunei	168	28	+108	-	n/a
Somalia	169	-	n/a	-	n/a
Maldives	170	-	n/a	-	n/a
Trinidad and Tobago	171	84	+53	55	+24
Haiti	172	142	-4	-	n/a
Fiji	173	-	n/a	-	n/a
West Bank and Gaza	174	-	n/a	-	n/a
Yemen	175	140	-1	-	n/a
Equatorial Guinea	176	-	n/a	-	n/a

Ranking differences have been adjusted for the number of countries available to allow for direct ranking comparisons



Global Competitiveness and Sustainable Competitiveness Scores vs. GDP. Sources: WEF, World Bank, SolAbility



Global Competitiveness and Sustainable Competitiveness Scores vs. GNI. Sources: WEF, World Bank, SolAbility

High correlation to current GDP

A comparison of the rankings between the Competitiveness Index (GCI) and the Sustainable Competitiveness Index (GSCI) show similarities, but also certain dissimilarities. Scandinavian and other Northern European Countries e.g. are ranked high in both indexes, as is Japan. However, other large economies – in particular the US and the UK – are ranked distinctively higher in the GCI than in the GSCI as are new and emerging Asian economic powerhouses (China, South Korea). On the other hand, Eastern European nations are evaluated higher by the GSCI.

Given the set of indicators chosen to measure competitiveness, it is perhaps not really surprising that the Davos Man rankings show a very high correlation to current GDP levels of the respective country. The R square value (a statistical measurement quantifying the probability of two values matching a linear formula)for the WEF Index is a high 0.67, i.e. a 67% exact correlation between GDP and Competitiveness. Which raises the question – why not just use the GDP as a graduator of competitiveness…?

There seems to be a similar, albeit less positive correlation between GDP/GNI levels and the Sustainable Competitiveness Index. However, due to the integration of factors that currently might have limited direct financial impacts, (but influence long-term perspective, often referred to as “non-financial” aspects), the correlation is significantly less strong, wit an R square value of 0.22 (i.e. 22% probability of an exact match).

The WEF Index might be a good measurement of current wealth. However, in light of the coming resource scarcity (i.e. when “non-financial” factors become financial factors), it is very probable that the GSCI is a more accurate forecast of future competitiveness and wealth creation and sustaining capabilities.

So… how about growth rates?

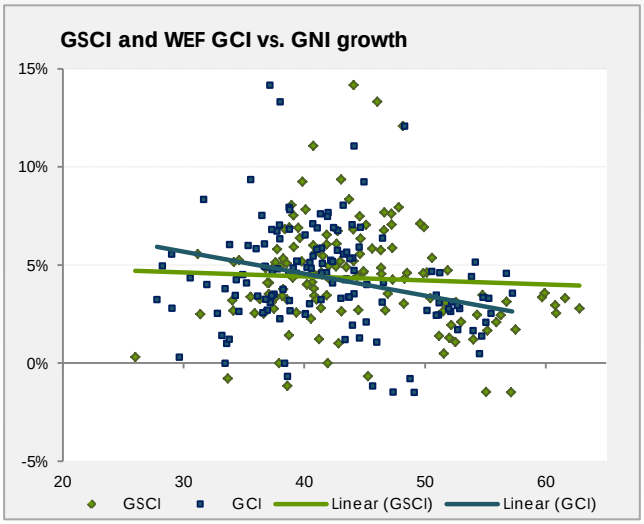
The previous page has shown the somehow expected correlations between current GDP levels and the WEF Competitiveness Index, and the also expected not-so strong correlation of the same value to the Sustainable Competitiveness Ranking.

However, a more interesting question relates to whether the Indexes have any correlation to growth rates, i.e. to the addition to, or sustaining, of, wealth by a given economy (or what is commonly perceived as wealth as measured by GDP or GNI). In other words – do the indexes have any value in predicting the capability of creating new wealth?

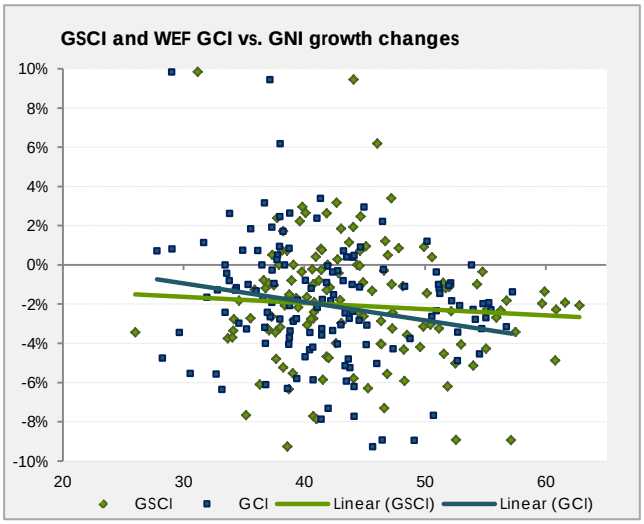
Given the spread of growth rates, it is not really surprising that comparing index scores and growth rates (without adjustments for development stage of an economy) is scattered rather than aligned, with no distinctive linear correlation visible. However, *on average* (looking at the average correlation), the association of competitiveness according to Davos Man and growth is negative (i.e. higher competitiveness averages lower growth rates an vice-versa. The average association of the sustainable competitiveness to growth is neutral, even before adjustment to development stages.

Analysis the changes to growth rates (also without adjustment to development stage of an economy) produces a very similar picture. However, the association of sustainable competitiveness and growth rate changes are also slightly negative, indicating that neither index is able to fully grasp the essence of growth and growth changes.

This analysis is by no means scientific, but rather intends to contribute to the discussion of what policies actually determine future wealth creation on the level of nations.

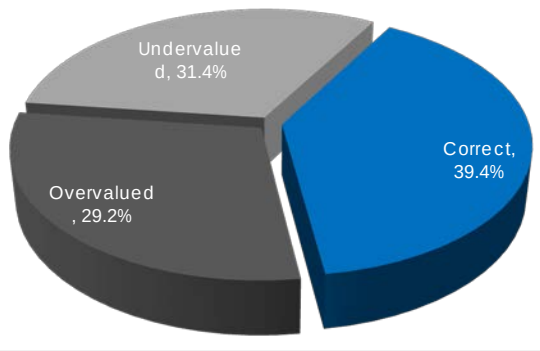


Global Competitiveness and Sustainable Competitiveness Scores vs. GNI growth rates. Sources: World Bank, WEF, SolAbility



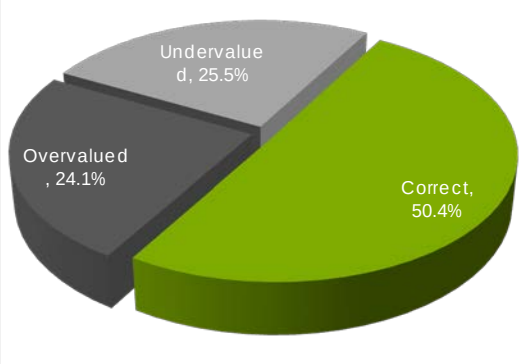
Global Competitiveness and Sustainable Competitiveness Scores vs. GNI growth rate changes 2006-2011. Sources: World Bank, WEF, SolAbility

WEF GCI and GNI growth changes: correleations



WEF Global Competitiveness rankings and growth change rankings deviation: percentage of correct correlations (high rank, high growth rate changes) – the correlation holds true in 40% of cases.

GSCI and GNI growth changes: correleations



Sustainable Competitiveness rankings and growth change rankings deviation: percentage of correct correlations (high rank, high growth rate changes) – the correlation holds true in 50% of cases.

Negative correlations

Another statistical analysis consist of using of the average deviation of competitiveness and growth rates changes. This exercise has been conducted in order to analyse whether the competitiveness ranking of a country correlates to the ranking in terms of growth rates changes, or whether the country ranking would suggest a higher or lower growth rate than the actual, real growth rate.

While this, again, does not intent and cannot represent a bullet-proof scientific analysis, it nevertheless gives interesting indications:

According to the WEF Index, only 40% of all cases show a positive correlation. In 30% of all cases a higher growth rate than anticipated by the WEF ranking is observed, while in another 30% the growth rate is lower than the WEF ranking would suggest. The hit rate of the Sustainable Competitiveness Index is 11% higher compared to the WEF index at marginally over 50%.

The reason why this important is the self-perception of the WEF and its competitiveness Index, that aims to "understand the key factors that determine economic growth, helps to explain why some countries are more successful than others in raising income levels, (...), and offers an important tool in the formulation of improved economic policies and institutional reforms".

Comparing the WEF rankings and actual income level raising levels of the respective countries unfortunately does not support this notion.

Data analysis suggest that a country that would take the WEF's competitiveness blueprint as a development model has a statistical higher chance of such a strategy leading to undesired opposite results.

High GDP level correlation , but low GDP growth correlation

The comparison of methodologies and empirical analysis of correlations with wealth levels and new wealth creation (growth and growth rate changes as measured in GDP or GNI per capital) leads to 4 major observations:

- **The data sources**: the WEF index is to 69% based on qualitative opinion surveys ("the executive survey"). While the high global number of respondents should lead to a representative picture, it is questionable whether opinion surveys based on a small bandwidth of the population ("the executives") are a true reflection of the respective quality and/or performance – in particular when it comes to non-business aspects such as quality of public services (health education, policing), or environmental matters. Reliance on data, on the other hand, would require exact and accurate data, which in turn requires the availability of data and application of streamlined data accounting across all countries – which, at this point in time, cannot be guaranteed for all relevant sustainable performance data.
- **The selection of indicators**: the WEF Competitiveness Index is based on the notion that "competitiveness" is based on economic performance and drivers that enhance economic performance (infrastructure, education, and regulations that affect businesses). In recognition that such economic activities might not be fully sustainable (i.e. not the sole ingredients of competitiveness in the longer term), The WEF has begun developing a "sustainable competitiveness" framework. However, this framework is limited in scope, selection of indicators, and not integrated in the main competitiveness Index at this point in time.
- **High correlation to current GDP**: The WEF Competitiveness shows a distinctive correlation to current GDP levels under exclusion of any environmental or equality indicators. The WEF ranking-GDP correlation also holds true in instances where current high GDP levels have been achieved mainly through the exploitation of natural resources (e.g. the fossil-rich states in the Middle East). In other words: the Competitiveness Report is a ranking of past achievements and current wealth of nations. This is not necessarily a sign of competitiveness, i.e. a country's capability to sustain and increase wealth in the future.
- **Low correlation to new wealth creation** (growth and changes of growth rates): empiric analysis of the WEF competitiveness scores and actual growth rates (measured in GDP or GNI) shows little correlation, and even less so to changes in growth rates. The Competitiveness Report aims to identify components of competitiveness and serve as tool for policy making to increase competitiveness, and due to the "brand-value" and international media presence is probably one of the most recognised indexes. However, there is no statistical (empiric) evidence that would support the notion that competitiveness - as defined through the selection of components by the WEF Index - actually lead to new or higher growth. Comparative analysis with the Sustainable Competitiveness Index suggests that full integration of sustainability factors yields a higher correlation to growth and growth changes, i.e. the capability to sustain or create new growth , the definition of future competitiveness.

The development of sustainability criteria by the WEF present a step in the right direction. However, the current version is work in progress. It is hoped that the WEF will continue to develop, and more importantly, fully integrate the sustainability factors in their Global Competitiveness Index.

achieving sustainable competitiveness

Sustainable development , competitiveness, and wealth creation

The leading nations according to the Sustainable Competitiveness Index mostly present high-income countries, suggesting a certain correlation between sustainable competitiveness and GDP per capita or income levels (high income = high sustainability). While a certain similarity between GDP rankings and sustainability levels seems to be visible, the correlation is superficial and refuted by too many exceptions to the rule. 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.

However, the correlation or the influence of the sustainable competitiveness on the GDP or income level is not immediate - it is time deferred. Like every endeavor or project, an upfront investment is required; the seeds have to be planted, the plants need to be cared for before the fruits can be harvested. In addition, the sustainable competitiveness level can be "cheated on" for a certain amount of time trough exploitation of the natural capital in the presence of large natural resources (e.g. the oil-rich countries of the Middle East). However, such wealth is highly unsustainable and the wealth generated will diminish with the depletion of the natural resources in the absence of development of an adequate alternative sustainable economy and the underlying fundament requirements for such an economy.

The time-delay impact of sustainable competitiveness on wealth levels works both ways. A country that in the past has achieved a comparable high level of economic development will decline over time in the absence of initiatives and performance supporting sustainable competitiveness (as currently seems to be the case with the USA or the UK, for example). A country can sustain its current level for only a limited time by exploiting the historically accumulated sustainable capital (natural capital, efficiency capital, human capital, equality, and income). However, the decline in actual income level will occur at a later point (delayed) compared to the decline in actual sustainable competitiveness. By the time the decline commences to be felt in actual economic terms, it will be difficult to recuperated sustainable competitiveness because the weight of the momentum is pulling in the opposite direction. Politicians tend to turn to extremes and/or introduction of drastic economic policies in such moments. However, failure to consider the full long-term impacts of such policies often leads to a worsening of the situation rather than improvement and causes an even faster decline. The sustainable competitiveness level of an economy therefore can serve as an early warning indication for misguided development and policies.

For countries with low current income or GDP levels, a low sustainability competitiveness score indicates low potential to achieve sustainable development in the short and mid-term future in the absence of significant changes to development and investment policies.

Low-income countries with a comparable high sustainability competitiveness score, on the other hand, have the potential to improve their income and well-being levels based on sustainable fundamentals.


