

INTERCOUNTRY COMPARISON OF DEVELOPMENT INDICES

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This is to certify that AMRITA BANERJEE, MEGHA SINGHANIA, SUMAIYAAH ISLAM, UDITA MUKHERJEE AND UPALI DEB have completed their project work for the B.Sc. degree with Major in Economics under my supervision for the session 2017-2020. The title of the work is “INTERCOUNTRY COMPARISON OF DEVELOPMENT INDICES”. It is now ready for submission towards of partial fulfilment of the B.Sc. degree with Major in Economics.

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INTERCOUNTRY COMPARISON OF DEVELOPMENT INDICES

ABSTRACT

The aim of this paper was to compare countries on the basis of different economic and social indices between the years 2010 to 2018. GDP per capita has been considered as our economic indicator. For the social indicators, we started with HDI and saw how it evolved over the years to GDI, IHDI and SDI in order to include more qualitative factors such as gender gap, inequality and environment. The relationship between these and some other development indices such as GGI, GII, Ease of Doing Business, CPI, World Happiness, Global Peace, Rule of Law, Economic Openness, Ecological Footprint and Index of Social Progress, were analyzed using correlation matrices. An inclusive development index, which considers both economic and social indicators, was constructed. We used this measure to rank different countries of the world and performed a region-wise analysis. In terms of this new development measure, it was concluded that Europe and Central Asia and North America are the leading performers; East Asia and Pacific, Latin America and Caribbean, Middle East and North Africa and South Asia perform moderately; Sub Saharan Africa was consistently the worst performer during our period of study.

1. INTRODUCTION

Development refers to an improvement in certain qualitative factors along with economic growth. In the twentieth century, economists associated economic development primarily with economic growth. Over the years, the definition of economic development evolved to include broader aspects relating to human welfare. Economic growth has been described as but “one aspect of the process of economic development” by Amartya Sen. The wealth of a country, and its level of industrialization is measured by economic indicators. Social indicators elucidate how a country tries to use its wealth to improve the quality of life of its citizens. A country might have a high value for its economic indicators, however, it might not perform so well in terms of its social indicators. For instance, an economic indicator like Gross Domestic Product per capita does not take into consideration social elements like education, life expectancy, infrastructure, environmental impact, personal rights, inequality, happiness, corruption, internal and external conflict. Thus, economic indicators alone cannot truly reflect the overall development in a country. Development indicators and indices are convenient and efficient tools for measuring progress and recognizing areas for social advancement. With the on going climate crisis, the emphasis should be on establishing a development index that revolves around sustainability.

2. LITERATURE REVIEW

Through the course of this paper, we have established certain relationships among the different development indicators we used, that has been substantiated by the following papers.

Deb (2015) states that there exists a strong positive correlation between GDP and HDI. Lopez-Claros and Zahidi (2005) state both qualitative and quantitative presence of women in the workforce encourages economic development in countries. Stotsky (2006) states that gender and development are complementary to each other, having two-way causality. Knowles et al. (2002) suggest that education of women leads to all round growth in the economy. Aron (2000) concluded that corruption is accredited to the lack of women participation in policy making. Results of the regression analysis conducted by Qaisar et al. (2017) show a strong positive relation between Index of Social Progress (ISP) and GDP per capita (PPP). Veenhoven (2011) suggests that social development leads to economic development.

Moorthy and Jason (2016) summarize that countries with better Ease of Doing Business (EDB) rankings tend to have high per capita income. Moreover, EDB considers well defined property rights which are essential for economic growth and result in higher income.

The Institute of Economics and Peace (2018) states that countries which have shown the greatest improvement in terms of the Global Peace Index have recorded a seven times higher GDP growth compared to the countries which have deteriorated in terms of their level of peace. According to Jorgenson and Givens (2015), the correlation between GDP per capita and per capita ecological footprint is relatively high.

Satrovic et. al. (2018) illustrate the significant positive impact of control of corruption on happiness. Shao et al (2007) found a negative correlation between corruption and long-term growth of a country. Ahmad and Arjumand (2016) concluded that high corruption levels in any country negatively affect GDP per capita. Mauro (1995) and Grabova (2014) found a negative correlation between corruption and GDP growth.

Rigobon and Rodrik (2004) identify the existence of a positive relationship between trade openness and Rule of Law.

3. OBJECTIVE AND RESEARCH QUESTIONS

We wanted to do an inter-country comparison based on different social and economic development indices. Our aim then was to create a more inclusive development index which would consider both economic and social factors. Our primary research questions are the following:

- (i) Do the rankings of the different countries remain the same with respect to various development indicators? If not, why do they change?
- (ii) Can we construct a few new development indicator(s) that will capture all the aspects of development as defined in various literatures?
- (iii) How are the rankings of the different countries affected with respect to our newly constructed indices?
- (iv) Can we compare popular development indices with our indices and provide explanations in case of striking differences?

4. DATA AND METHODOLOGY

This study was conducted using the quantitative research method. The results are likely to be free of researcher bias as secondary data was used, which was readily available. We have collected the data of HDI, IDHI, GDI, and GII from UNDP; GDP and EDB from the World Bank; SDI from Sustainable Development Index website; Happiness Report from Global Economy; Ecological Footprint from Footprint Network and Index of Social Progress from Social Progress Imperative. We used this data to compare countries vis-a-vis the development indicators. Radars were constructed for HDI, GDI, IHDI, SDI, GGI and they compared the performances of twenty countries each, from high, middle and low income groups. They showed a consistent relationship over our period of study. Hence, we constructed correlation matrices for only two years - 2015 and 2018. The correlation matrix established a relationship among all the previously mentioned indices along with some other development indices, showing how changes in one index affect another. We attempted to construct a new, more inclusive development index. The numerator of the new index is calculated by taking the geometric mean of IHDI and GGI, thus taking into account not only the HDI, but also inequality and gender. The denominator was constructed using indicators of environmental impact – material footprint and CO2 emissions. We did a region-wise analysis based on the new index. We compared the New Index with other development indicators, wherein maps created using ArcGIS were used. Finally, we incorporated Rule of Law into the New Index and observed how the rankings changed for the year 2015.

5. VARIOUS DEVELOPMENT INDICATORS

GDP PER CAPITA (PPP 2011 \$)

Gross Domestic Product measures the value of all final goods and services produced within a country in a given year. It is divided by the total population to obtain GDP per capita. GDP (PPP) is Gross Domestic Product converted to international dollars using purchasing power parity rates. It is measured in real terms, adjusted by PPP and thus, it takes into account the relative cost of living and the inflation rates of the countries rather than using only the exchange rates. Since it does not reflect the inequality in the distribution of income or consider qualitative factors, it is not an ideal indicator of the level of development.

HUMAN DEVELOPMENT INDEX (HDI)

The Human Development Index (HDI) was introduced in 1990 by Mahbub ul Haq. The aim of HDI was to focus on social dimensions of development instead of just the economic one using GDP per capita (PPP). HDI consists of 3 indicators- Health, Education and Income. It is calculated by taking the geometric mean of the dimension indices of these three indicators:

$$1) \text{ LIFE EXPECTANCY INDEX} = \frac{(LE-20)}{(85-20)} ,$$

where LE stands for Life expectancy in years.

$$2) \text{ EDUCATION INDEX} = \frac{(MYSI + EYSI)}{2} ,$$

$$MYSI = \frac{(MYS-0)}{(15-0)} \text{ and,}$$

$$EYSI = \frac{(EYS-0)}{(18-0)}$$

where MYSI is mean years of schooling index and EYSI is expected years of schooling index.

$$3) \text{ INCOME INDEX} = \frac{[\ln(GNIpc) - \ln(100)]}{[\ln(75000) - \ln(100)]}$$

where GNIpc is Gross National Income per capita (2011 PPP \$).

$$HDI = (I_{HEALTH} * I_{EDUCATION} * I_{INCOME})^{1/3}$$

A major drawback of HDI is that it does not consider the income inequality in a country, ecological sustainability or gender gap.