Sustainable Competitiveness
Pillar
Solutions
Implications
Issue
Sustainable Natural Capital Usage
Sustainable water usage
Drinking water, agriculture
Water
Biodiversity protection
Degradation
Biosphere
Sustainable agriculture
Food security
Agricultural resources
Sustainable resource use
Overexploitation, pollution
Mineral & fossil resources
Sustainable land use
Overexploitation, land conflicts
Depletion of land & resources
Resource Efficient
Energy efficiency, education
Cost, import/export balance
Energy
Efficiency increase, substitution
Cost, waste disposal
Raw materials
Efficiency increase, education
Water availability
Water
GHG reduction & fuel switch
Climate change
GHGs
Efficiency, recycling
Pollution, degradation
Waste
Sustainable Innovation, Sustainable Economy
Education quality
Lack of skilled labor
Education
Strategic R&D planning
Lack of innovation, value-adding industry
R&D
Strategic infrastructure planning & financing
Deteriorating/ insufficient infrastructure
Investments
Simple but stringent business regulations
Competitiveness
Business indicators
Stringent legislative implementation
Competitiveness, investment barriers
Corruption
Social Cohesion, Equality, STability
Universal affordable health care
Inequality, labour cost
Health
Democracy, freedom of speech
Fear, investment barriers
Freedom
Coherent judicial system, equality
Safety, instability
Crime
Progressive regulation, growth, job creation
Social unrest, instability, crime
Social equality
Integration of all parts of society, dialogue
Instability, barriers to investment & growth
Conflicts

Maintaining the four basic pillars of competitiveness

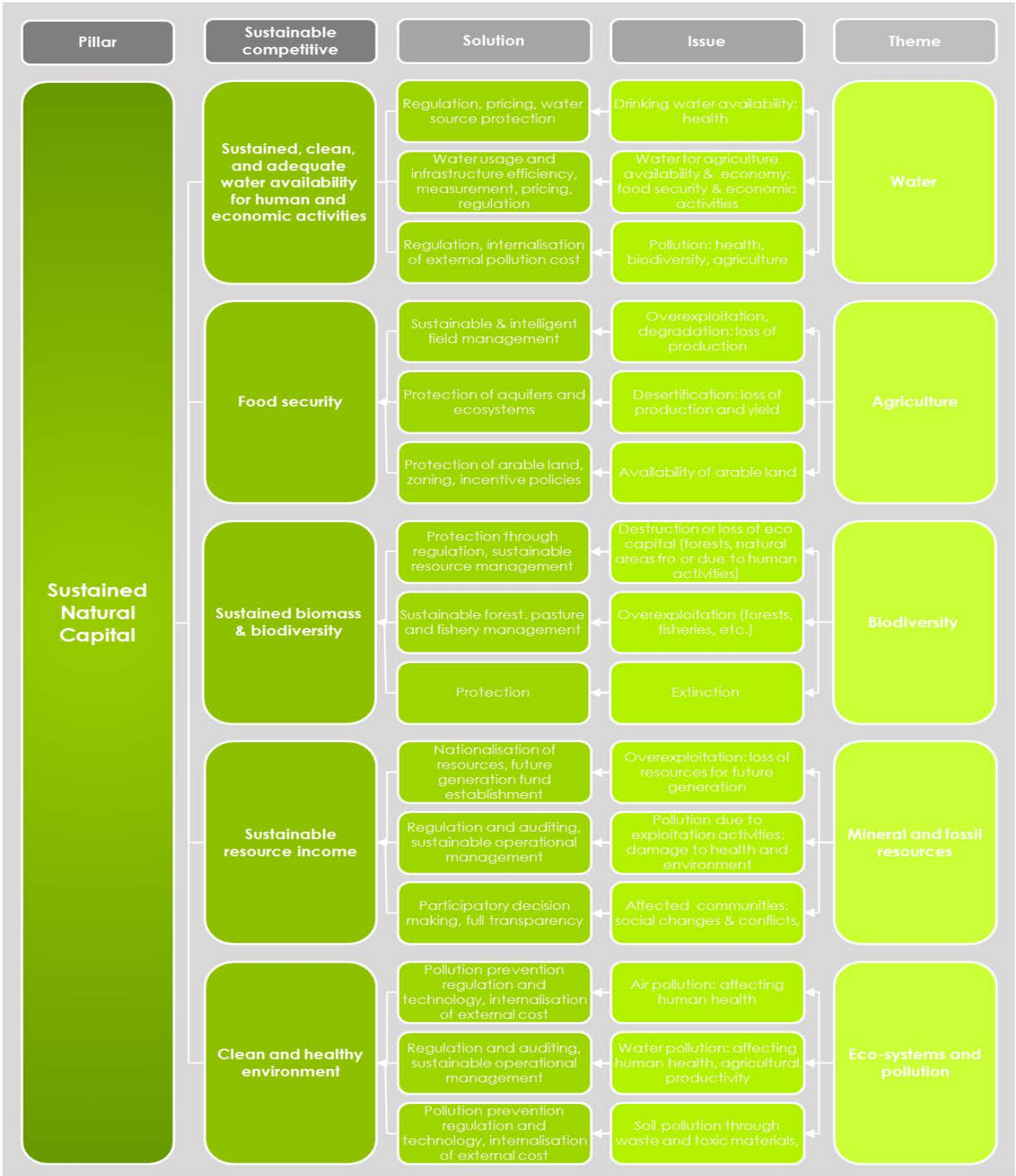
Sustainable competitiveness is the accumulated result of development policies and strategies, designed and implemented by governments, authorities, economic entities (businesses), individuals, and other players.

Sustainable competitiveness is therefore subject to human influence and can be improved for the better, or will change for the worse in the absence of thoughtful and intelligent guidance. While short-term success might be achieved through limited initiatives in a single area, long-term sustainable competitiveness – i.e. the ability to sustain growth and wealth creation into the future - can only be achieved through polices, regulations, standards and incentives balancing all areas of national sustainable competitiveness. According to the methodology used for the Sustainable Competitiveness Index, these include:

- **Natural Capital:** fostering sustainable agriculture, protecting biodiversity and biomass (forest areas), protecting surface water and water reservoirs, and ensuring sustainable use (management) of renewable and non-renewable natural resources.
- **Resource Intensity**: increasing industrial efficiency trough regulations and intelligent incentives, advocating of efficient technologies, products and services, regulating through mandatory efficiency standards, and de-materialisation of production.
- **Sustainable Innovation:** increasing universal availability and quality of education, defining key national industrial and economic growth areas with supporting programs and policies, incentives fostering entrepreneurship, and eradicating corruption.
- **Social Cohesion:** Improving availability and affordability of health care services, guaranteeing equal economic opportunities, gender equality, integrating neglected communities, and crime counter-measurements, ensure freedom of thought.

Achieving sustainable competitiveness requires a combination of thoughtful policies that both regulate and stimulate the environment in a way that allows for both businesses and society to thrive while preserving the natural environment, i.e. sustainably manage natural environment and resources which in turn form the basis for continued business operations and social stability in terms of food security.

Considering that many of the elements of competitiveness are inter-linked and directly or indirectly correlate with one another (e.g. quality and availability of education determines future innovation capabilities), it is vital to include all aspects in an intelligent model. Neglecting any of the pillars of sustainable competitiveness, on the other hand, will lead to decreasing competiveness because of these inter-linkages. Increasing inequality, for example, is leading to higher crime rates and insecurity with the associated cost for policing and the judicial system as well as cost for security for businesses, and ultimately shrink the domestic market due to lack of power purchasing parity, in turn a barrier to new investments – a vicious cycle as austerity-lead economies such as the UK or Greece are currently finding out the hard way.


Pillar
Sustainable competitive
Solution
Issue
Theme
Sustained Natural Capital
Sustained, clean, and adequate water availability for human and economic activities
Regulation, pricing, water source protection
Water usage and infrastructure efficiency, measurement, pricing, regulation
Regulation, internalisation of external pollution cost
Drinking water availability: health
Water for agriculture availability & economy: food security & economic activities
Pollution: health, biodiversity, agriculture
Water
Food security
Sustainable & intelligent field management
Protection of aquifers and ecosystems
Protection of arable land, zoning, incentive policies
Overexploitation, degradation: loss of production
Desertification: loss of production and yield
Availability of arable land
Agriculture
Sustained biomass & biodiversity
Protection through regulation, sustainable resource management
Sustainable forest, pasture and fishery management
Protection
Destruction or loss of eco capital (forests, natural areas fro or due to human activities)
Overexploitation (forests, fisheries, etc.)
Extinction
Biodiversity
Sustainable resource income
Nationalisation of resources, future generation fund establishment
Regulation and auditing, sustainable operational management
Participatory decision making, full transparency
Overexploitation: loss of resources for future generation
Pollution due to exploitation activities: damage to health and environment
Affected communities: social changes & conflicts,
Mineral and fossil resources
Clean and healthy environment
Pollution prevention regulation and technology, internalisation of external cost
Regulation and auditing, sustainable operational management
Pollution prevention regulation and technology, internalisation of external cost
Air pollution: affecting human health
Water pollution: affecting human health, agricultural productivity
Soil pollution through waste and toxic materials,
Eco-systems and pollution

Positive an negative incentives to protect and sustain the natural capital

Most top ranked nations – with a few exceptions – are countries with a comparably low population density, coupled with sufficient water availability. Water availability in turn is the basis for a rich biodiversity and agricultural yield. The countries on the bottom of the natural capital ranking (which includes China and India, i.e. a significant percentage of humanity) are highly likely to face barriers to sustainable and sustained development. These obstacles might include water constraints, affecting agriculture, human needs, and the economy, ultimately leading to conflict over resources (the Darfur conflict, for example, is in its essence a conflict over water resources and pastures coupled with increasing population density).

The natural capital of a country is mainly determined by factors beyond the influence of humanity: geography, climate, water resources, mineral resources. However, the efficient and sustainable use - and therefore the level of depletion – is a result of human activity and therefore can be directed through positive and negative incentives.

Negative natural capital protection incentives

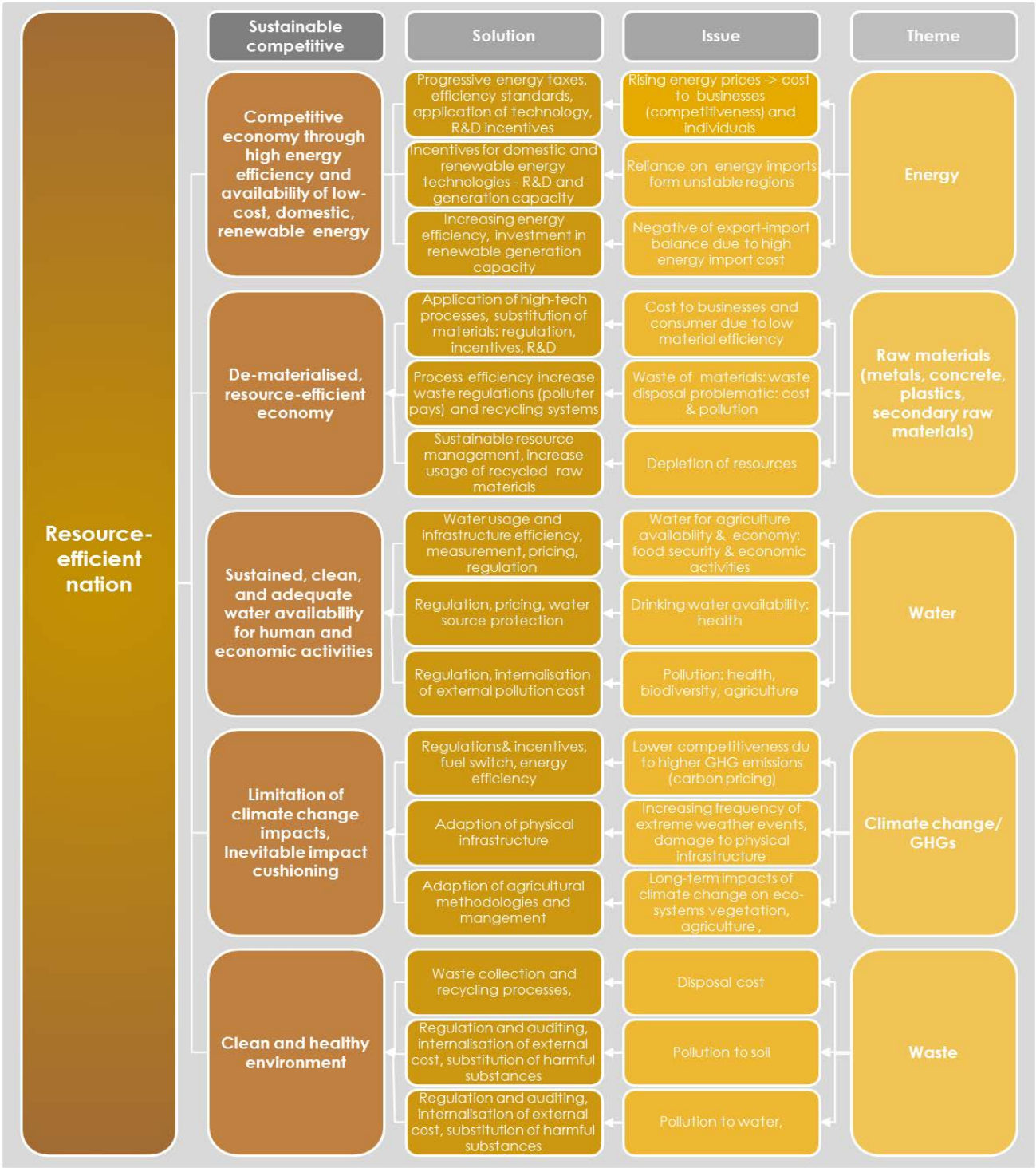
- Setting mandatory efficiency standards (possibly coupled with fines for non-compliance)
- User-pays and polluter-pays principles: defining prices of resources (e.g. water) that reflect the inclusive value of the resource or internalizes non-financial depletion and/or pollution costs. This measurement 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
- Introduction of environmental regulations, designation of protected areas
- As a drastic measurement of last resort: introduction of contingents

Positive natural capital incentives

- 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 (rank 155, excluding West Bank and Gaza) has achieved and maintained a high level of economic prosperity compared to other countries with similar characteristics. Israel has developed and applied intelligent technology (in particular in terms of irrigation) which allows to extract high yields from limited resources: the country is a net agricultural exporter. 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.


Resource-efficient nation
Sustainable competitive
Solution
Issue
Theme
Competitive economy through high energy efficiency and availability of low-cost, domestic, renewable energy
Progressive energy taxes, efficiency standards, application of technology, R&D incentives
Rising energy prices -> cost to businesses (competitiveness) and individuals
Incentives for domestic and renewable energy technologies - R&D and generation capacity
Reliance on energy imports form unstable regions
Increasing energy efficiency, investment in renewable generation capacity
Negative of export-import balance due to high energy import cost
Energy
De-materialised, resource-efficient economy
Application of high-tech processes, substitution of materials: regulation, incentives, R&D
Cost to businesses and consumer due to low material efficiency
Process efficiency increase waste regulations (polluter pays) and recycling systems
Waste of materials: waste disposal problematic: cost & pollution
Sustainable resource management, increase usage of recycled raw materials
Depletion of resources
Raw materials (metals, concrete, plastics, secondary raw materials)
Sustained, clean, and adequate water availability for human and economic activities
Water usage and infrastructure efficiency, measurement, pricing, regulation
Water for agriculture availability & economy: food security & economic activities
Regulation, pricing, water source protection
Drinking water availability: health
Regulation, internalisation of external pollution cost
Pollution: health, biodiversity, agriculture
Water
Limitation of climate change impacts, Inevitable impact cushioning
Regulations& incentives, fuel switch, energy efficiency
Lower competitiveness du to higher GHG emissions (carbon pricing)
Adaption of physical infrastructure
Increasing frequency of extreme weather events, damage to physical infrastructure
Adaption of agricultural methodologies and mangement
Long-term impacts of climate change on eco-systems vegetation, agriculture ,
Climate change/ GHGs
Clean and healthy environment
Waste collection and recycling processes,
Disposal cost
Regulation and auditing, internalisation of external cost, substitution of harmful substances
Pollution to soil
Regulation and auditing, internalisation of external cost, substitution of harmful substances
Pollution to water,
Waste

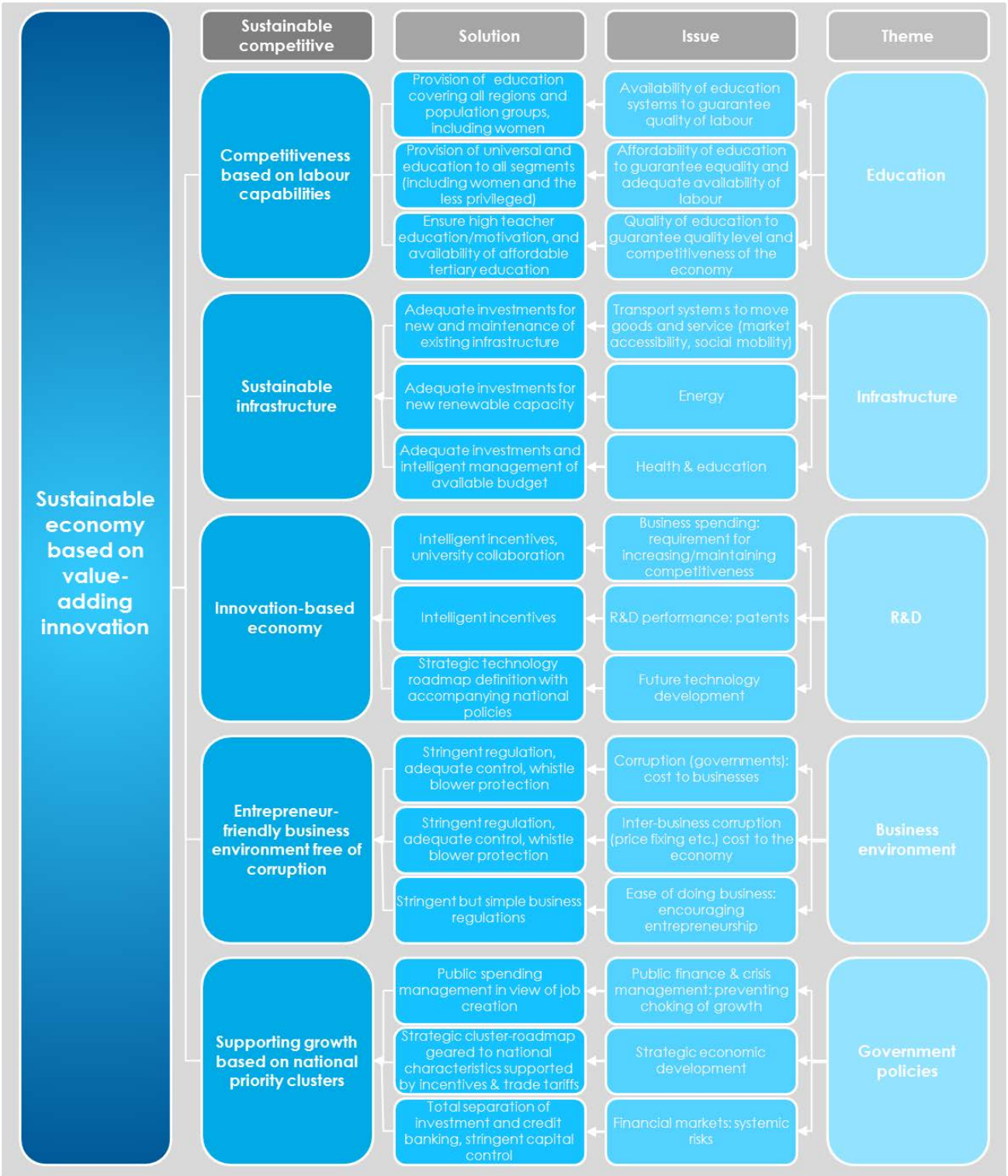
Incentives and taxes to educe resource intensity, and increase resource efficiency

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


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

Education, R&D, and investments to foster an innovation-based economy

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.

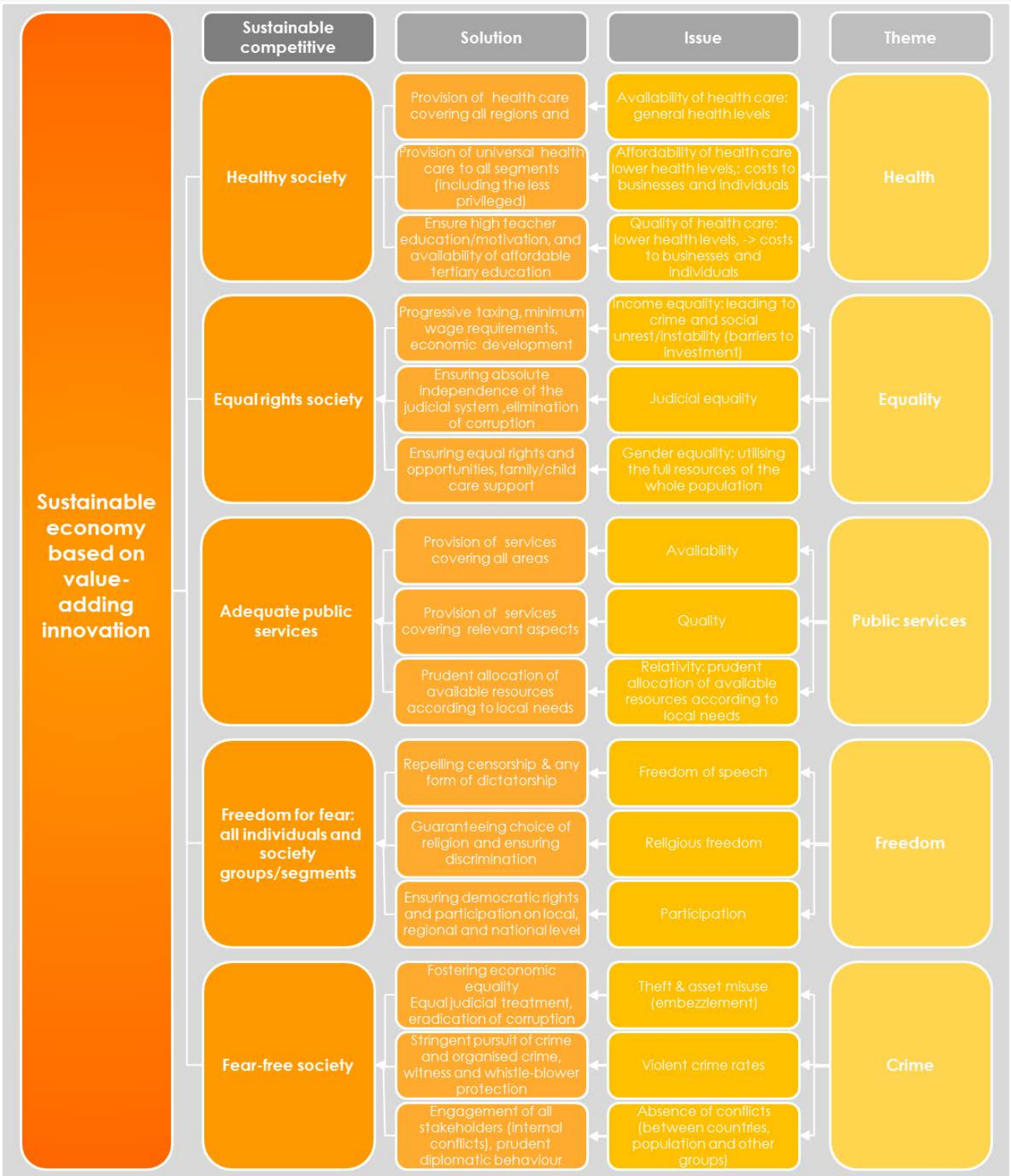
Know-ledge and innovation are key success factors for adding value and achieve sustained growth in an increasingly complex and globalised economy. Countries with low sustainable innovation competitiveness on the other hand are facing difficulties to achieve meaningful growth as nations due to the lack 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 (a phenomena that can currently be observed in Europe). 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
Healthy society
Provision of health care covering all regions and
Provision of universal health care to all segments (including the less privileged)
Ensure high teacher education/motivation, and availability of affordable tertiary education
Availability of health care: general health levels
Affordability of health care lower health levels,: costs to businesses and individuals
Quality of health care: lower health levels, -> costs to businesses and individuals
Health
Equal rights society
Progressive taxing, minimum wage requirements, economic development
Ensuring absolute independence of the judicial system ,elimination of corruption
Ensuring equal rights and opportunities, family/child care support
Income equality: leading to crime and social unrest/instability (barriers to investment)
Judicial equality
Gender equality: utilising the full resources of the whole population
Equality
Adequate public services
Provision of services covering all areas
Provision of services covering relevant aspects
Prudent allocation of available resources according to local needs
Availability
Quality
Relativity: prudent allocation of available resources according to local needs
Public services
Freedom for fear: all individuals and society groups/segments
Repelling censorship & any form of dictatorship
Guaranteeing choice of religion and ensuring discrimination
Ensuring democratic rights and participation on local, regional and national level
Freedom of speech
Religious freedom
Participation
Freedom
Fear-free society
Fostering economic equality
Equal judicial treatment, eradication of corruption
Stringent pursuit of crime and organised crime, witness and whistle-blower protection
Engagement of all stakeholders (internal conflicts), prudent diplomatic behaviour
Theft & asset misuse (embezzlement)
Violent crime rates
Absence of conflicts (between countries, population and other groups)
Crime

Ensuring equal opportunities to facilitate social stability

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

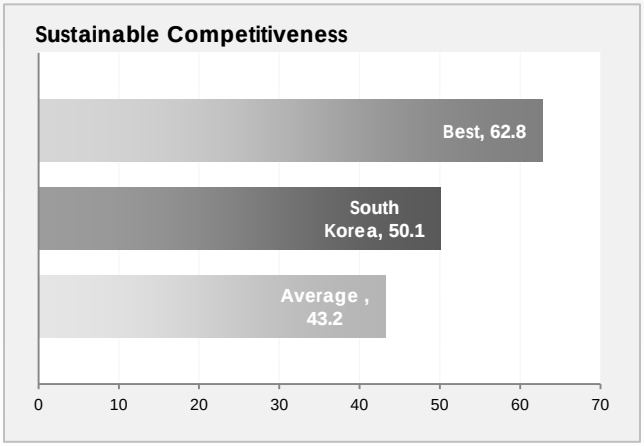
spotlight on korea

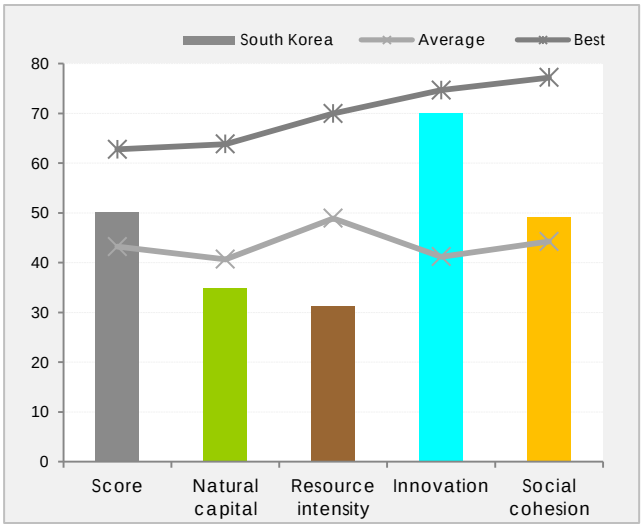
Global Sustainable Competitiveness Rank: 31

Korea ranks 31st in the Global Sustainable Competitiveness Index, just within the top 20%. The country scores very high in terms of sustainable innovation and economic indicators (ranked 2nd globally), slightly above average in Social Cohesion, but is considerably below the world average in terms of Natural Capital and Resource Efficiency. While the economic indicators suggest that Korea is on a sustainable way to sustain existing and create new wealth, the low availability of natural capital and low resource efficiency could undermine or reverse economic gains in the medium and long term, if not addresses comprehensively. The score in Social Cohesion indicates that wealth is somewhat unequally distributed, leading to a certain dissatisfaction within the society that could undermine the stability required for continued growth.

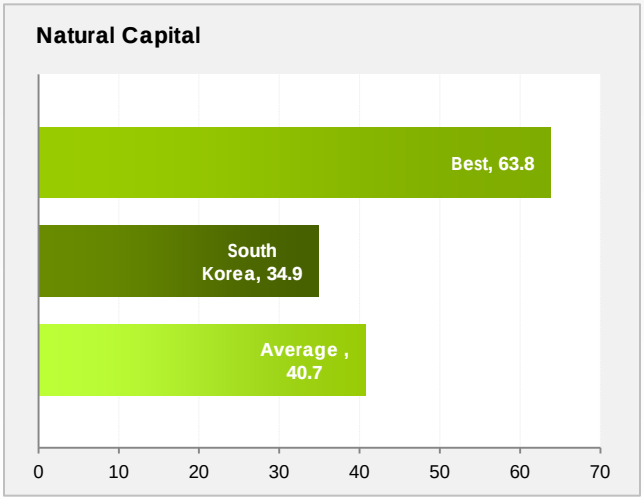
The low level of available Natural Capital is difficult to tackle, and needs to be addressed with policies increasing efficiency and securing stable supply of basic goods (water, food, raw materials). The good news is that resource efficiency can be improved through government policies (pricing, taxing, smart incentives, mandatory efficiency standards, etc.) provided sufficient political intent and will to withstand the pressure of the beneficiaries of current lax legislations. A series of measurements have already been taken in the wake of rising global oil prices, particularly in the private sector, but are not yet on a level required to ensure long-term competitiveness.