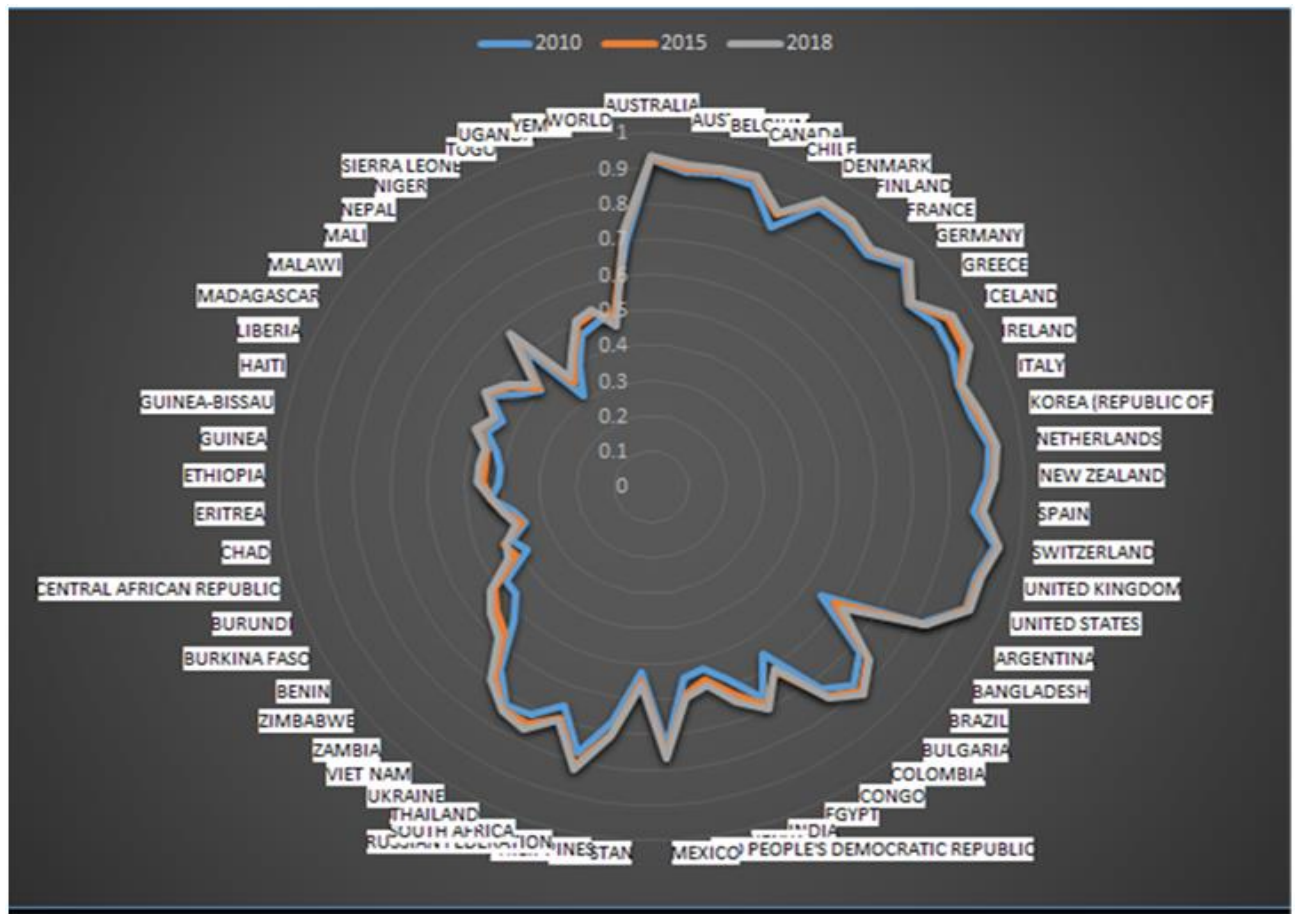


FIGURE 1: HDI RADAR

We have selected 20 countries each from the high, middle and low income groups for the years 2010, 2015 and 2018. From the radar, no significant change over the years can be observed.

GENDER RELATED DEVELOPMENT INDEX (GDI)

GDI was introduced in 1995 as an improvement over HDI, which does not take into account the disparity between males and females. GDI calculates the ratio of HDIs separately for males and females, thereby highlighting the gap between the two genders.

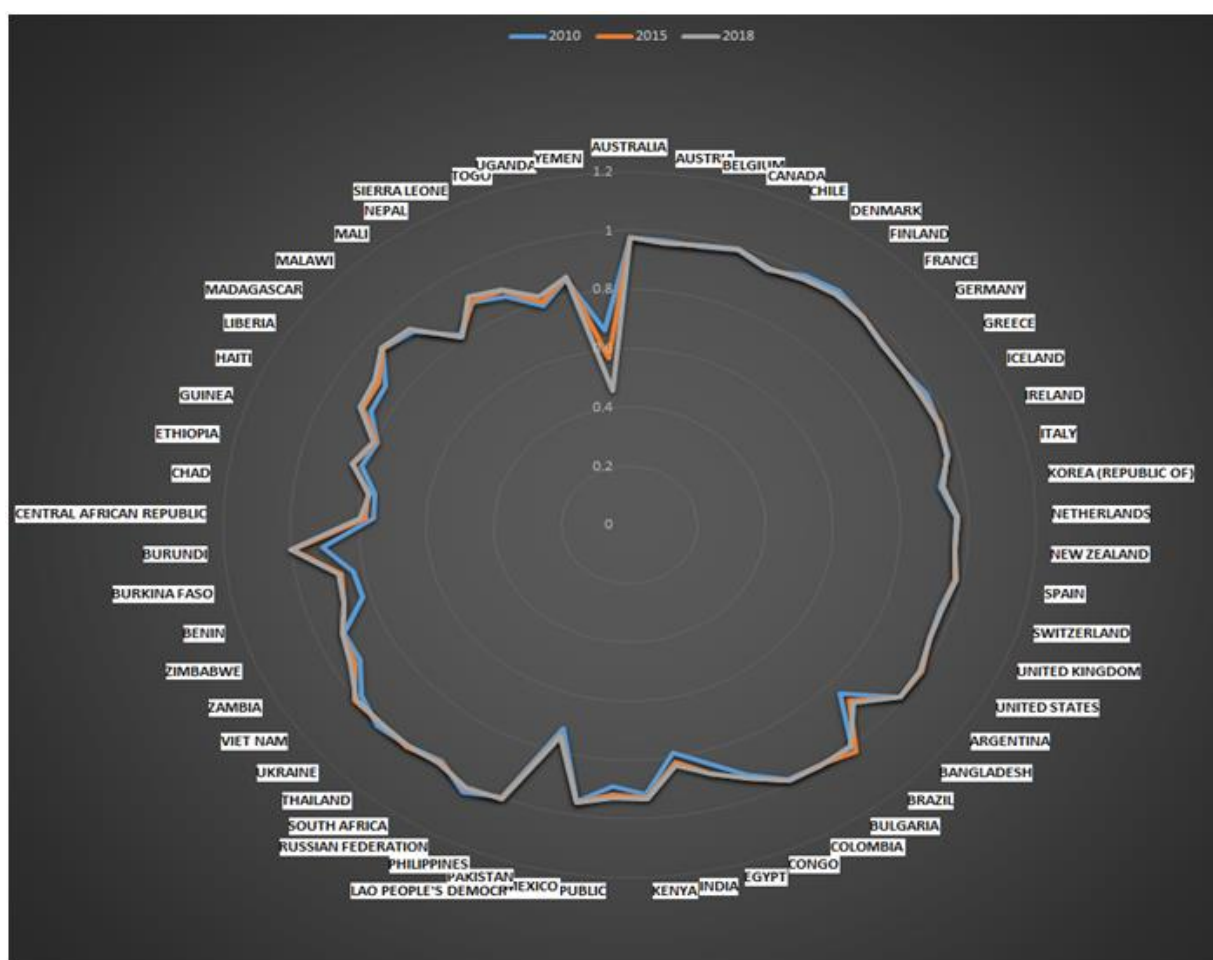


FIGURE 2: GDI RADAR

From Figure 2, it is observed that the top performers are Germany, Vietnam and Denmark. Denmark and Germany perform equally well in all the indicators. Vietnam's sex ratio is very close to unity. However, countries like India and China perform moderately in this index due to their male biased sex ratio and low income attainment. The worst performers are Mali, Burkina Faso, Chad and Yemen.

INEQUALITY ADJUSTED HUMAN DEVELOPMENT INDEX (IHDI)

The IHDI was proposed by Foster, Lopez-Calva and Szekely; it draws on the Atkinson family of inequality measures. It is calculated as the geometric mean of inequality-adjusted indicators of HDI. The human development cost of inequality creates the difference between HDI and IHDI, that is, the loss of human development due to the inequality.

$$IHDI = [(1 - A_{HEALTH}) * (1 - A_{EDUCATION}) * (1 - A_{INCOME})]^{1/3} * HDI$$

$LOSS\ IN\ HDI\ DUE\ TO\ INEQUALITY = 1 - [(1 - A_{HEALTH}) * (1 - A_{EDUCATION}) * (1 - A_{INCOME})]^{1/3}$,
where A is the inequality measure.

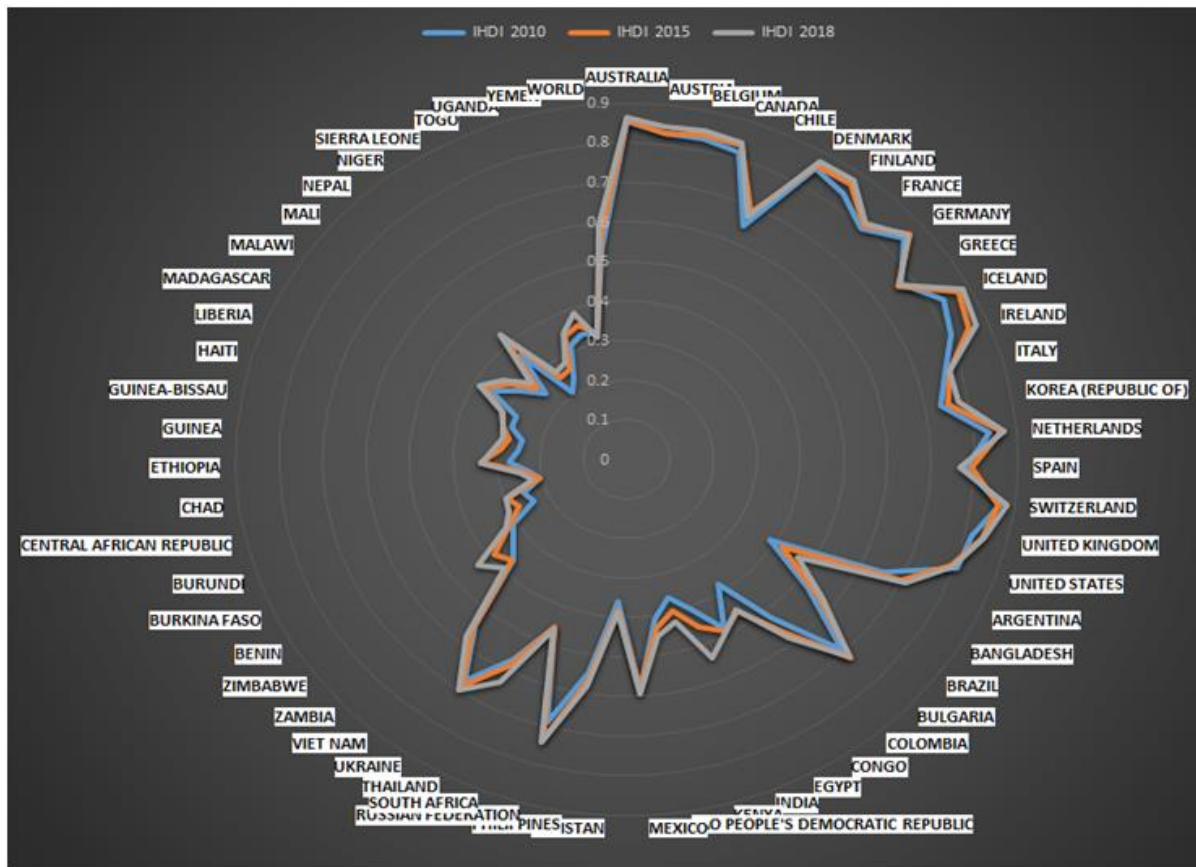


FIGURE 3: IHDI RADAR

The top performers are Switzerland, Iceland and Canada, due to their high employment rates and low income inequality resulting from a narrow wage dispersion. The worst performers are Burkina Faso, Mali and Niger.

SUSTAINABLE DEVELOPMENT INDEX (SDI)

HDI does not take into account ecological sustainability and this became its main criticism due to the ongoing climate change crisis. SDI considers material footprint and carbon dioxide emissions along with the three indicators of HDI. It focuses on the ecological efficiency of countries in delivering human development. The base components of HDI are divided by the ecological overshoot, that is, the extent to which consumption-based CO2 emissions and material footprint exceed per-capita shares of planetary boundaries.

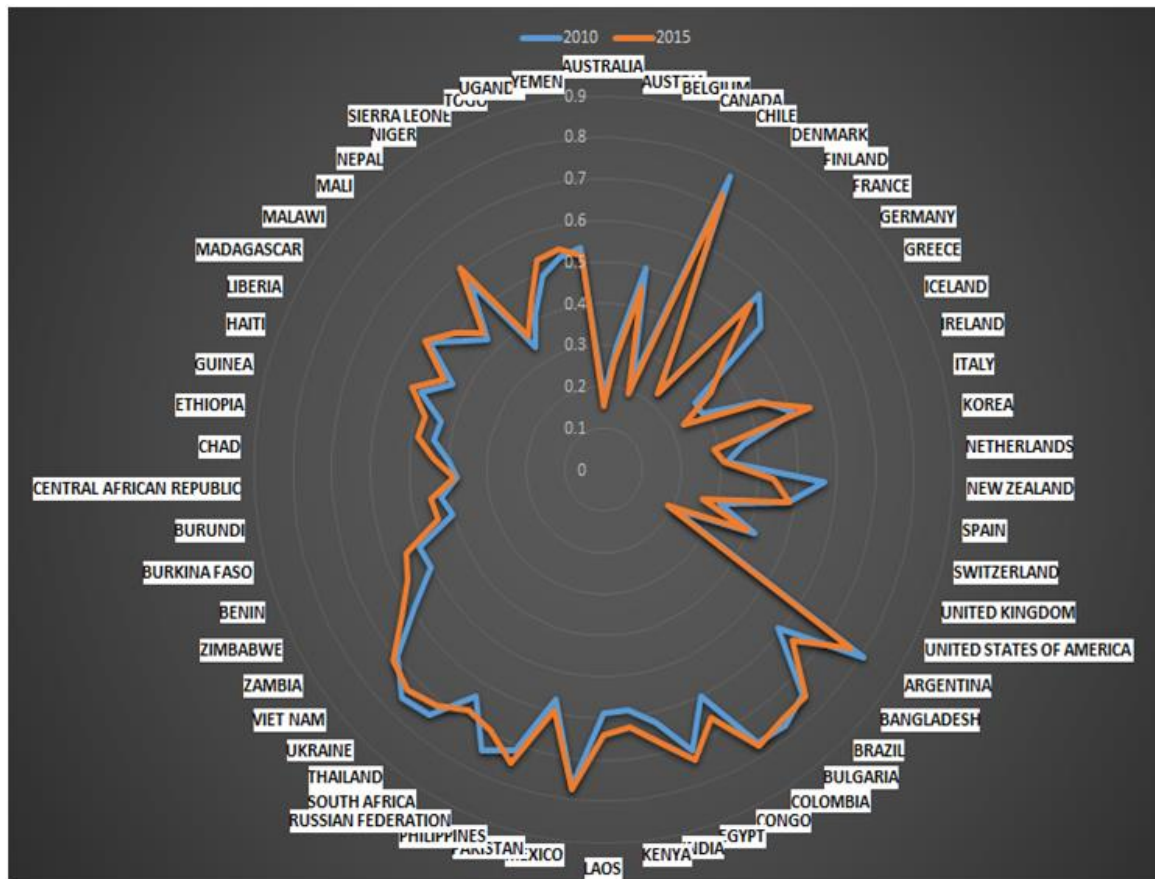


FIGURE 4: SDI RADAR

The top performers are Cuba, Costa Rica and Sri Lanka. The government of Cuba undertakes eco-friendly policies, thereby reducing emissions. Costa Rica has high life expectancy and has also implemented measures for ecological sustainability. The government of Sri Lanka takes measures to improve education, health and ecological sustainability. United States of America, Canada and Australia perform poorly in this index due to their levels of CO2 emissions resulting from high consumption levels.

HDI vs. SDI

We see that the top performers in HDI perform very poorly in SDI due to their unsustainable levels of economic activity. It is implausible for the high income countries to reduce their CO2 emissions while maintaining their existing levels of consumption. Even if these high income countries reduce their emissions by 1%, it will not be enough to meet the Paris Climate Agreement target. The middle income countries have CO2 emissions and material footprint that are only moderately in excess of their ecological boundaries. Therefore, it can be expected that they reduce their emission to sustainable levels, accompanied by steadily rising income.

However, this increase in income will not be enough to compete with the high income countries. As for the low income countries, they can increase their income levels significantly without any detrimental impact on the environment.

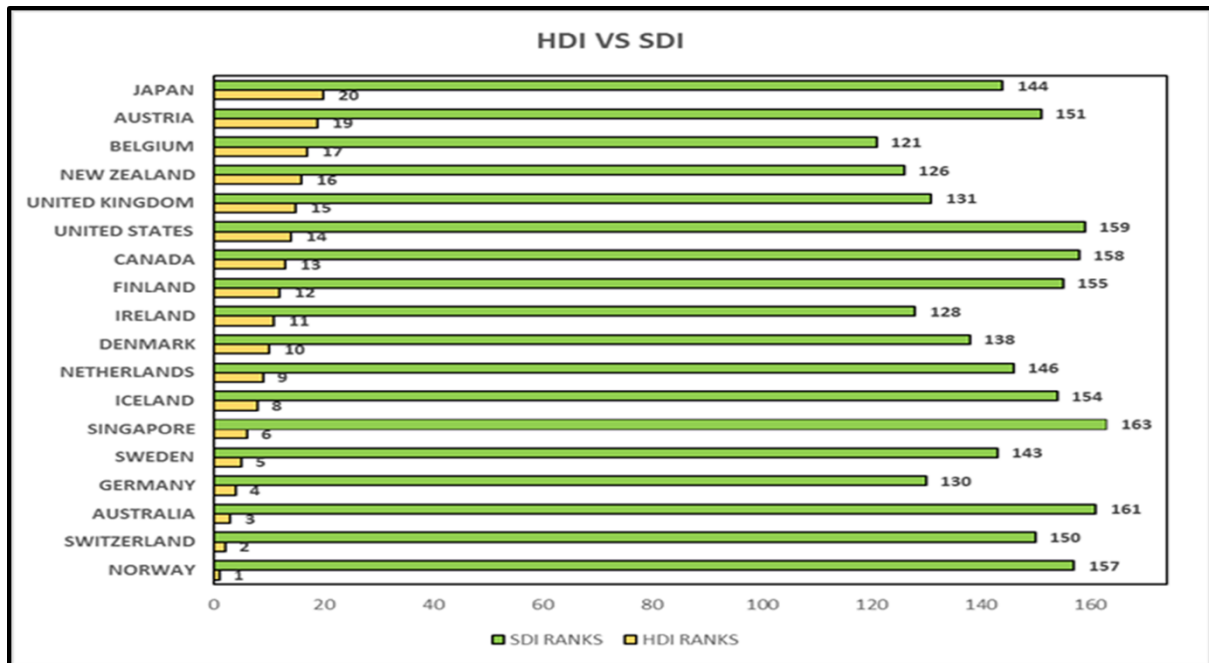


FIGURE 5: HDI VS SDI

GENDER GAP INDEX (GGI)

The Global Gender Gap Index was introduced by World Economic Forum in 2006. It captures the scope of gender based disparities and their progress. The four components of GGI are Economic Participation and Opportunity, Educational Attainment, Health and Survival and Political Empowerment. From the radar in Figure 6, we can see that Iceland, Finland, Ireland are the top performers and Yemen, Pakistan and Egypt are at the bottom.