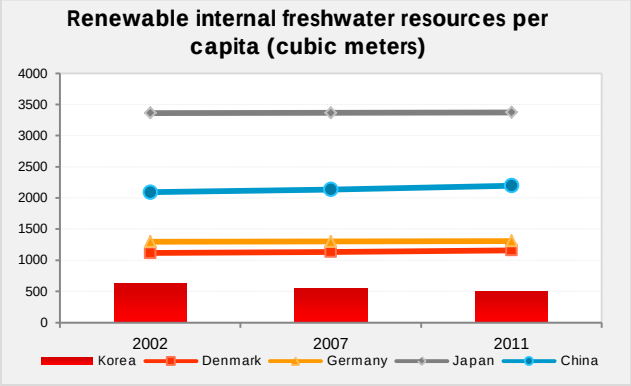
Social Cohesion can also be improved through policies, but are more difficult to implement fair and intelligent, and might have time-delayed impact in reality (e.g. influence on crime rates).



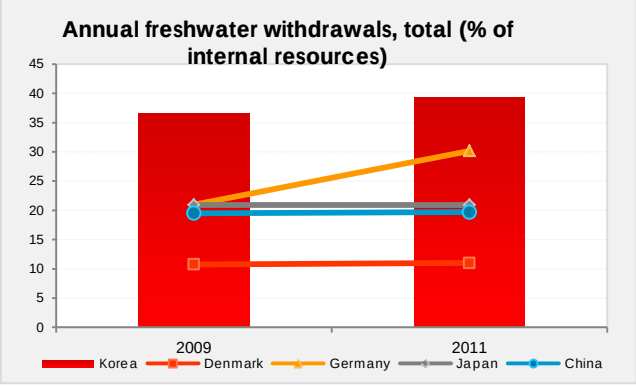


Korea is within the top 20%, but closer to the World average than to the World best. The country score very high in sustainable economic and innovation, but significantly below global averages in Natural Capital and resource intensity





Renewable freshwater resource in Korea are significantly below other industrialised countries, and have decreased over the past 10 years



A very large percentage of Korea's available fresh water is used for human purposes, and further increasing. The withdrawal rate is high above what constitutes a "water stress" situation

Ranking, water

Ranking

Considering the size of Korea's economy, the country's land area is comparably small, and is home to 49 million people. The high population density coupled with the lack of relevant domestic mineral or fossil resources leads to a low Natural Capital score, i.e. the natural capital available per capita is comparably small. Korea is ranked 133 amongst 176 nations globally.

The availability of Natural Capital is more or less given and therefore beyond the direct influence of government policies. International trade can compensate for the availability of local resources, but makes the country dependent on imports of energy, raw materials, and food – and therefore highly exposed to price fluctuations of commodities on the global market place. Increasing internal efficiency is therefore key to lower the dependence and exposure of price fluctuations.

Water

Given regular rain and streams criss-crossing the country, it comes as a surprise to many Koreans that their country is suffering from "water stress" according the UN definition: the availability of renewable fresh-water is fairly low compared to other countries, and has further declined over the past 10 years (although still significantly above the "water stress" definition). More importantly, the annual withdrawal rate of available freshwater stands at nearly 40% (significantly above the relevant definition of water stress). Water is the basic of all life and civilisation. The high withdrawal rate underlines the importance of waste-water treatment and water purification to ensure adequate sanitation and hygiene: water is highly likely being used several times for human purposes between the spring and the seas – where it should also provide living space for water flora and fauna.

It is not yet clear if and how climate change will affect rain patterns on the Korean peninsula. However, should they change significantly, the current theoretical water stress eventually might turn into a real water stress. Education on water usage and increased industrial efficiency in water usage are therefore highly important to ensure availability of sufficient and clean water for all purposes required.

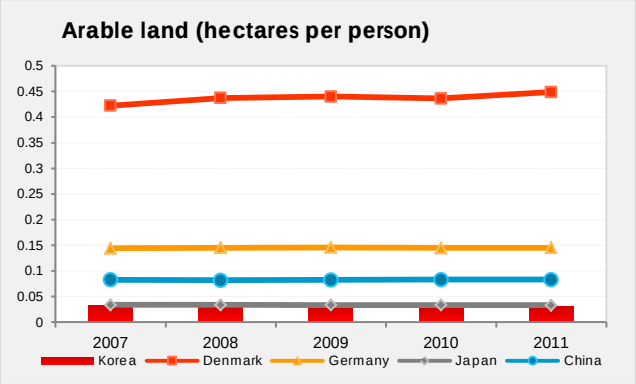
Agriculture & Food

Agriculture & food

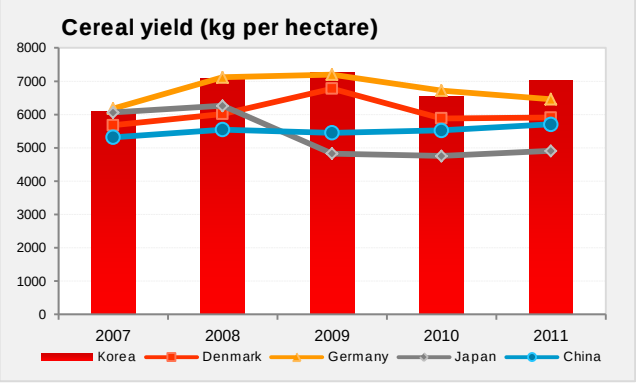
Given the small land mass, high population density and geographical specifications of the country (large areas are mountainous, characterised by steep slopes, roughly equal to the 65% of area covered by forests), it is not surprising that the available arable land per capita is small (comparable to Japan, but only 40% of China, despite the much larger population, and significantly lower than in Western European countries). Agricultural efficiency and yields on the other hand are amongst the highest in the World. The combination of these two factors means that there is little room for increasing domestic food supply, again making the country dependent on imports and the fluctuations on the food commodity markets to feed its population.

Korea's strategic answer is to lease land for agricultural purposes overseas – mostly in fertile, but poor countries in Africa. However, land lease contracts are normally signed with government authorities, often without the consent of local affected people – NGOs therefore refer to this practice as "land grab". This is not only important from the perspective of the locals. Where land lease deals lead to local resistance and/or social unrest, the continued return and sustainability of these projects cannot be guaranteed (it is suggested that Daewoo International's land lease deal with the Madagascar Government over 1.3 million hectares was a key element that led to the revolution of 2009 and the subsequent cancellation of the deal by the new government).

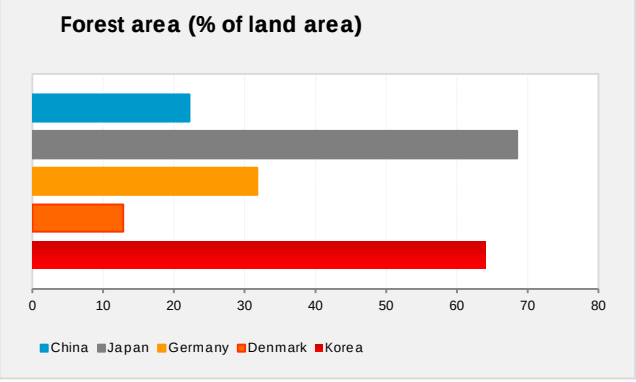
While it is understandable to look overseas for supplies in the absence of obvious domestic resources, it is highly questionable whether such an approach is truly sustainable in the sense of achieving secure long-term supplies. Imported supplies depend on the economic, environmental, and socio-political circumstances in the location of sourcing. It therefore sees advisable to simultaneously look for and invest in new innovative solutions domestically, including vertical agriculture, and terrace farming.



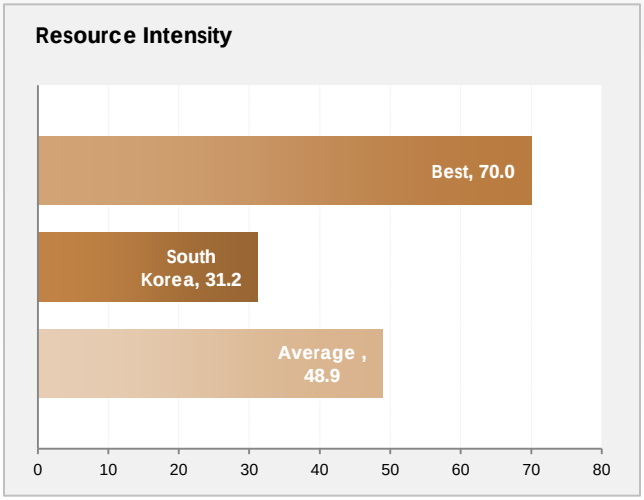
Availability of arable land (land that can be used for agricultural purposes) is low, making the country dependent on food imports and global grain price volatility

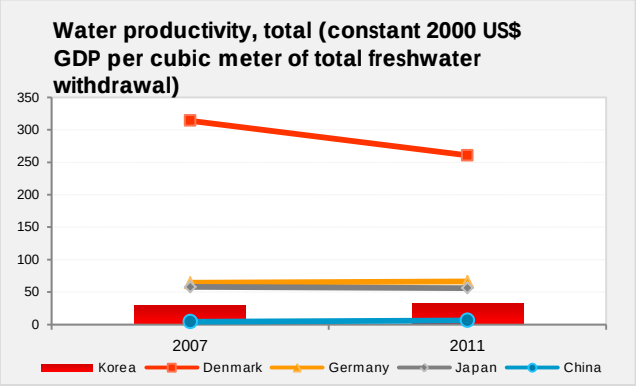


Agricultural yields per area) is amongst the highest in the World, indicating limited upward potential through domestic efficiency improvement

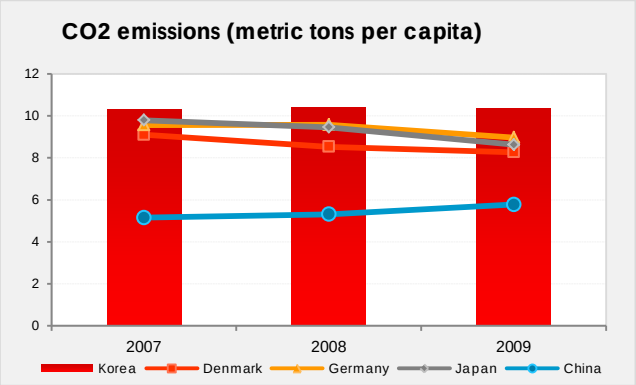


Large areas are covered by forest, testimony to intact biodiversity. The are of forest cover is equal to mountainous areas not suitable for human settlements or conventional agriculture purposes





In addition to low water availability, the Koran water efficiency is comparably low (high amount of water used to generate economic value)



CO_2 emission per capita are 10-20% higher than in other industrialised countries, and have not ben reduced in recent years

Resource Efficiency

Ranking

Korea ranks in the bottom 10% on the resource efficiency ranking, considerably below the global average, preventing a higher ranking in the overall sustainable competitiveness.

The low ranking has a variety of reasons:

- The Korean economy is composed of a higher percentage of energy intensify industries (metal), petrochemical) and heavy industry, in particular compared to OECD averages.
- Dependence on raw material and energy imports (97% of energy used is imported)
- High energy and GHG intensity of the economy compared to OECD countries
- Negative tends: energy and raw material usage as well as GHG intensity has further increased over the past years, contributing to a lower score (the score reflects both absolute values and trends over the past 5 years). Water intensity (water used to produce a certain amount of GDP, GHG emissions per capita, and energy usage per capita are all above the average of industrialised nations, and have been increasing while leading economies have managed to educe raw material and energy consumption per GDP and per capita.

Water

Due to the lack of adequate pricing and education, water as a good is “just available” and therefore not a real concern to private and industrial consumers. However, Korea’s current water intensity is more than double compared to advances economies (or only half as efficient). At the same time, water availability is lower, and available freshwater withdrawal rate significantly higher than in other advanced economies, underlying the importance on increasing water efficiency. The low efficiency suggests that there is a large yet untapped water savings potential which can be realised trough pricing, efficiency improvements and recycling of process water in the industry.

Considering that Korea is technically speaking already facing a water-stress situation (annual fresh-water withdrawal of more than 30%), it is advisable to re-think water-related policies and water management.

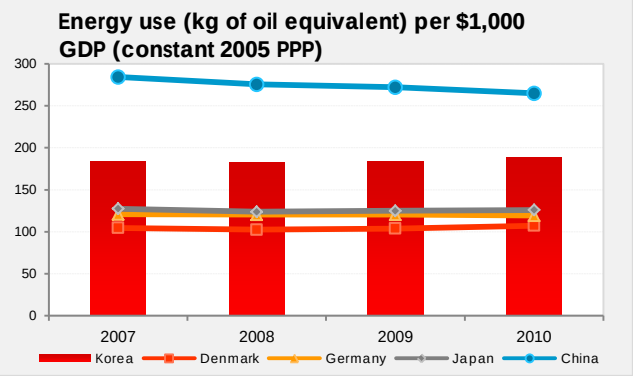
Energy

Korea consumes more energy to generate wealth than other comparable economies (both relative to GDP and per capita). In addition, renewable energy capacity is marginal, and has fallen below China's level of renewable electricity generation. To make matters worse, Korea does not have any domestic fossil energy resources to speak of; 97% of the energy needs are imported, making the country highly dependent on the global commodity markets with its fluctuations: cost of energy imports have nearly tripled since 2000, equivalent to more than 10% of GDP. And global energy prices are not expected to decrease. This implies two main – and urgent – issues:

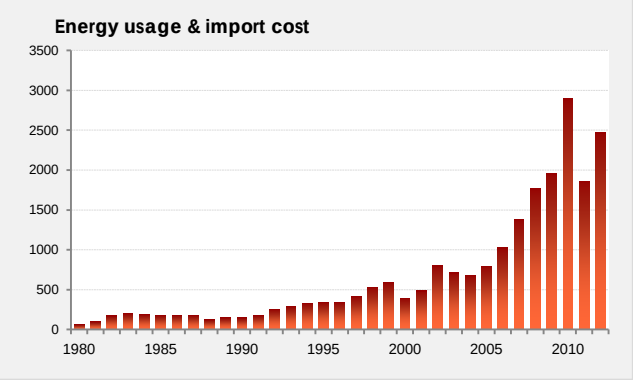
- Energy efficiency needs to be further and drastically increased through smart incentives and ending subsidies for large consumers
- Increasing energy independence trough forcing renewables

If Korea could achieve energy efficiency (measured by intensity) similar to other industrialised countries, energy consumption, and more importantly, the cost associated with energy imports – could be reduced by at least 25%. equivalent of savings of a highly significant 2.5% of GDP (or more). This would require higher and smarter incentives to save energy (e.g. through progressive rather than the current regressive tariff structure).