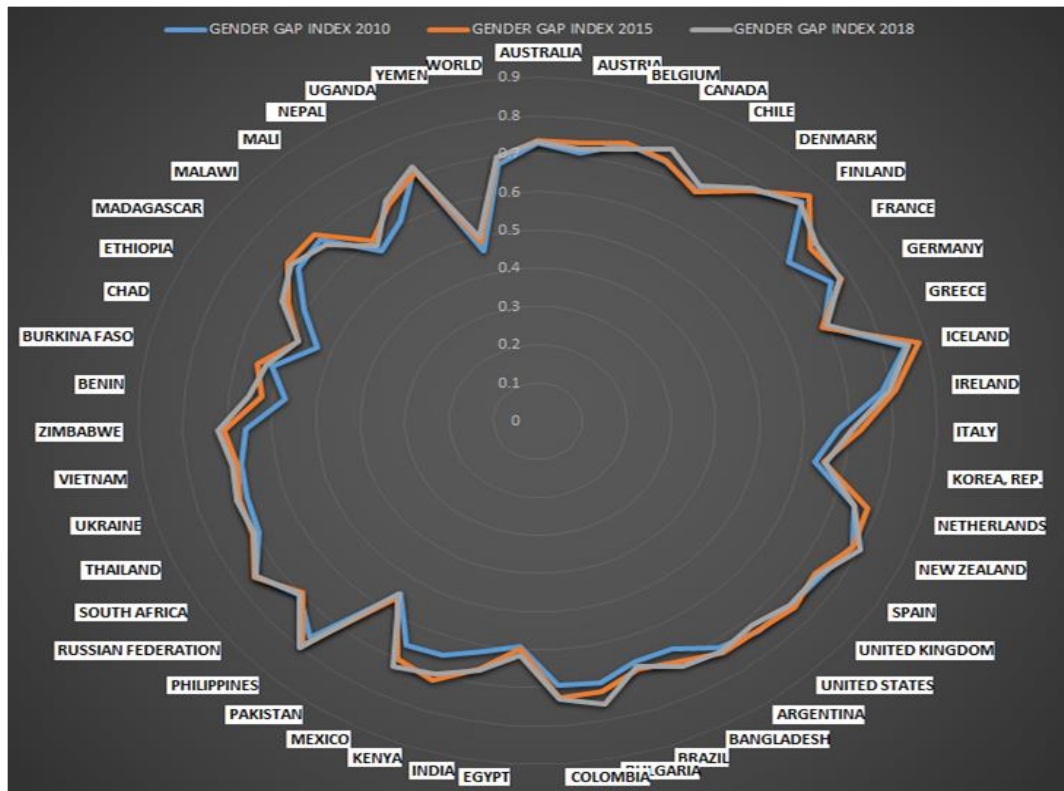


FIGURE 6: GGI RADAR

EASE OF DOING BUSINESS (EDB)

The EDB is a source of information on the business environment of about 180 countries. The construction of EDB involves ten indicators, a few of them being: starting a business, dealing with construction permits, getting electricity, registering property. It is based on a survey which consists of a questionnaire prepared by the Doing Business Team.

ECOLOGICAL FOOTPRINT

This index measures the human demand on nature, that is , the quantity of nature it takes to support people or an economy. The Ecological Footprint tracks the usage of cropland, fishing grounds, forest area and carbon demand.

WORLD HAPPINESS REPORT

The World Happiness Report is based on respondents' ratings of their own lives. Gallup World Poll surveys citizens of about 160 countries and the sample taken for it represents about 98% of the world's adult population. Its core questions are from areas such as - Citizen Engagement, Communications and Technology, Diversity, Education and Families, Emotions, Environment

and Energy, Food and Shelter, Government and Politics, Law and Order, Health, Religion and Ethics, Transportation and Work.

GLOBAL PEACE INDEX

The Global Peace Index explores the degree to which nations are involved in ongoing domestic and international conflicts. This report is produced by the Institute of Economics and Peace. It ranks countries according to their level of peacefulness based on three thematic domains - level of societal safety and security, extent of ongoing domestic and international conflict, degree of militarisation.

CORRUPTION PERCEPTION INDEX (CPI)

The CPI is an index that scores countries on how corrupt their governments are believed to be. CPI was introduced by Transparency International. It takes into account 16 different surveys from twelve different institutions, like African Development Bank, World Bank, World Economic Forum, Economist Intelligence Unit and others.

INDEX OF SOCIAL PROGRESS

The Index of Social Progress measures the extent to which countries provide for the social and environmental needs of their citizens. It is published by Social Progress Imperative. It combines three dimensions- basic human needs, foundation of well-being and opportunity.

RULE OF LAW

Rule of Law is an index developed by the World Justice Project (WJP) to measure the extent to which the countries adhere to the rule of law in practice. It provides data on eight dimensions: limited government powers, absence of corruption, order and security, fundamental rights, open government, regulatory enforcement, civil justice and criminal justice.

ECONOMIC OPENNESS

Economic Openness expresses the sum of imports and exports of a country as a percentage of the country's GDP. A higher index value is supposed to indicate a larger influence of trade on domestic activities.

6. CORRELATION MATRIX ANALYSIS

	LOG PCI	HDI	IHDI	SDI	RULE OF LAW	ECONOMIC OPENNESS	GGI	GII	GDI	CPI	INEQUALITY ADJ Y	PEACE	ECOLOGICAL FOOTPRINT	HAPPINESS	EASE OF DOING BUSINESS	SOCIAL PROGRESS
LOG PCI	1															
HDI	0.97	1														
IHDI	0.92	0.97	1													
SDI	-0.38	-0.36	-0.38	1												
RULE OF LAW	0.78	0.79	0.78	-0.62	1											
ECONOMIC OPENNESS	0.18	0.22	0.29	-0.02	0.21	1										
GGI	0.41	0.44	0.46	-0.34	0.49	0.14	1									
GII	-0.84	-0.87	-0.89	0.53	-0.75	-0.24	-0.45	1								
GDI	0.59	0.62	0.61	-0.04	0.35	0.21	0.54	-0.53	1							
CPI	0.74	0.74	0.73	-0.64	0.95	0.18	0.48	-0.69	0.31	1						
INEQ ADJ Y	0.87	0.89	0.94	-0.48	0.75	0.21	0.38	-0.89	0.45	0.70	1					
PEACE	-0.43	-0.44	-0.47	0.52	-0.71	-0.31	-0.36	0.48	-0.18	-0.70	-0.48	1				
ECOLOGICAL FOOTPRINT	0.79	0.78	0.79	-0.51	0.71	0.23	0.47	-0.71	0.49	0.73	0.75	-0.46	1			
HAPPINESS	0.75	0.75	0.70	-0.37	0.67	0.05	0.52	-0.64	0.50	0.67	0.65	-0.38	0.65	1		
EASE OF DOING BUSINESS	0.88	0.88	0.85	-0.38	0.81	0.21	0.40	-0.77	0.54	0.75	0.77	-0.42	0.70	0.68	1	
SOCIAL PROGRESS	0.93	0.94	0.91	-0.43	0.88	0.23	0.54	-0.84	0.60	0.85	0.82	-0.56	0.80	0.80	0.87	1

TABLE 1: CORRELATION MATRIX (2015)

	log PCI	HDI	IHDI	RULE OF LAW	ECONOMIC OPENNESS	GDI	INEQUALITY ADJ Y	GII	GGI	GLOBAL PEACE	CPI	HAPPINESS	DOING BUSINESS	SOCIAL PROGRESS
log PCI	1													
HDI	0.98	1												
IHDI	0.93	0.97	1											
RULE OF LAW	0.79	0.80	0.80	1										
ECONOMIC OPENNESS	0.29	0.28	0.32	0.24	1									
GDI	0.59	0.64	0.63	0.41	0.28	1								
INEQUALITY ADJ Y	0.91	0.91	0.96	0.80	0.33	0.49	1							
GII	-0.91	-0.92	-0.94	-0.80	-0.36	-0.57	-0.92	1						
GENDER GAP	0.38	0.44	0.44	0.43	0.14	0.60	0.35	-0.44	1					
GLOBAL PEACE	-0.39	-0.41	-0.43	-0.58	-0.31	-0.28	-0.43	0.44	-0.45	1				
CPI	0.77	0.77	0.77	0.96	0.26	0.32	0.78	-0.77	0.40	-0.53	1			
HAPPINESS	0.76	0.75	0.69	0.73	0.10	0.47	0.68	-0.67	0.50	-0.38	0.72	1		
DOING BUSINESS	0.83	0.82	0.82	0.72	0.30	0.47	0.79	-0.82	0.25	-0.23	0.69	0.57	1	
SOCIAL PROGRESS	0.93	0.97	0.94	0.87	0.27	0.61	0.88	-0.91	0.45	-0.49	0.83	0.77	0.79	1

TABLE 2: CORRELATION MATRIX (2018)

From our period of study, we constructed correlation matrices for only the years 2015 and 2018 since the relationships among the variables remained constant over the time span of 2010-2018. A few relationships have been discussed here.

INDEX OF SOCIAL PROGRESS and LOG PCI (LOG PCI has been derived by taking the logarithmic transformation of GDP per capita) have a positive relationship as observed by Qaisar, et al. From the correlation matrices, we see that this relationship holds. There exists a negative correlation between CORRUPTION and LOG PCI, which was also suggested by Mauro and Grabova. Shao et al. also found a negative correlation between corruption and long term growth of a country. We see from the correlation matrix that there is a negative relation between happiness and corruption, which was also suggested by Satrovic et al. They suggested

that the more corruption is controlled, the more positive is the impact on the level of happiness among the citizens. Gender parity and development go hand in hand as suggested by Stotsky (2006), a stronger economic growth leads to reduced gender disparities. Gender inequality as suggested by Kabeer, is the most prevalent form of gender disparity. Due to the socio economic scenario in most countries, we see that the education received by males is more than that received by females. As suggested by Knowles et al., a slight increase in women's education leads to an increase in GDP. We can see from the correlation matrix that both GGI (Gender Gap Index) and GDI (Gender Development Index) have a strong positive correlation with LOG PCI. Also, there is a negative relationship when compared with GII (Gender Inequality Index), suggesting that as inequality between the genders decreases, the economy performs better. Thus, women's education should be given more emphasis and should be correlated to educational capital as suggested by Baldacci et al. We derived from the matrix that there is a positive correlation between CPI and GGI and GDI, and a negative correlation with GII. Corruption is ranked on a scale of 100 (very clean) to 0 (very corrupt). So from the matrix above we can conclude as gender disparities reduce, the countries become cleaner. As concluded by the World Bank and Dollar et al., men tend to be more corrupt than women. Thus countries with higher participation of women in the public sectors, tend to have more clean businesses and governments. Aron, Abed and Gupta concluded that corruption is accredited to the lack of women participation in policy making, which results in poorer quality of institutions and hence weaker growth. We found a positive correlation between the INDEX OF SOCIAL PROGRESS and HAPPINESS. Ruut Veenhoven suggests that social development leads to economic development which in turn leads to happiness, thus the positive relation. We derived a negative relation between GENDER INEQUALITY and HAPPINESS. As suggested by Veenhoven there is a positive relation between gender equality and average happiness. Our research shows a positive relationship between LOG PCI and EASE OF DOING BUSINESS. As Moorthy suggests, GDP per capita is negatively correlated with ease of doing business rankings, that is, as GDP rises, EDB also rises. Complementing our research Deb also suggests that there exists a strong positive correlation between LOG PCI and HDI. Similarly, there exists a positive correlation between IHDI and GDP, but since IHDI takes into consideration the inequality factor, it is not as strongly correlated to GDP. Our data suggests a negative correlation between GDP and GLOBAL PEACE. The Institute for Economics and Peace states that GDP growth has been threefold in highly peaceful countries. The data suggests a negative correlation between LOG PCI and SDI. This is because as per capita income rises, pollution levels rise with it, which is evident from the high positive correlation between log PCI and

ECOLOGICAL FOOTPRINT. From the correlation matrix, we find a positive correlation between ECONOMIC OPENNESS and RULE OF LAW. According to Rigobon and Rodrik, trade openness is good for rule of law, which is why they are positively correlated. They also found a strong causal impact of rule of law on income, which is also supported by our data.

7. NEW INDEX

We wanted to calculate a development index which is more comprehensive and takes into account inequality, gender gap, environmental impact along with human development. So we calculated this index for six years from 2010 to 2015 and considered the data for around 120 countries. We then constructed the numerator by taking the geometric mean of Inequality Adjusted Human Development Index (IHDI) and Gender Gap Index (GGI). Since both these indices lie between 0 and 1, our numerator also lies between 0 and 1.

To incorporate environmental impact we used the indicators material footprint per capita (MF) and carbon dioxide emissions per capita (CO₂). Material footprint per capita is defined as the total amount of raw materials that have been extracted to meet final consumption demand. CO₂ emissions per capita refers to the per capita carbon dioxide emissions that arise from the burning of fossil fuels and cement manufacture. Since an increase in both these values have a negative impact on the environment, we have taken them in our denominator.

Then we normalize the two values using the following formula so as to make our indicators comparable and unit-free:

$$\frac{\text{Actual Value} - \text{Minimum Value}}{\text{Maximum Value} - \text{Minimum Value}}$$

Hence we, derive MF* and CO₂*. We then add 1 to each MF* and CO₂* so that our denominator is greater than 1 and our index value lies between 0 and 1. Then we take the geometric mean of these two values and derive our denominator. We get our Index value by dividing the numerator with the denominator.

$$\text{INDEX VALUE} = \frac{\sqrt{\text{IHDI} * \text{GGI}}}{\sqrt{(1 + 0.5 \text{M.F}^*) * (1 + 0.5 \text{CO}_2^*)}}$$

8. REGION-WISE ANALYSIS

We divided the world region wise into – East Asia and Pacific, Europe and Central Asia, Latin America and Caribbean, Middle East and North Africa, North America, South Asia and Sub Saharan Africa, according to the World Bank database which is shown in Figure 7.

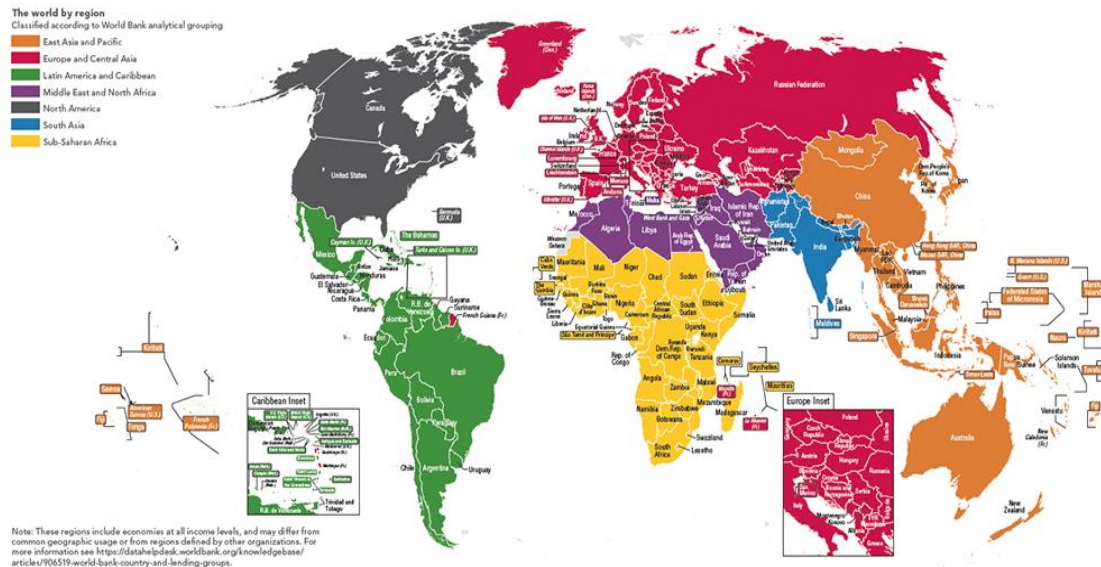


FIGURE 7 : REGIONS OF THE WORLD

ANALYSIS OF 2010

The highest value that our Index takes in this year is 0.5985 and the lowest value is 0.3152. We have considered the data for 112 countries.

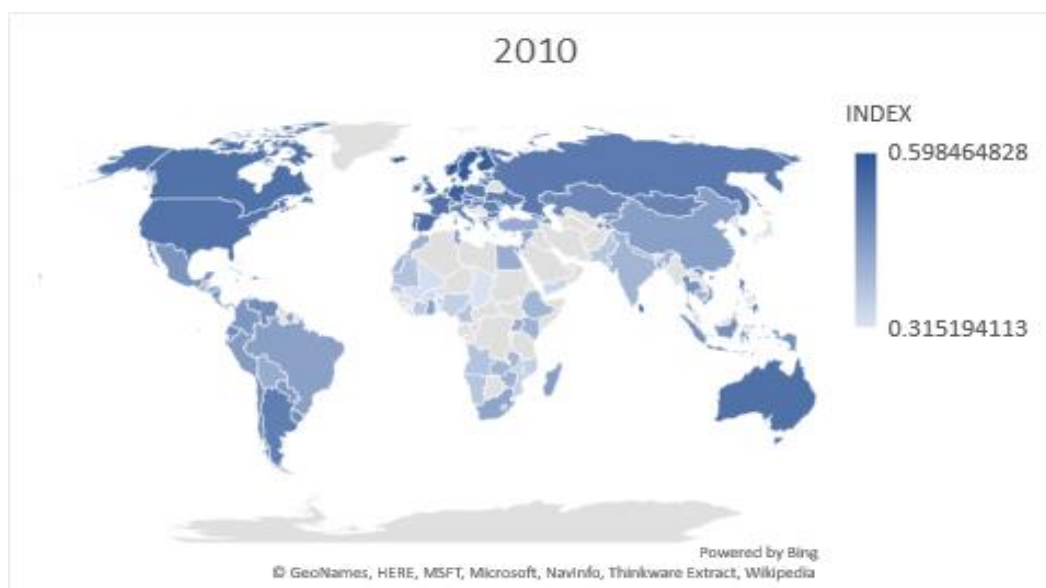


FIGURE 8: NEW INDEX 2010

SUB SAHARAN AFRICA

This region has performed the worst with an average of 0.3880. Chad with an index value of 0.3152 takes the least value for this year. For the 25 countries that we have considered for this region, the rankings range from 70 to 112 and are close to each other. Madagascar does the best with an index value of 0.4515.

COUNTRY	INDEX	RANKING
Madagascar	0.451505	70
Ghana	0.44576172	75
South Africa	0.43909464	78
United Republic of Tanzania	0.43731361	81
Suriname	0.43613448	82
Uganda	0.42285663	84
Zimbabwe	0.41332775	88
Kenya	0.41074414	91
Malawi	0.4090782	92
Zambia	0.40585488	93
Ethiopia	0.40387486	96
Lesotho	0.38967068	97
Mauritania	0.37858558	98
Cameroon	0.37771459	99
Angola	0.37666012	100
Namibia	0.37180696	101
Senegal	0.37003522	102
Gambia	0.36750747	104
Côte d'Ivoire	0.36663646	105
Mozambique	0.35460206	106
Nigeria	0.35271189	107
Benin	0.34818509	108
Burkina Faso	0.3313538	110
Mali	0.32317442	111
Chad	0.31519411	112

TABLE 3: SUB SAHARAN AFRICA 2010

MIDDLE EAST AND NORTH AFRICA

This region ranks 6th with an average of 0.4362. Yemen does the worst with an index value of 0.3390 while Israel does the best at 0.5252. There are seven countries in this region and their rankings have a wide range from 26 to 109.