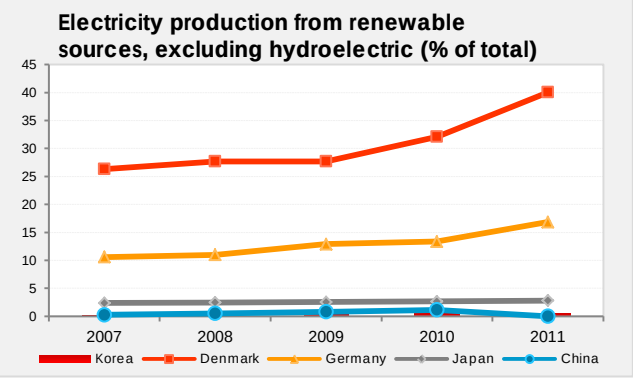
Korea's strategic answer to gain independence from the oil market fluctuations seems to be going nuclear, with 17 new reactors planned in addition to the existing 22. However, the renewable energy potential is barely exploited (especially in terms of on-and off-shore wind energy), and investments in installing renewable energy capacity remain marginal - despite all the government and business talk related to green growth. It is questionable whether the all-eggs-in-one basket strategy on the controversial nuclear path and its unresolved nuclear waste problematic is a wise strategy, especially when there are other, economically viable and renewable alternatives available that would reduce the burden of import cost in the long term.



Energy intensity has been stable or only slightly increasing, but is 50+% above other industrialised economies

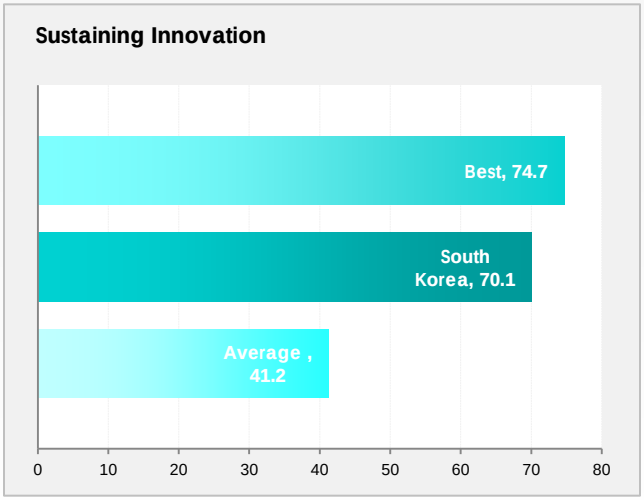


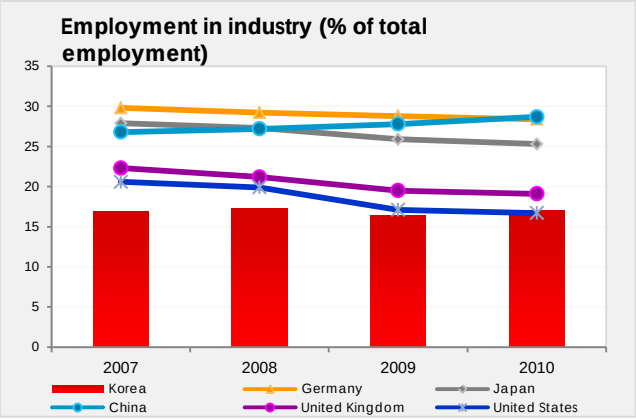
Costs of importing primary energy (oil, coal, gas, uranium) have exploded since the early 2000s, representing more than 10% of GDP, a direct result of misguided energy polices



Renewable energy production in Korea remains close to inexistent, significantly bellow other leading industrialised countries

Innovation and Economic Development





Economies hardest hit by the slump following the financial crises show a stronger decline in manufacturing employment. IN other words: economies with a sound industrial and manufacturing base with lower dependence on the service sector have had less problems to smoother the fall-out of the financial crises

Ranking

Korea ranks second to Singapore only in the innovation and economic development pillar; the score is, accordingly, high above the global average in this section. The high performance is a result of the high emphasises traditionally placed on education in the Korean culture that lead to quality manufacturing and innovation culture and capabilities. Coupled with strategic investments and counter-cycle government investment focus, including modern infrastructure (transport and communication), Korea seem well placed to sustain or increase wealth levels in a competitive global market based on continued innovation.

Sector balance

It is worth noting that countries with larger employment base in the manufacturing sector (such as Germany, Switzerland, Denmark) have been much less affected by the continuing fallout of the financial market crises that started in 2008. Countries with a higher reliance on the service sector – e.g. the US, the UK – have been it significantly harder by the crises. More importantly, countries with a weaker industry have seen further losses in the manufacturing sector following the crisis – a development Korea is well advised to take notice of, in particular in the light of the recent and growing tendencies of outsourcing production and manufacturing to countries with lower labour cost. It is also worth noting that the key drivers for employment and wealth generation in the industrial countries less hit by the financial crises tend to be the small and medium sized industrial companies (Germany, Switzerland), and not the well-known internationally operating conglomerates. The same applies in Korea. While the small and medium sized companies provide nearly 90% of employment, their share of GDP is significantly smaller. The Chaebols, on the other hand, provide less than 10% of employment, but generate more than 60% of Korea's GDP – an imbalance that might threaten the economic stability of the country on the long term trough wakening of the middle classes.

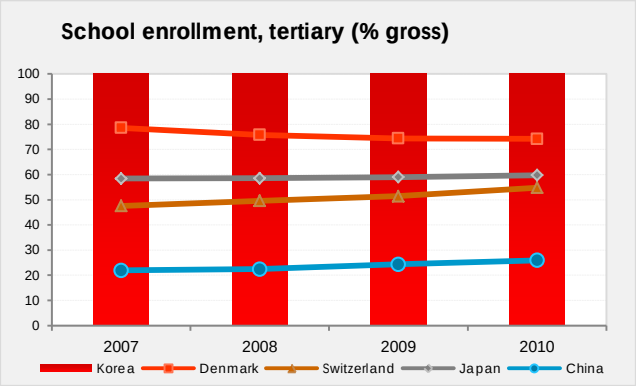
Education & Innovation

Education

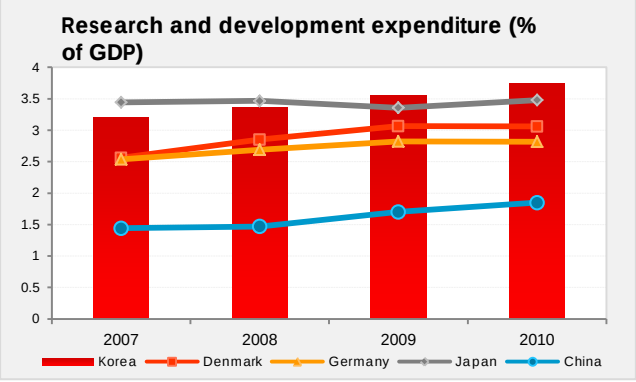
Scholl enrolment in Korea is as high as it is possible, and average years spent in education are amongst the highest in the World. In addition, tertiary education enrolment (university level) is second to none globally. However, countries known for high quality industrial products such as Germany, Switzerland or Japan have a much lower tertiary enrolment rate. The high university enrolment rate is a further sign of the cultural importance of education, which has only grown with the massive reduction of the average family size over the past 3 decades, putting huge pressure on children to become economically successful – which is often cited as one of the main reason for Korea's high teenage suicide rate (the highest in the World). Besides the human tragedy of the negative side effects (and the high financial cost through private tuition: 9% of GDP is spent on education), it is questionable whether all jobs really require a university degree and 16+ years in education, and whether some of this time could not be used in a more meaningful way, e.g. by learning job-related trades and skills rather than theoretical knowledge. There has been some movement in recent times with the establishment of "Meister schools". Formal apprenticeship (learning on the job combined with specific schooling) is also an option worth exploring. An army consisting exclusively of generals will not win a battle, and not everybody can be a team-leader in the economic reality – there is also a need for team members. However, this would require a cultural shift on the part of parents, which might be more difficult to achieve than policy changes.

Innovation

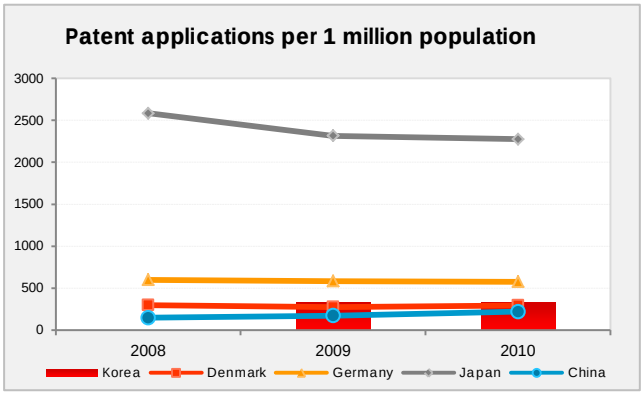
Korean companies have historically entered the global markets on the basis of price competitiveness combined with decent quality. However, cheaper competitors are now pushing into the global markets (in particular China). It is therefore only consequent that spending for R&D has been increasing constantly, and is now surpassing the levels of most OECD countries (measured as % of GDP) in order to enable Korean companies to distinct themselves through innovation, quality and design against cheaper competitors.



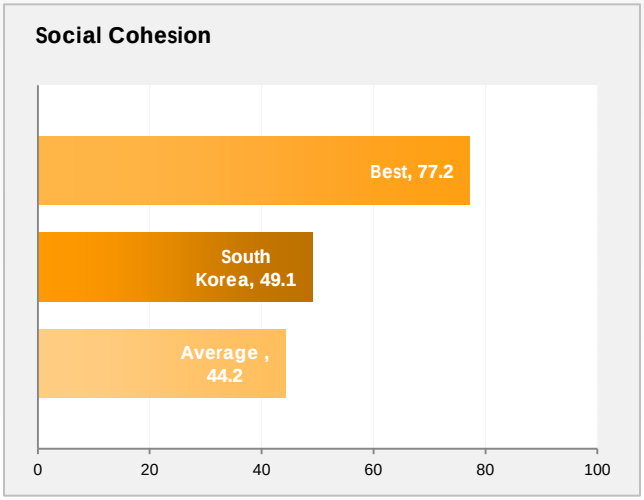
University education in Korea is nearly universal, highlighting the value attached to education and quality of labour force. However, there is a danger to creation an army of generals that has no soldiers

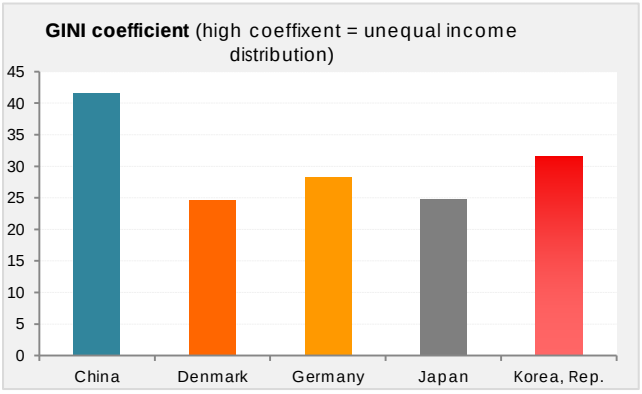


R&D spending on Korea has been rising with the global rise of Korean companies. And is now surpassing most other industrialise economies.

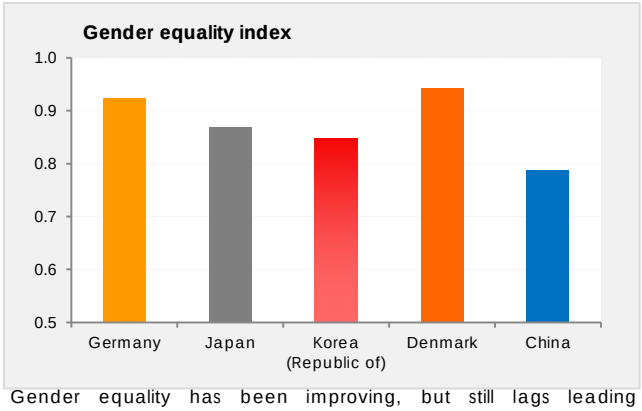


Patent registrations, a proxy for technological innovation, is rising, but still somewhat below industrial powerhouses (Germany, Japan)





GINI coefficient (deviation of household income from the average income, whereby 0 represents perfect equality and 100 perfect inequality): Korea's income inequality is higher than most high-income countries



Gender equality has been improving, but still lags leading industrialised countries

Social Cohesion

Ranking

Korea ranks 61 in the social Cohesion pillar of sustainable competitiveness, 10 % above the global average, but more than 30% below the highest score. Social Cohesion in the Sustainable Competitiveness Index is composed of medical service availability and health performance indicators, but also income and gender equality indicators, crime rates, freedom indicators, and perception of life quality and social services.

While Korea scores high in the medical sphere, social equality is lower than in the advanced OECD countries. Maybe most surprising, crime rates are considerably above OECD averages.

Income Equality

Income inequality in Korea is higher than the more sustainable competitive countries within the OECD, but lower than some other countries, including the US, the UK, and China. The Chaebol at the top of the value chain garn the highest profit and pay high salaries, while the small suppliers are struggling to pay adequate salaries. In order to increase social equality – which is in turn a pillar of social stability – economic democratisation needs to be deepened, including the complex cross-subsidising tax and tariff systems that often favour large companies.

Gender Equality

Korea's gender dynamic is still heavily influenced by traditional (Confucian) values and a family model in which the male part is the bread provider and the female part the family carer, leading to an underrepresentation of women in management and political decision making positions. However, these values and models are slowly changing with the development of the economy. Koreas day-care schools and improved government support for pre-school day-care facilitate these changes, enabling economic participation of the female population and allow women to follow more ambitious career paths than in the past. However, given the cultural shift required (in particular amongst the ruling male management class), it is expected to take more time for these changes to become truly common and generally accepted.