COUNTRY	INDEX	RANKING
Israel	0.52516303	26
Jordan	0.45778719	67
Tunisia	0.45295992	69
Syrian Arab Republic	0.44368628	76
Egypt	0.42093584	86
Morocco	0.4137183	87
Yemen	0.33896472	109

TABLE 4: MIDDLE EAST AND NORTH AMERICA 2010

SOUTH ASIA

This region ranks 5th and has an average of 0.4399. Pakistan performs the worst in this region at 0.3699 while Sri Lanka does the best at 0.5674. The rankings of the six countries in this region vary widely from 9 to 103.

COUNTRY	INDEX	RANKING
Sri Lanka	0.56738373	9
Maldives	0.44976536	71
Bangladesh	0.44105864	77
Nepal	0.40559896	94
India	0.40552269	95
Pakistan	0.36990594	103

TABLE 5: SOUTH ASIA 2010

LATIN AMERICA AND CARIBBEAN

This region has 23 countries, the rankings of which range from 19 to 90. This region has an average of 0.4695 and ranks 4th. Trinidad and Tobago have the highest value at 0.5391 while Guatemala does the worst at 0.4110.

COUNTRY	INDEX	RANKING
Trinidad and Tobago	0.53911352	19
Argentina	0.5132739	37
Costa Rica	0.51027044	39
Jamaica	0.50077676	44
Chile	0.49939528	46
Bahamas	0.49458799	49
Ecuador	0.48760832	53
Uruguay	0.48468623	54
Bolivarian Republic of Venezuela	0.48287572	57
Panama	0.47509834	59
Nicaragua	0.47452464	60
Dominican Republic	0.47096154	62
Mexico	0.47055064	63
Colombia	0.46545788	65
Paraguay	0.45811393	66
Peru	0.45663393	68
El Salvador	0.44669478	73
Brazil	0.44607264	74
Belize	0.43906178	79
Honduras	0.4375206	80
Plurinational State of Bolivia	0.42285194	85
Cambodia	0.41253214	89
Guatemala	0.41095447	90

TABLE 6: LATIN AMERICA AND CARIBBEAN 2010

EAST ASIA AND PACIFIC

This region ranks 3rd and has an average index value of 0.4898. The rankings of the eight countries in this region have a wide range from 16 to 72. Australia does the best with an index value of 0.5415 whereas China performs the worst with 0.4487.

COUNTRY	INDEX	RANKING
Australia	0.54149906	16
Philippines	0.52668724	25
Mongolia	0.49849414	47
Republic of Korea	0.48399244	55
Indonesia	0.4773702	58
Thailand	0.47199635	61
Viet Nam	0.46941988	64
China	0.44866334	72

TABLE 7: EAST ASIA AND PACIFIC 2010

EUROPE AND CENTRAL ASIA

This region has 41 countries and ranks 2nd. Norway does the best in this region and also in 2010 with an index value of 0.5985. Turkey does the worst in this region with an index value of 0.4274. The rankings range from 1 to 83 and the average stands at 0.5310.

COUNTRY	INDEX	RANKING
Norway	0.59846483	1
Iceland	0.59041831	2
Republic of Moldova	0.58721706	3
Sweden	0.58180933	4
Finland	0.57845157	5
Denmark	0.57540478	6
Germany	0.57260389	7
Switzerland	0.56957338	8
Ireland	0.56585292	10
Belgium	0.56387768	11
Netherlands	0.55640274	12
United Kingdom	0.55613607	13
Spain	0.54862198	14
Slovenia	0.54358746	15
Latvia	0.54004832	18
Austria	0.53903838	20

France	0.53719731	21
Czechia	0.53181933	23
Hungary	0.52709461	24
Portugal	0.52253438	27
Russian Federation	0.52166587	28
Bulgaria	0.52019359	29
Poland	0.52016399	30
Estonia	0.5183156	31
Armenia	0.51762549	32
Ukraine	0.51698432	33
Italy	0.51602257	34
Lithuania	0.51560597	35
Romania	0.51342126	36
Greece	0.51237926	38
Croatia	0.50986278	40
Albania	0.50958239	41
Slovakia	0.50874267	42
Azerbaijan	0.50435304	43
Cyprus	0.49946881	45
Tajikistan	0.49483047	48
Kazakhstan	0.4925154	50
Georgia	0.49191159	51
North Macedonia	0.49071978	52
Kyrgyzstan	0.48316801	56
Turkey	0.42738949	83

TABLE 8: EUROPE AND CENTRAL ASIA 2010

NORTH AMERICA

With two countries ranking 17 and 22, the average for this region is 0.5385. Canada takes a value of 0.5404 and the United States takes 0.5366. North America performs the best and is ranked 1st for 2010.

COUNTRY	INDEX	RANKING
Canada	0.54035534	17
United States	0.53663897	22

TABLE 9: NORTH AMERICA 2010

ANALYSIS OF 2011-2014

Similar results were obtained for all these years. Tables with rankings for the years 2011 to 2014 are in the appendix.