Health & Happiness

Health

Koreas health services are modern and widely available. Albeit some countries have a higher number of trained doctors measured against the population, key health performance indicators such as child mortality and general mortality are in line with the most advanced economies in the World.

Crime

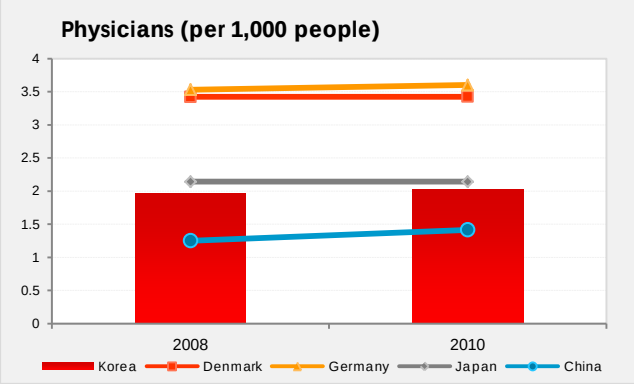
While physical theft and petty theft is not very common in Korea, the homicide rate is higher than the OECD average (despite a complete ban on private possession of fire arms), and his been rising steadily over the past 10 years – a sign of the increasing social inequality. In order to reduce crime rates, it is therefore important to ensure a certain level of equal distribution of income and provision of equal economic opportunities.

Happiness

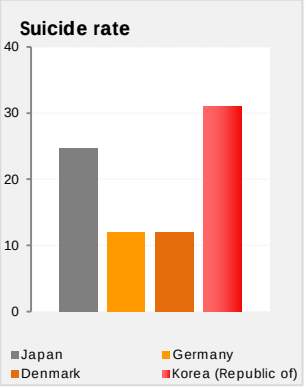
Despite a fairly high standard of life, international surveys reveal a low average life satisfaction. Amongst teenagers, the perceived happiness of Koreans is the lowest within OECD nations. A further indication is the high suicide rate , and the World's highest teenage suicide rate. All this factors are often attributed to the constant burden of the workload and the pressure to perform better than other in order to achieve higher economic and social status. It therefore seems advisable to aim at a better work-life balance, with less pressure to perform. However, it is also argued that the performance-driven attitude and culture is a key element of the recent economic development that raised Korea from poverty to wealth over the past few decades.

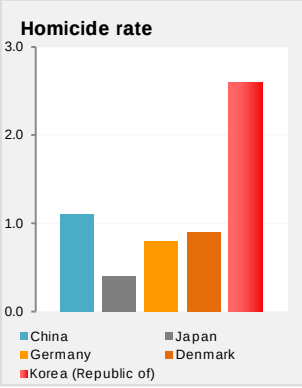
Aging Society

Korea's population is currently fairly even distributed by age groups. However, birth rates have slumped dramatically over the last 20-30 years, and the country will be facing the problems of an aging population within les than 2 decades. This requires a long term planning and overhaul of the current pension systems on part of policy makers, as well as a re-think of the work-force recruitment and retaining on part of companies

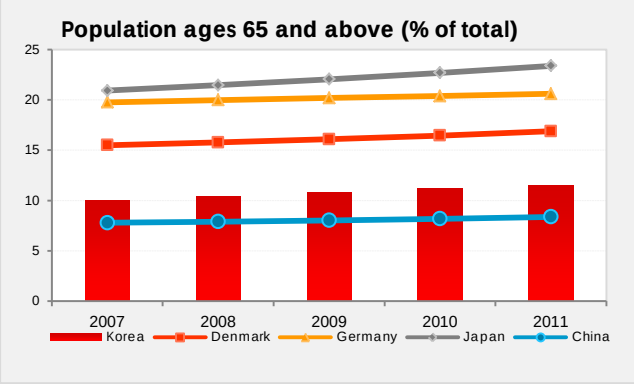


Key health indicators put Korea amongst the highest developed nations. However, most industrialised economies have a still higher doctor availability.





A very high suicide rate is an indication for low life satisfaction and high exposure to stress. The homicide rate is higher that the OECD average, indicating unequal wealth distribution



Koreas demographic distribution is normal. However, the collapse of the birth rates over the past 3 decades suggest that Korea will be an over-aged society similar to Japan with less than 3 decades

at a glance: the tables
global sustainability rankings

Country	Rank	Score
Denmark	1	62.8
Sweden	2	61.6
Finland	3	60.9
Norway	4	60.8
Switzerland	5	59.9
Germany	6	59.7
Canada	7	57.5
Ireland	8	57.1
Austria	9	56.7
Luxembourg	10	56.3
Netherlands	11	55.9
Japan	12	55.2
Iceland	13	55.1
New Zealand	14	54.8
France	15	54.3
Slovenia	16	54.0
Czech Republic	17	53.0
Estonia	18	52.6
Spain	19	52.5
Portugal	20	52.2
Belarus	21	52.1
Italy	22	52.0
Lithuania	23	51.9
Australia	24	51.7
United Kingdom	25	51.6
Belgium	26	51.5
USA	27	51.2
Brazil	28	50.6
Hungary	29	50.4
South Korea	30	50.1
Poland	31	49.9
Singapore	32	49.9
Bhutan	33	49.8
Romania	34	49.6
Slovakia	35	48.5
Latvia	36	48.3
Croatia	37	48.3
China	38	48.2
Uzbekistan	39	47.9
Argentina	40	47.8
Costa Rica	41	47.3
Montenegro	42	47.3
Indonesia	43	47.2
Uruguay	44	47.2

Country	Rank	Score
Malta	45	46.9
Timor-Leste	46	46.9
Israel	47	46.7
Russia	48	46.6
Peru	49	46.6
Serbia	50	46.4
Albania	51	46.4
Bulgaria	52	46.3
Republic of Congo	53	46.1
Tajikistan	54	46.0
Tanzania	55	45.6
Greece	56	45.3
Ghana	57	45.1
Malaysia	58	44.9
Colombia	59	44.9
Zambia	60	44.7
Cyprus	61	44.6
Sri Lanka	62	44.6
Cameroon	63	44.5
Qatar	64	44.4
Dominica	65	44.3
Liberia	66	44.1
Moldova	67	44.1
Guyana	68	44.1
Guinea-Bissau	69	44.0
Mozambique	70	43.7
Laos	71	43.7
Armenia	72	43.5
Macao	73	43.3
Venezuela	74	43.1
Ethiopia	75	43.0
Ecuador	76	43.0
Cote d'Ivoire	77	42.8
Dominican Republic	78	42.8
Paraguay	79	42.7
Suriname	80	42.6
Tunisia	81	42.3
Sudan	82	42.2
Kosovo	83	42.2
Democratic Republic of Congo	84	42.2
Kyrgistan	85	42.1
Sierra Leone	86	42.0
Gambia	87	42.0
Zimbabwe	88	41.9

Country	Rank	Score
Mali	89	41.9
Malawi	90	41.9
Cambodia	91	41.9
Niger	92	41.7
Belize	93	41.7
Papua New Guinea	94	41.7
Georgia	95	41.5
Nepal	96	41.5
Egypt	97	41.4
Guinea	98	41.4
Greenland	99	41.3
Madagascar	100	41.2
Togo	101	41.1
Ukraine	102	41.0
Mauritius	103	41.0
Nicaragua	104	40.8
Burkina Faso	105	40.8
Bosnia and Herzegovina	106	40.7
Azerbaijan	107	40.7
Uganda	108	40.7
Oman	109	40.7
El Salvador	110	40.5
Djibouti	111	40.5
Thailand	112	40.3
Lesotho	113	40.2
Lebanon	114	40.1
Angola	115	40.1
Burma	116	40.0
Panama	117	39.8
Philippines	118	39.8
Chile	119	39.6
Vietnam	120	39.5
Cuba	121	39.3
Senegal	122	39.3
Turkey	123	39.1
Bangladesh	124	39.1
Chad	125	39.1
India	126	38.9
Central African Republic	127	38.9
Rwanda	128	38.8
Mauritania	129	38.7
Kuwait	130	38.6
Burundi	131	38.6
Morocco	132	38.6

Country	Rank	Score
Mongolia	133	38.4
Syria	134	38.4
Gabon	135	38.3
Kazakhstan	136	38.3
Afghanistan	137	38.2
Benin	138	38.2
Turkmenistan	139	38.0
Nigeria	140	38.0
Jamaica	141	37.9
Seychelles	142	37.8
Mexico	143	37.7
Macedonia	144	37.6
Saudi Arabia	145	37.5
Bolivia	146	37.4
Algeria	147	37.3
Eritrea	148	37.2
Jordan	149	37.1
Kenya	150	37.1
Bahrain	151	37.0
Pakistan	152	36.9
Botswana	153	36.8
Guatemala	154	36.6
North Korea	155	36.6
Libya	156	36.3
Comoros	157	36.1
Swaziland	158	35.9
South Africa	159	35.6
United Arab Emirates	160	35.2
Bahamas	161	35.1
Iraq	162	34.8
Iran	163	34.6
Hong Kong	164	34.4
South Sudan	165	34.2
Honduras	166	34.1
Namibia	167	34.0
Brunei	168	33.7
Somalia	169	33.3
Maldives	170	33.2
Fiji	171	32.7
Trinidad and Tobago	172	31.4
Haiti	173	31.2
West Bank and Gaza	174	30.0
Equatorial Guinea	175	28.4
Yemen	176	26.0

Country	Rank	Score	Natural Capital		Resource Intensity		Innovation		Social cohesion	
Denmark	1	62.8	12	55.3	81	51.2	5	66.1	2	74.6
Sweden	2	61.6	30	51.5	55	55.3	10	63.4	3	74.0
Finland	3	60.9	36	50.8	85	50.8	8	64.2	4	73.9
Norway	4	60.8	16	54.0	148	39.2	6	65.9	1	77.2
Switzerland	5	59.9	82	40.4	31	59.7	7	64.9	7	71.5
Germany	6	59.7	69	41.9	86	50.7	3	68.8	10	70.3
Canada	7	57.5	5	60.6	124	44.5	19	58.1	13	64.2
Ireland	8	57.1	28	51.8	93	49.7	24	55.5	9	71.3
Austria	9	56.7	118	36.9	71	52.8	15	61.8	6	71.8
Luxembourg	10	56.3	67	42.7	82	51.0	13	62.5	14	64.1
Netherlands	11	55.9	53	44.8	129	43.7	18	59.5	8	71.4
Japan	12	55.2	85	40.1	107	47.3	4	68.5	35	55.3
Iceland	13	55.1	64	42.9	158	34.7	14	62.1	5	72.9
New Zealand	14	54.8	8	58.6	98	48.9	28	54.1	32	57.0
France	15	54.3	42	49.2	109	47.1	21	56.8	19	61.4
Slovenia	16	54.0	87	39.8	136	41.1	16	60.4	11	68.5
Czech Republic	17	53.0	71	41.8	133	42.5	17	60.2	20	61.3
Estonia	18	52.6	39	50.2	165	30.0	9	63.7	33	55.8
Spain	19	52.5	135	34.7	38	58.2	29	54.0	15	63.0
Portugal	20	52.2	107	38.0	77	51.7	20	57.2	27	58.7
Belarus	21	52.1	19	53.1	118	45.0	27	54.9	47	52.6
Italy	22	52.0	89	39.7	44	57.5	25	55.1	37	54.7
Lithuania	23	51.9	45	46.6	22	62.0	34	51.0	56	50.0
Australia	24	51.7	31	51.4	122	44.7	26	55.0	48	52.6
United Kingdom	25	51.6	154	31.8	50	56.1	32	53.2	12	64.9
Belgium	26	51.5	109	37.5	110	46.9	23	56.2	17	61.7
USA	27	51.2	22	52.6	134	41.9	22	56.3	59	49.2
Brazil	28	50.6	7	59.7	43	57.5	36	50.2	125	36.3
Hungary	29	50.4	81	40.4	73	52.2	35	51.0	29	58.1
South Korea	30	50.1	133	34.9	164	31.2	2	70.1	61	49.1
Poland	31	49.9	127	35.6	111	46.3	33	52.8	16	62.6
Singapore	32	49.9	197	21.7	156	35.1	1	74.7	54	50.3
Bhutan	33	49.8	20	52.9	8	64.9	91	37.9	44	53.2
Romania	34	49.6	108	37.8	62	53.9	37	49.9	31	57.2
Slovakia	35	48.5	136	34.6	72	52.7	40	47.7	23	60.2
Latvia	36	48.3	17	53.9	128	43.9	47	46.0	55	50.1
Croatia	37	48.3	84	40.1	69	53.0	60	43.4	21	60.3
China	38	48.2	149	32.5	143	40.0	11	62.8	65	47.1
Uzbekistan	39	47.9	49	45.1	78	51.5	46	46.9	60	49.2
Argentina	40	47.8	25	52.2	90	50.4	55	44.3	69	46.8
Costa Rica	41	47.3	77	40.9	9	64.3	43	47.3	98	39.6
Montenegro	42	47.3	123	36.1	96	49.1	38	48.5	36	55.0
Indonesia	43	47.2	29	51.5	74	51.9	65	42.3	66	47.0
Uruguay	44	47.2	33	51.2	99	48.8	57	44.0	67	47.0

Country	Rank	Score	Natural Capital		Resource Intensity		Innovation		Social cohesion	
Malta	45	46.9	126	35.6	119	45.0	44	47.1	26	59.5
Timor-Leste	46	46.9	79	40.5	16	63.7	69	41.6	63	47.6
Israel	47	46.7	173	28.0	142	40.2	12	62.7	78	44.9
Russia	48	46.6	23	52.4	152	36.6	30	53.9	114	37.5
Peru	49	46.6	9	57.3	88	50.7	59	43.4	110	37.8
Serbia	50	46.4	117	37.2	144	39.5	42	47.5	25	59.6
Albania	51	46.4	119	36.8	15	63.8	70	41.5	58	49.4
Bulgaria	52	46.3	102	38.4	131	43.6	49	45.4	30	57.9
Republic of Congo	53	46.1	23	52.4	1	70.0	94	37.7	140	33.5
Tajikistan	54	46.0	86	40.0	27	61.5	97	37.4	45	53.0
Tanzania	55	45.6	27	52.0	28	61.5	86	38.6	118	37.3
Greece	56	45.3	103	38.3	108	47.2	56	44.1	49	52.5
Ghana	57	45.1	60	43.7	4	66.6	89	38.0	95	40.0
Malaysia	58	44.9	66	42.7	140	40.5	41	47.7	70	46.3
Colombia	59	44.9	6	59.9	56	55.2	75	40.1	164	29.0
Zambia	60	44.7	14	55.0	19	62.7	96	37.5	157	30.9
Cyprus	61	44.6	178	26.9	139	40.5	39	48.1	22	60.2
Sri Lanka	62	44.6	122	36.2	20	62.7	63	42.4	86	41.3
Cameroon	63	44.5	40	49.3	26	61.7	102	37.0	117	37.4
Qatar	64	44.4	57	44.3	154	35.2	81	39.5	24	60.0
Dominica	65	44.3	143	33.3	6	65.3	61	43.2	96	39.8
Liberia	66	44.1	47	46.1	24	61.9	101	37.1	105	38.4
Moldova	67	44.1	121	36.3	102	48.3	68	41.8	50	52.0
Guyana	68	44.1	3	62.1	92	49.8	93	37.8	154	31.3
Guinea-Bissau	69	44.0	13	55.2	10	64.3	147	31.6	128	35.8
Mozambique	70	43.7	37	50.7	46	57.2	106	36.5	120	37.2
Laos	71	43.7	4	61.5	115	45.6	156	30.2	71	45.9
Armenia	72	43.5	166	28.9	66	53.3	74	40.6	38	54.6
Macao	73	43.3	189	24.0	151	36.7	31	53.9	52	51.0
Venezuela	74	43.1	10	57.0	123	44.6	105	36.5	104	38.5
Ethiopia	75	43.0	58	44.2	25	61.8	135	33.4	85	41.7
Ecuador	76	43.0	61	43.4	61	54.2	80	39.5	103	38.7
Cote d'Ivoire	77	42.8	18	53.2	80	51.2	103	36.9	132	35.0
Dominican Republic	78	42.8	52	44.9	65	53.3	83	39.1	113	37.7
Paraguay	79	42.7	15	54.9	47	56.9	150	31.0	119	37.3
Suriname	80	42.6	2	63.8	117	45.0	146	31.7	121	37.0
Tunisia	81	42.3	147	32.7	95	49.4	64	42.3	72	45.9
Sudan	82	42.2	41	49.2	7	65.3	134	33.4	158	30.3
Kosovo	83	42.2	186	24.8	132	42.9	62	42.6	28	58.5
Democratic Republic of Congo	84	42.2	11	56.2	41	57.6	115	35.3	166	26.3
Kyrgistan	85	42.1	104	38.2	84	50.8	92	37.8	75	45.8
Sierra Leone	86	42.0	32	51.4	49	56.3	129	33.6	138	34.4
Gambia	87	42.0	62	43.2	3	66.8	124	34.1	146	32.9
Zimbabwe	88	41.9	35	51.0	70	52.9	87	38.6	162	29.2

Country	Rank	Score	Natural Capital		Resource Intensity		Innovation		Social cohesion	
Mali	89	41.9	46	46.4	48	56.3	123	34.2	112	37.7
Malawi	90	41.9	74	41.4	35	59.2	127	33.9	91	40.7
Cambodia	91	41.9	48	45.9	30	59.8	145	31.7	100	39.1
Niger	92	41.7	96	39.1	75	51.8	85	38.9	92	40.6
Belize	93	41.7	38	50.4	29	60.1	144	31.8	142	33.5
Papua New Guinea	94	41.7	1	63.8	94	49.5	173	24.3	89	40.9
Georgia	95	41.5	134	34.8	57	55.1	67	41.9	124	36.4
Nepal	96	41.5	164	29.7	12	64.2	128	33.7	68	46.9
Egypt	97	41.4	55	44.4	130	43.6	154	30.8	43	53.7
Guinea	98	41.4	50	45.0	37	58.2	133	33.4	123	36.6
Greenland	99	41.3	180	26.2	166	28.4	54	44.8	18	61.5
Madagascar	100	41.2	26	52.1	32	59.7	162	28.9	136	34.8
Togo	101	41.1	95	39.2	17	63.0	138	32.8	108	37.9
Ukraine	102	41.0	156	31.6	147	39.5	77	39.8	42	53.7
Mauritius	103	41.0	91	39.5	101	48.3	72	41.2	129	35.8
Nicaragua	104	40.8	65	42.7	5	66.2	169	27.3	99	39.5
Burkina Faso	105	40.8	68	42.0	53	55.7	132	33.4	101	39.1
Bosnia and Herzegovina	106	40.7	92	39.5	162	32.3	98	37.3	39	54.5
Azerbaijan	107	40.7	158	31.1	34	59.5	126	33.9	74	45.8
Uganda	108	40.7	76	41.3	54	55.6	100	37.1	141	33.5
Oman	109	40.7	100	38.4	174	17.9	45	47.0	51	51.6
El Salvador	110	40.5	130	35.0	14	64.1	113	35.3	135	34.9
Djibouti	111	40.5	137	34.2	21	62.6	107	36.3	131	35.5
Thailand	112	40.3	129	35.2	161	33.4	48	45.9	84	41.8
Lesotho	113	40.2	54	44.6	2	68.6	142	32.1	168	25.2
Lebanon	114	40.1	187	24.7	126	44.1	79	39.7	46	52.8
Angola	115	40.1	43	49.0	18	62.9	119	34.5	175	21.2
Burma	116	40.0	21	52.7	42	57.6	170	26.5	139	34.2
Panama	117	39.8	63	42.9	68	53.0	139	32.6	116	37.4
Philippines	118	39.8	98	38.7	45	57.5	141	32.2	107	38.3
Chile	119	39.6	105	38.1	105	47.4	90	37.9	115	37.4
Vietnam	120	39.5	75	41.4	153	36.1	136	33.1	53	50.7
Cuba	121	39.3	146	32.8	91	50.0	73	40.8	137	34.6
Senegal	122	39.3	131	35.0	103	48.1	99	37.3	97	39.7
Turkey	123	39.1	183	25.8	138	40.8	50	45.2	88	41.2
Bangladesh	124	39.1	78	40.6	100	48.6	164	28.3	64	47.2
Chad	125	39.1	93	39.4	39	58.2	130	33.5	153	31.7
India	126	38.9	151	32.2	120	44.9	111	35.9	77	45.5
Central African Republic	127	38.9	51	44.9	40	58.1	118	35.2	171	23.0
Rwanda	128	38.8	59	43.8	33	59.5	117	35.2	174	22.1
Mauritania	129	38.7	116	37.3	89	50.4	114	35.3	126	35.9
Kuwait	130	38.6	90	39.5	176	13.6	71	41.3	40	54.2
Burundi	131	38.6	124	36.0	23	62.0	158	29.8	127	35.9
Morocco	132	38.6	139	33.8	76	51.8	137	33.0	87	41.2

Country	Rank	Score	Natural Capital		Resource Intensity		Innovation		Social cohesion	
Sierra Leone	133	35.2	49	47.5	78	47.6	149	25.1	151	27.7
Democratic Republic of Congo	134	35.2	20	54.7	83	46.9	150	25.0	170	21.4
Central African Republic	135	34.9	39	49.6	62	49.3	154	24.4	166	23.9
Malawi	136	34.9	76	42.4	71	48.3	152	24.5	124	31.7
Uganda	137	34.7	63	44.6	96	44.6	138	27.2	150	27.7
Djibouti	138	34.4	100	39.7	81	47.2	157	24.1	108	33.7
Hong Kong	139	34.3	206	17.3	150	35.1	39	47.2	128	30.6
Niger	140	34.1	122	36.0	54	50.4	135	28.0	154	27.1
Mauritania	141	34.0	112	37.2	97	44.3	140	27.0	119	32.5
Botswana	142	34.0	146	33.1	135	39.3	92	36.2	159	26.6
Bolivia	143	33.9	52	47.2	138	38.8	137	27.6	160	26.3
Chad	144	33.9	82	41.1	44	51.3	162	22.4	138	29.0
Guinea	145	33.8	53	46.6	66	48.9	173	20.1	139	28.9
Pakistan	146	33.8	176	28.5	122	41.3	122	30.5	93	37.4
Namibia	147	33.7	165	30.5	134	39.4	112	32.3	105	34.1
Thailand	148	33.7	134	34.5	119	42.2	114	32.0	147	28.1
Brunei	149	33.6	169	29.7	171	24.4	75	40.1	98	35.7
Bahamas	150	33.6	132	34.8	161	30.3	117	31.4	89	38.5
South Africa	151	33.4	101	39.6	169	25.5	80	38.3	158	26.8
Nicaragua	152	33.4	73	42.7	20	54.4	174	18.4	141	28.8
Zimbabwe	153	33.1	47	47.8	110	43.0	147	25.8	171	21.0
Iran	154	33.1	194	23.3	168	27.2	61	43.0	118	32.6
Honduras	155	32.9	92	40.4	55	50.4	161	22.9	161	25.4
Lesotho	156	32.8	65	44.3	41	51.6	160	23.3	175	19.3
Burkina Faso	157	32.7	71	43.8	108	43.2	169	21.4	130	30.0
United Arab Emirates	158	32.6	171	29.5	174	20.4	123	30.3	43	50.2
Rwanda	159	32.6	75	42.5	85	46.6	132	28.4	176	16.7
Togo	160	32.6	105	38.5	68	48.4	165	22.1	140	28.9
Maldives	161	32.4	193	23.6	129	40.4	142	26.7	75	43.1
Eritrea	162	32.0	148	32.9	32	52.7	163	22.4	149	27.8
Burundi	163	31.9	139	33.9	52	50.5	166	22.0	142	28.8
Guatemala	164	31.5	182	26.2	87	46.2	146	26.3	122	32.0
Kenya	165	31.4	172	29.5	79	47.6	134	28.1	167	23.9
Benin	166	31.0	91	40.4	159	31.0	145	26.3	137	29.1
Comoros	167	30.7	140	33.8	69	48.4	171	21.2	157	26.8
South Sudan	168	29.8	170	29.6	109	43.1	158	23.5	146	28.1
Trinidad and Tobago	169	29.6	87	40.6	173	21.8	151	24.7	113	33.2
Somalia	170	29.1	143	33.4	100	44.1	170	21.3	168	23.6
Macao	171	29.1	208	16.5	154	34.0	99	34.6	144	28.6
West Bank and Gaza	172	28.1	187	24.9	145	37.0	156	24.1	133	29.5
Iraq	173	27.6	163	30.7	102	43.7	176	14.5	127	30.6
Haiti	174	27.5	160	30.9	102	43.7	172	20.8	174	20.2
Fiji	175	27.3	88	40.4	172	24.2	155	24.3	169	21.8
Yemen	176	25.0	178	27.6	149	35.2	175	15.2	143	28.7

Country	Rank	Score
Papua New Guinea	1	63.8
Suriname	2	63.8
Guyana	3	62.1
Laos	4	61.5
Canada	5	60.6
Colombia	6	59.9
Brazil	7	59.7
New Zealand	8	58.6
Peru	9	57.3
Venezuela	10	57.0
Democratic Republic of Congo	11	56.2
Denmark	12	55.3
Guinea-Bissau	13	55.2
Zambia	14	55.0
Paraguay	15	54.9
Norway	16	54.0
Latvia	17	53.9
Cote d'Ivoire	18	53.2
Belarus	19	53.1
Bhutan	20	52.9
Burma	21	52.7
USA	22	52.6
Russia	23	52.4
Republic of Congo	23	52.4
Argentina	25	52.2
Madagascar	26	52.1
Tanzania	27	52.0
Ireland	28	51.8
Indonesia	29	51.5
Sweden	30	51.5
Australia	31	51.4
Sierra Leone	32	51.4
Uruguay	33	51.2
Bolivia	34	51.1
Zimbabwe	35	51.0
Finland	36	50.8
Mozambique	37	50.7
Belize	38	50.4
Estonia	39	50.2
Cameroon	40	49.3
Sudan	41	49.2
France	42	49.2
Angola	43	49.0
Gabon	44	47.2

Country	Rank	Score
Lithuania	45	46.6
Mali	46	46.4
Liberia	47	46.1
Cambodia	48	45.9
Uzbekistan	49	45.1
Guinea	50	45.0
Central African Republic	51	44.9
Dominican Republic	52	44.9
Netherlands	53	44.8
Lesotho	54	44.6
Egypt	55	44.4
Trinidad and Tobago	56	44.4
Qatar	57	44.3
Ethiopia	58	44.2
Rwanda	59	43.8
Ghana	60	43.7
Ecuador	61	43.4
Gambia	62	43.2
Panama	63	42.9
Iceland	64	42.9
Nicaragua	65	42.7
Malaysia	66	42.7
Luxembourg	67	42.7
Burkina Faso	68	42.0
Germany	69	41.9
Bahamas	70	41.8
Czech Republic	71	41.8
South Africa	72	41.7
Equatorial Guinea	73	41.6
Malawi	74	41.4
Vietnam	75	41.4
Uganda	76	41.3
Costa Rica	77	40.9
Bangladesh	78	40.6
Timor-Leste	79	40.5
North Korea	80	40.5
Hungary	81	40.4
Switzerland	82	40.4
Croatia	83	40.1
Japan	84	40.1
Tajikistan	85	40.0
Slovenia	86	39.8
Swaziland	87	39.7
Italy	88	39.7

Country	Rank	Score
Kuwait	89	39.5
Mauritius	90	39.5
Bosnia and Herzegovina	91	39.5
Chad	92	39.4
Fiji	93	39.4
Togo	94	39.2
Niger	95	39.1
Philippines	96	38.7
Oman	97	38.4
Benin	98	38.4
Bulgaria	99	38.4
Greece	100	38.3
Kyrgistan	101	38.2
Chile	102	38.1
Seychelles	103	38.0
Portugal	104	38.0
Romania	105	37.8
Belgium	106	37.5
Mexico	107	37.4
Kazakhstan	108	37.4
Saudi Arabia	109	37.4
Turkmenistan	110	37.4
Mauritania	111	37.3
Serbia	112	37.2
Austria	113	36.9
Albania	114	36.8
Syria	115	36.6
Moldova	116	36.3
Sri Lanka	117	36.2
Montenegro	118	36.1
Burundi	119	36.0
Mongolia	120	35.7
Malta	121	35.6
Poland	122	35.6
Algeria	123	35.4
Thailand	124	35.2
El Salvador	125	35.0
Senegal	126	35.0
Honduras	127	34.9
South Korea	128	34.9
Georgia	129	34.8
Spain	130	34.7
Slovakia	131	34.6
Djibouti	132	34.2