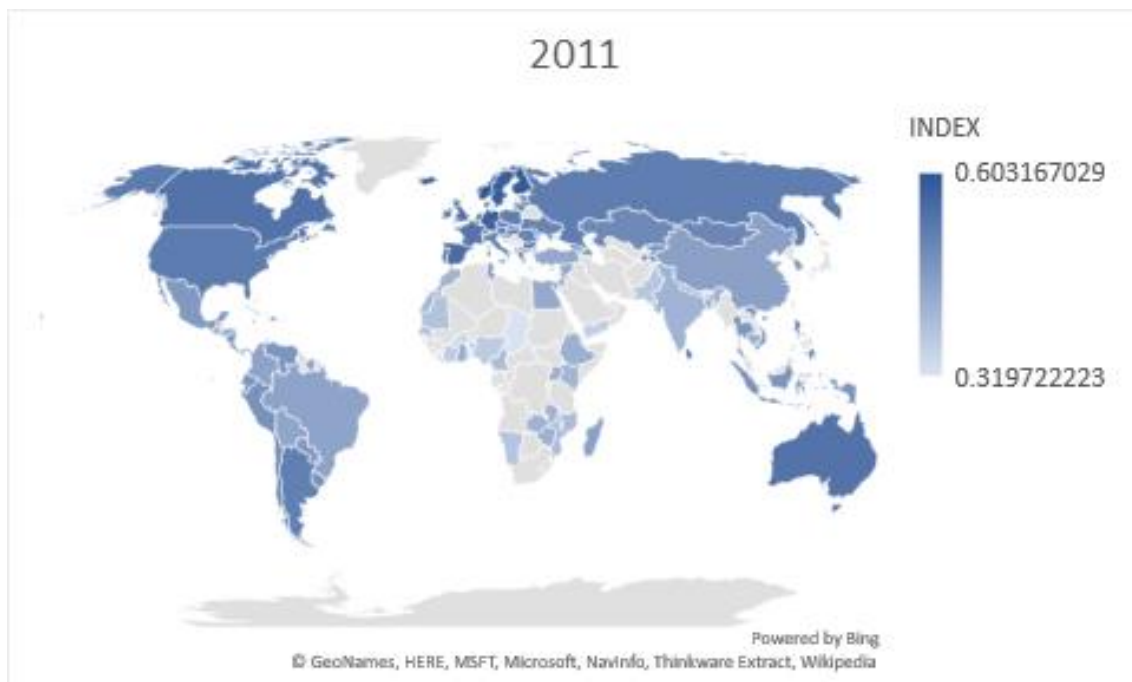


FIGURE 9: NEW INDEX 2011



FIGURE 10: NEW INDEX 2012

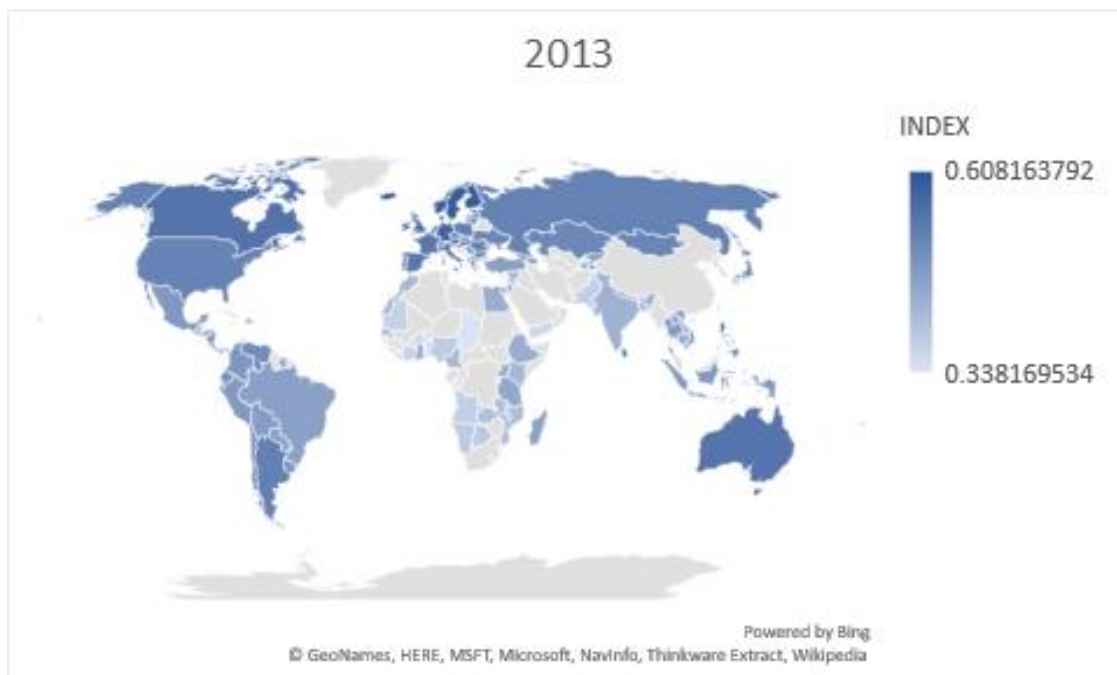


FIGURE 11: NEW INDEX 2013

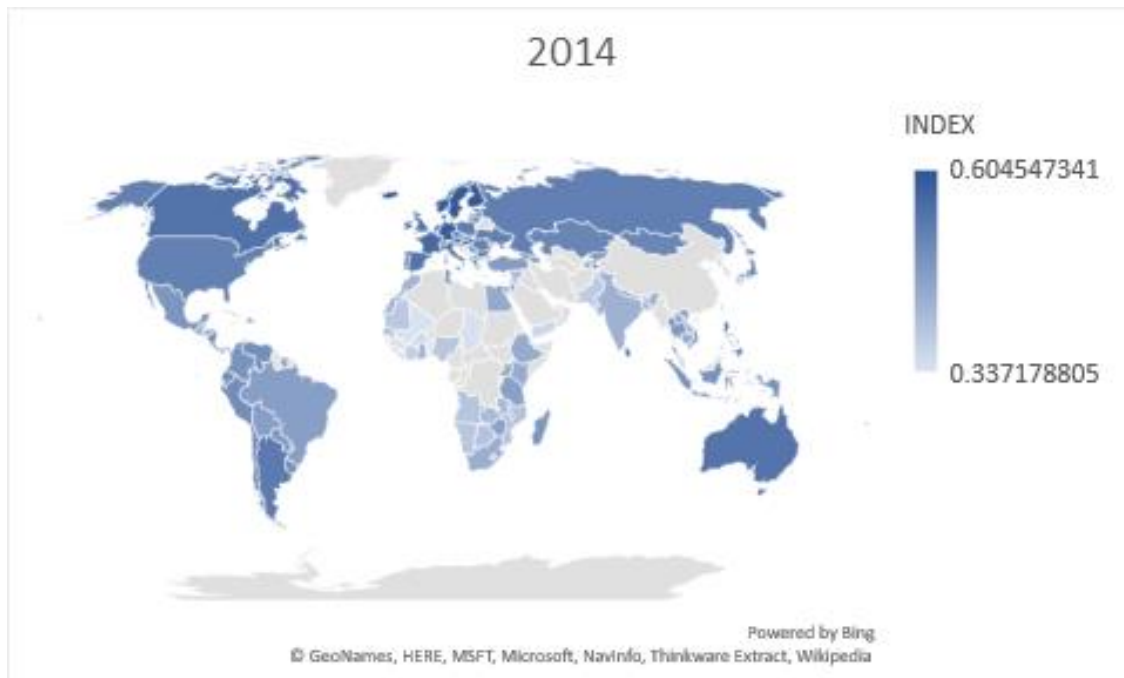


FIGURE 12: NEW INDEX 2014

ANALYSIS OF 2015

The highest value that our Index takes in this year is 0.6199 and the lowest value is 0.3440. We have considered the data for 124 countries.

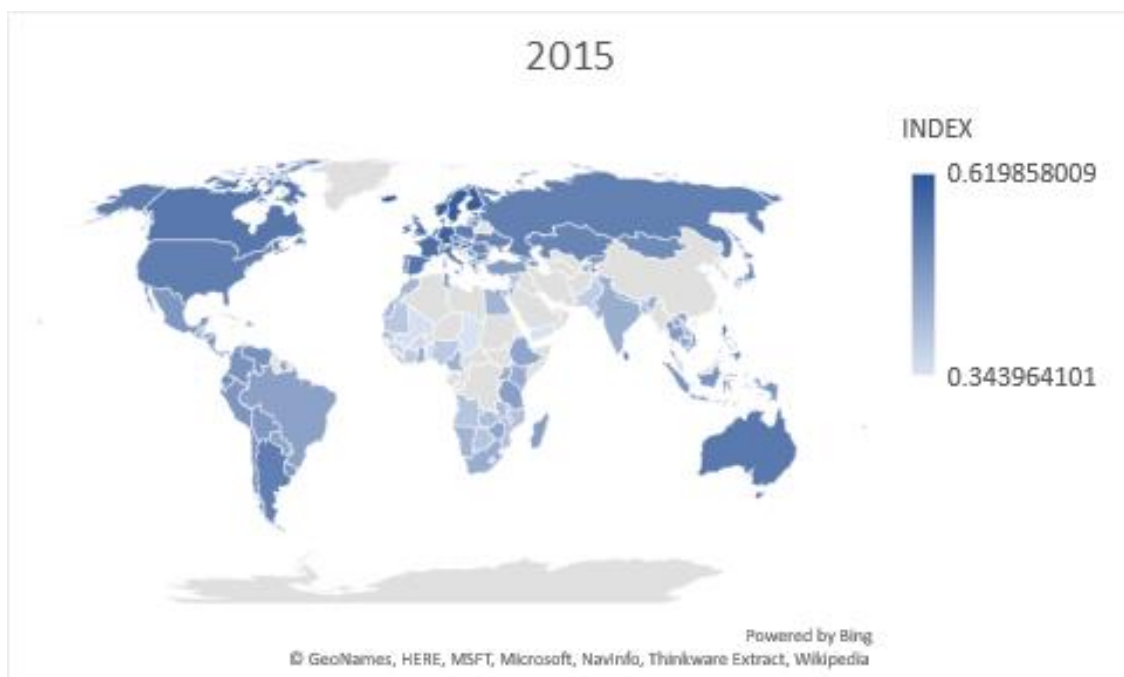


FIGURE 13: NEW INDEX 2015

SUB SAHARAN AFRICA

This region has performed the worst with an average of 0.4212. Chad with an index value of 0.3440 takes the least value for this year. For the 30 countries that we have considered for this region, the rankings range from 60 to 124 and are pretty close to each other. Mauritius does the best with an index value of 0.4853.

COUNTRY	INDEX	RANK
Mauritius	0.48538366	69
Cape Verde	0.48415076	71
Madagascar	0.47662172	75
Tanzania	0.47375397	76
Ethiopia	0.46234032	83
Zimbabwe	0.46105759	84
Rwanda	0.45982846	85
Kenya	0.45108428	91
South Africa	0.4471788	93
Ghana	0.44240663	96
Uganda	0.44059997	97
Malawi	0.44022083	98
Cameroon	0.43745966	99
Namibia	0.43353519	101
Burundi	0.42622736	104
Zambia	0.4148776	105
Senegal	0.41307941	106
Mozambique	0.4104314	107
Liberia	0.40622432	110
Botswana	0.40420163	111
Angola	0.40035855	112
Mauritania	0.39588949	114
Nigeria	0.39255821	115
Côte d'Ivoire	0.3905329	116
Lesotho	0.37729146	118

Guinea	0.37689762	119
Benin	0.37266224	120
Burkina Faso	0.36533983	121
Mali	0.3494654	122
Chad	0.3439641	124

TABLE 10: SUB SAHARAN AFRICA 2015

MIDDLE EAST AND NORTH AFRICA

This region ranks 6th with an average of 0.4464. Yemen does the worst with an index value of 0.3473 while Israel does the best at 0.5386. There are 10 countries in this region and their rankings have a wide range from 29 to 123.

COUNTRY	INDEX	RANK
Israel	0.53858827	29
Malta	0.53389789	34
Tunisia	0.47181817	78
Jordan	0.46668145	81
Lebanon	0.43717559	100
Egypt	0.43233452	102
Morocco	0.4276713	103
Iran	0.40966891	108
Syria	0.39869727	113
Yemen	0.34734817	123

TABLE 11: MIDDLE EAST AND NORTH AFRICA 2015

SOUTH ASIA

This region ranks 5th and has an average of 0.4520. Pakistan performs the worst in this region at 0.3854 while Sri Lanka does the best at 0.5638. The rankings of the seven countries in this region vary widely from 15 to 117.

COUNTRY	INDEX	RANK
Sri Lanka	0.563817	15
Bangladesh	0.46688279	80

Nepal	0.45149547	90
India	0.44482038	94
Maldives	0.44324417	95
Bhutan	0.40862304	109
Pakistan	0.38540576	117

TABLE 12: SOUTH ASIA 2015

LATIN AMERICA AND CARIBBEAN

This region has 22 countries, the rankings of which range from 32 to 92. This region has an average of 0.4930 and ranks 4th. Argentina has the highest value at 0.5370 while Honduras does the worst at 0.4475.

COUNTRY	INDEX	RANK
Argentina	0.53697571	32
Trinidad and Tobago	0.53338701	37
Costa Rica	0.53088279	38
Panama	0.52950839	39
Chile	0.51403502	50
Ecuador	0.51210796	52
Jamaica	0.50092585	55
Nicaragua	0.5004082	57
Venezuela	0.49971678	58
Colombia	0.49656807	61
Peru	0.49311106	63
Uruguay	0.49291342	64
Dominican Republic	0.49191294	65
Mexico	0.48867042	67
Bolivia	0.48473062	70
El Salvador	0.47897048	73
Belize	0.47235478	77
Brazil	0.46964095	79
Paraguay	0.46264767	82
Suriname	0.45706436	86

Guatemala	0.45310676	89
Honduras	0.44750891	92

TABLE 13: LATIN AMERICA AND CARRIBEAN 2015

EAST ASIA AND PACIFIC

This region ranks 3rd and has an average index value of 0.4991. The rankings of the 11 countries in this region have a wide range from 19 to 88. Australia does the best with an index value of 0.5503 whereas Laos performs the worst with 0.4534.