Country	Rank	Score
Botswana	133	34.0
Morocco	134	33.8
United Arab Emirates	135	33.8
Guatemala	136	33.6
Dominica	137	33.3
Eritrea	138	32.9
Cuba	139	32.8
Tunisia	140	32.7
Nigeria	141	32.6
China	142	32.5
Macedonia	143	32.4
India	144	32.2
Bahrain	145	31.9
Iraq	146	31.8
United Kingdom	147	31.8
Somalia	148	31.7
Ukraine	149	31.6
Libya	150	31.5
Azerbaijan	151	31.1
Afghanistan	152	30.8
Comoros	153	30.0
Yemen	154	30.0
Nepal	155	29.7
Kenya	156	29.0
Armenia	157	28.9
Namibia	158	28.7
Brunei	159	28.3
West Bank and Gaza	160	28.3
Israel	161	28.0
South Sudan	162	28.0
Jamaica	163	27.8
Haiti	164	27.5
Cyprus	165	26.9
Greenland	166	26.2
Iran	167	26.0
Turkey	168	25.8
Pakistan	169	25.4
Kosovo	170	24.8
Lebanon	171	24.7
Maldives	172	22.5
Singapore	173	21.7
Hong Kong	174	21.0
Jordan	175	19.2

Resource Intensity & Efficiency
Rankings at a glance

Country	Rank	Score
Republic of Congo	1	70.0
Lesotho	2	68.6
Gambia	3	66.8
Ghana	4	66.6
Nicaragua	5	66.2
Dominica	6	65.3
Sudan	7	65.3
Bhutan	8	64.9
Costa Rica	9	64.3
Guinea-Bissau	10	64.3
Comoros	11	64.2
Nepal	12	64.2
Nigeria	13	64.1
El Salvador	14	64.1
Albania	15	63.8
Timor-Leste	16	63.7
Togo	17	63.0
Angola	18	62.9
Zambia	19	62.7
Sri Lanka	20	62.7
Djibouti	21	62.6
Lithuania	22	62.0
Burundi	23	62.0
Liberia	24	61.9
Ethiopia	25	61.8
Cameroon	26	61.7
Tajikistan	27	61.5
Tanzania	28	61.5
Belize	29	60.1
Cambodia	30	59.8
Switzerland	31	59.7
Madagascar	32	59.7
Rwanda	33	59.5
Azerbaijan	34	59.5
Malawi	35	59.2
Eritrea	36	58.5
Guinea	37	58.2
Spain	38	58.2
Chad	39	58.2
Central African Republic	40	58.1
Democratic Republic of Congo	41	57.6
Burma	42	57.6
Brazil	43	57.5
Italy	44	57.5

Country	Rank	Score
Philippines	45	57.5
Mozambique	46	57.2
Paraguay	47	56.9
Mali	48	56.3
Sierra Leone	49	56.3
United Kingdom	50	56.1
Haiti	51	56.0
Namibia	52	56.0
Burkina Faso	53	55.7
Uganda	54	55.6
Sweden	55	55.3
Colombia	56	55.2
Georgia	57	55.1
Kenya	58	54.8
Somalia	59	54.7
Swaziland	60	54.6
Ecuador	61	54.2
Romania	62	53.9
Afghanistan	63	53.8
Guatemala	64	53.5
Dominican Republic	65	53.3
Armenia	66	53.3
South Sudan	67	53.2
Panama	68	53.0
Croatia	69	53.0
Zimbabwe	70	52.9
Austria	71	52.8
Slovakia	72	52.7
Hungary	73	52.2
Indonesia	74	51.9
Niger	75	51.8
Morocco	76	51.8
Portugal	77	51.7
Uzbekistan	78	51.5
Pakistan	79	51.3
Cote d'Ivoire	80	51.2
Denmark	81	51.2
Luxembourg	82	51.0
Honduras	83	51.0
Kyrgistan	84	50.8
Finland	85	50.8
Germany	86	50.7
Botswana	87	50.7
Peru	88	50.7

Country	Rank	Score
Mauritania	89	50.4
Argentina	90	50.4
Cuba	91	50.0
Guyana	92	49.8
Ireland	93	49.7
Papua New Guinea	94	49.5
Tunisia	95	49.4
Montenegro	96	49.1
Syria	97	48.9
New Zealand	98	48.9
Uruguay	99	48.8
Bangladesh	100	48.6
Mauritius	101	48.3
Moldova	102	48.3
Senegal	103	48.1
West Bank and Gaza	104	47.5
Chile	105	47.4
Gabon	106	47.4
Japan	107	47.3
Greece	108	47.2
France	109	47.1
Belgium	110	46.9
Poland	111	46.3
Bolivia	112	46.3
Yemen	113	46.1
Benin	114	45.7
Laos	115	45.6
North Korea	116	45.5
Suriname	117	45.0
Belarus	118	45.0
Malta	119	45.0
India	120	44.9
Fiji	121	44.9
Australia	122	44.7
Venezuela	123	44.6
Canada	124	44.5
Jamaica	125	44.5
Lebanon	126	44.1
Macedonia	127	44.1
Latvia	128	43.9
Netherlands	129	43.7
Egypt	130	43.6
Bulgaria	131	43.6
Kosovo	132	42.9

Country	Rank	Score
Czech Republic	133	42.5
USA	134	41.9
Seychelles	135	41.6
Slovenia	136	41.1
Hong Kong	137	41.0
Turkey	138	40.8
Cyprus	139	40.5
Malaysia	140	40.5
Iraq	141	40.3
Israel	142	40.2
China	143	40.0
Serbia	144	39.5
Mexico	145	39.5
Bahamas	146	39.5
Ukraine	147	39.5
Norway	148	39.2
Algeria	149	38.3
Jordan	150	37.5
Macao	151	36.7
Russia	152	36.6
Vietnam	153	36.1
Qatar	154	35.2
Turkmenistan	155	35.2
Singapore	156	35.1
Maldives	157	35.1
Iceland	158	34.7
Equatorial Guinea	159	34.5
Libya	160	34.3
Thailand	161	33.4
Bosnia and Herzegovina	162	32.3
South Africa	163	31.2
South Korea	164	31.2
Estonia	165	30.0
Greenland	166	28.4
Mongolia	167	26.5
Iran	168	26.3
Brunei	169	24.7
United Arab Emirates	170	22.5
Bahrain	171	19.8
Trinidad and Tobago	172	19.3
Kazakhstan	173	18.3
Oman	174	17.9
Saudi Arabia	175	17.1
Kuwait	176	13.6

Country	Rank	Score
Singapore	1	74.7
South Korea	2	70.1
Germany	3	68.8
Japan	4	68.5
Denmark	5	66.1
Norway	6	65.9
Switzerland	7	64.9
Finland	8	64.2
Estonia	9	63.7
Sweden	10	63.4
China	11	62.8
Israel	12	62.7
Luxembourg	13	62.5
Iceland	14	62.1
Austria	15	61.8
Slovenia	16	60.4
Czech Republic	17	60.2
Netherlands	18	59.5
Canada	19	58.1
Portugal	20	57.2
France	21	56.8
USA	22	56.3
Belgium	23	56.2
Ireland	24	55.5
Italy	25	55.1
Australia	26	55.0
Belarus	27	54.9
New Zealand	28	54.1
Spain	29	54.0
Russia	30	53.9
United Kingdom	31	53.2
Poland	32	52.8
Lithuania	33	51.0
Hungary	34	51.0
Brazil	35	50.2
Romania	36	49.9
Montenegro	37	48.5
Cyprus	38	48.1
Slovakia	39	47.7
Malaysia	40	47.7
Serbia	41	47.5
Costa Rica	42	47.3
Malta	43	47.1
Oman	44	47.0

Country	Rank	Score
Uzbekistan	45	46.9
Latvia	46	46.0
Thailand	47	45.9
Bulgaria	48	45.4
Turkey	49	45.2
Bahrain	50	45.1
Hong Kong	51	45.0
Iran	52	45.0
Greenland	53	44.8
Argentina	54	44.3
Greece	55	44.1
Uruguay	56	44.0
Saudi Arabia	57	44.0
Peru	58	43.4
Croatia	59	43.4
Dominica	60	43.2
Kosovo	61	42.6
Sri Lanka	62	42.4
Tunisia	63	42.3
Indonesia	64	42.3
Kazakhstan	65	42.0
Georgia	66	41.9
Moldova	67	41.8
Timor-Leste	68	41.6
Albania	69	41.5
Kuwait	70	41.3
Mauritius	71	41.2
Cuba	72	40.8
Armenia	73	40.6
Colombia	74	40.1
Mongolia	75	40.0
Ukraine	76	39.8
Brunei	77	39.8
Lebanon	78	39.7
Ecuador	79	39.5
Qatar	80	39.5
Seychelles	81	39.3
Dominican Republic	82	39.1
Libya	83	39.0
Niger	84	38.9
Tanzania	85	38.6
Zimbabwe	86	38.6
Turkmenistan	87	38.6
Ghana	88	38.0

Country	Rank	Score
Chile	89	37.1
Bhutan	90	37.1
Kyrgistan	91	37.0
Guyana	92	36.3
Republic of Congo	93	36.2
Algeria	94	36.1
Zambia	95	35.7
Tajikistan	96	35.4
Bosnia and Herzegovina	97	35.4
Senegal	98	35.2
Uganda	99	34.6
Liberia	100	34.6
Cameroon	101	34.6
Cote d'Ivoire	102	34.0
Jordan	103	33.9
Venezuela	104	33.6
Mozambique	105	33.5
Djibouti	106	33.4
South Africa	107	33.4
Jamaica	108	33.3
Benin	109	32.8
India	110	32.5
Kenya	111	32.4
El Salvador	112	32.3
Mauritania	113	32.1
Democratic Republic of Congo	114	32.0
Mexico	115	31.6
Rwanda	116	31.5
Central African Republic	117	31.4
Angola	118	31.4
Botswana	119	31.2
Eritrea	120	31.2
Pakistan	121	31.2
Mali	122	30.5
Gambia	123	30.3
Macedonia	124	30.2
Azerbaijan	125	30.1
Malawi	126	29.9
Nepal	127	29.6
Sierra Leone	128	29.6
Chad	129	29.2
Nigeria	130	28.7
Burkina Faso	131	28.5
Guinea	132	28.4

Country	Rank	Score
Sudan	133	33.4
Ethiopia	134	33.4
Vietnam	135	33.1
Morocco	136	33.0
Togo	137	32.8
Panama	138	32.6
Swaziland	139	32.3
Philippines	140	32.2
Lesotho	141	32.1
Iraq	142	31.9
Belize	143	31.8
Cambodia	144	31.7
Suriname	145	31.7
Guinea-Bissau	146	31.6
Syria	147	31.2
Afghanistan	148	31.2
Paraguay	149	31.0
United Arab Emirates	150	31.0
Maldives	151	31.0
Guatemala	152	30.8
Egypt	153	30.8
North Korea	154	30.2
Laos	155	30.2
Bahamas	156	29.8
Burundi	157	29.8
Comoros	158	29.6
Bolivia	159	29.1
Trinidad and Tobago	160	28.9
Madagascar	161	28.9
South Sudan	162	28.7
Bangladesh	163	28.3
Namibia	164	27.8
Somalia	165	27.8
Honduras	166	27.7
Gabon	167	27.5
Nicaragua	168	27.3
Burma	169	26.5
Equatorial Guinea	170	26.1
Haiti	171	24.6
Papua New Guinea	172	24.3
Fiji	173	22.9
West Bank and Gaza	174	21.4
Yemen	175	15.6

Social Cohesion
Rankings at a glance

Country	Rank	Score
Norway	1	77.2
Denmark	2	74.6
Sweden	3	74.0
Finland	4	73.9
Iceland	5	72.9
Austria	6	71.8
Switzerland	7	71.5
Netherlands	8	71.4
Ireland	9	71.3
Germany	10	70.3
Slovenia	11	68.5
United Kingdom	12	64.9
Canada	13	64.2
Luxembourg	14	64.1
Spain	15	63.0
Poland	16	62.6
Belgium	17	61.7
Greenland	18	61.5
France	19	61.4
Czech Republic	20	61.3
Croatia	21	60.3
Cyprus	22	60.2
Slovakia	23	60.2
Qatar	24	60.0
Serbia	25	59.6
Malta	26	59.5
Portugal	27	58.7
Kosovo	28	58.5
Hungary	29	58.1
Bulgaria	30	57.9
Romania	31	57.2
New Zealand	32	57.0
Estonia	33	55.8
Jordan	34	55.3
Japan	35	55.3
Montenegro	36	55.0
Italy	37	54.7
Armenia	38	54.6
Bosnia and Herzegovina	39	54.5
Kuwait	40	54.2
United Arab Emirates	41	53.9
Ukraine	42	53.7
Egypt	43	53.7
Bhutan	44	53.2
Tajikistan	45	53.0
Lebanon	46	52.8
Belarus	47	52.6
Australia	48	52.6
Greece	49	52.5
Moldova	50	52.0
Oman	51	51.6
Macao	52	51.0
Vietnam	53	50.7
Singapore	54	50.3
Latvia	55	50.1
Lithuania	56	50.0
Kazakhstan	57	49.7
Albania	58	49.4
USA	59	49.2
Uzbekistan	60	49.2
South Korea	61	49.1
Mongolia	62	48.4
Timor-Leste	63	47.6
Bangladesh	64	47.2
China	65	47.1
Indonesia	66	47.0
Uruguay	67	47.0
Nepal	68	46.9
Argentina	69	46.8
Malaysia	70	46.3
Laos	71	45.9
Tunisia	72	45.9
Maldives	73	45.8
Azerbaijan	74	45.8
Kyrgistan	75	45.8
Jamaica	76	45.6
India	77	45.5
Israel	78	44.9
Saudi Arabia	79	44.1
Afghanistan	80	43.8
Bahrain	81	43.5
Macedonia	82	43.3
Syria	83	42.8
Thailand	84	41.8
Ethiopia	85	41.7
Sri Lanka	86	41.3
Morocco	87	41.2
Turkey	88	41.2
Papua New Guinea	89	40.9
Pakistan	90	40.9
Malawi	91	40.7
Niger	92	40.6
Turkmenistan	93	40.3
Mexico	94	40.3
Ghana	95	40.0
Dominica	96	39.8
Senegal	97	39.7
Costa Rica	98	39.6
Nicaragua	99	39.5
Cambodia	100	39.1
Burkina Faso	101	39.1
Gabon	102	39.1
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