COUNTRY	INDEX	RANK
Australia	0.55029756	19
Philippines	0.5497195	21
Japan	0.52252042	45
Mongolia	0.51156957	53
Korea, Rep.	0.49943749	59
Indonesia	0.4947245	62
Fiji	0.49081143	66
Thailand	0.48558962	68
Vietnam	0.47731185	74
Cambodia	0.45520761	87
Laos	0.45337627	88

TABLE 14: EAST ASIA AND PACIFIC 2015

NORTH AMERICA

With 2 countries ranking 18 and 31, the average for this region is 0.5450. Canada takes a value of 0.5524 and the United States takes 0.5377. North America is ranked 2nd for 2015.

COUNTRY	INDEX	RANK
Canada	0.55235424	18
United States	0.53767741	31

TABLE 15: NORTH AMERICA 2015

EUROPE AND CENTRAL ASIA

This region has 42 countries and does the best for 2015. Iceland does the best in this region and also in 2015 with an index value of 0.6199. Turkey does the worst in this region with an index value of 0.4806. The rankings range from 1 to 72 and the average stands at 0.5496.

COUNTRY	INDEX	RANK
Iceland	0.61985801	1
Norway	0.61325121	2
Finland	0.60577413	3
Sweden	0.60484743	4
Ireland	0.60115668	5
Germany	0.59335366	6
Netherlands	0.58566518	7
Slovenia	0.58532836	8
Switzerland	0.58418299	9
Denmark	0.58402117	10
United Kingdom	0.57679853	11
Belgium	0.57491275	12
France	0.57044782	13
Moldova	0.57043482	14
Spain	0.55658288	16
Austria	0.55302995	17
Latvia	0.5499628	20
Italy	0.54723905	22
Portugal	0.54653901	23
Czech Republic	0.5465369	24
Estonia	0.54464879	25
Croatia	0.54224392	26
Bulgaria	0.54213329	27
Poland	0.54015845	28
Lithuania	0.5379496	30
Hungary	0.5366154	33
Albania	0.53361724	35

Russian Federation	0.53359287	36
Armenia	0.52944714	40
Ukraine	0.52678667	41
Romania	0.5253167	42
Georgia	0.52445049	43
Kazakhstan	0.523896	44
Slovakia	0.51975868	46
Azerbaijan	0.51914493	47
Greece	0.51776815	48
Cyprus	0.51673892	49
Serbia	0.51394633	51
Tajikistan	0.50414371	54
Kyrgyz Republic	0.50053226	56
Macedonia	0.49788408	60
Turkey	0.48060796	72

TABLE 16: EUROPE AND CENTRAL ASIA 2015

COMPARISON OF NEW INDEX WITH ENVIRONMENT GENDER INDEX (EGI)

EGI was introduced by the International Union for Conservation of Nature (IUCN) in 2013. It tracks gender equality and empowerment of women in the ecological domain. EGI has six main components- ecosystem, gender-based education and assets, governance, country reported activity, livelihood and gender-based rights and participation. We were able to find the data for the pilot year where 72 countries were ranked, and we compared their rankings with the top countries according to our index.

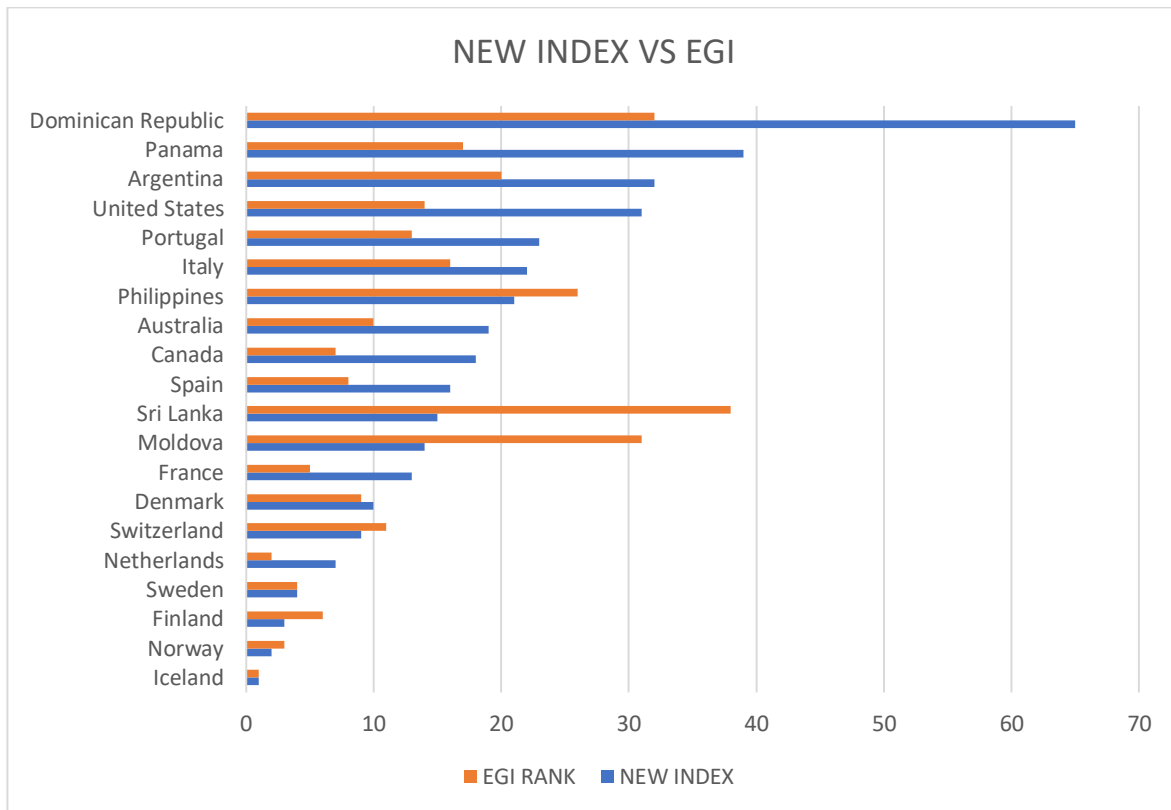


FIGURE 14: NEW INDEX VS EGI

Nordic countries are at the top for both EGI and our index. Iceland and Sweden rank 1 and 4 respectively in both these indices. The rankings in EGI and our index are quite similar. A few discrepancies in rankings arise due to the inclusion of components of IHDI in our index.

COUNTRY	NEW INDEX	EGI RANK
Iceland	1	1
Norway	2	3
Finland	3	6
Sweden	4	4
Netherlands	7	2
Switzerland	9	11
Denmark	10	9
France	13	5
Moldova	14	31
Sri Lanka	15	38
Spain	16	8

Canada	18	7
Australia	19	10
Philippines	21	26
Italy	22	16
Portugal	23	13
United States	31	14
Argentina	32	20
Panama	39	17
Dominican Republic	65	32

TABLE 17: NEW INDEX VS EGI 2015

9. COMPARISON OF OUR INDEX WITH OTHER DEVELOPMENT INDICES

HUMAN DEVELOPEMNT INDEX (HDI)

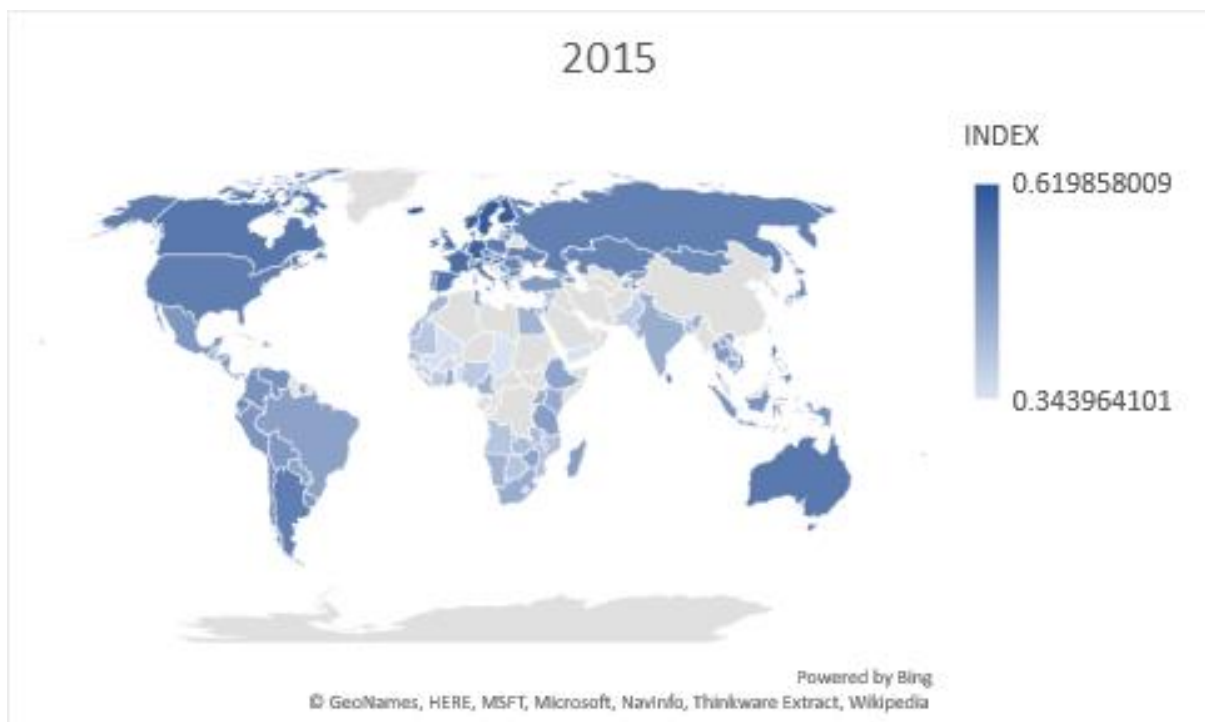


FIGURE 15(a): NEW INDEX 2015

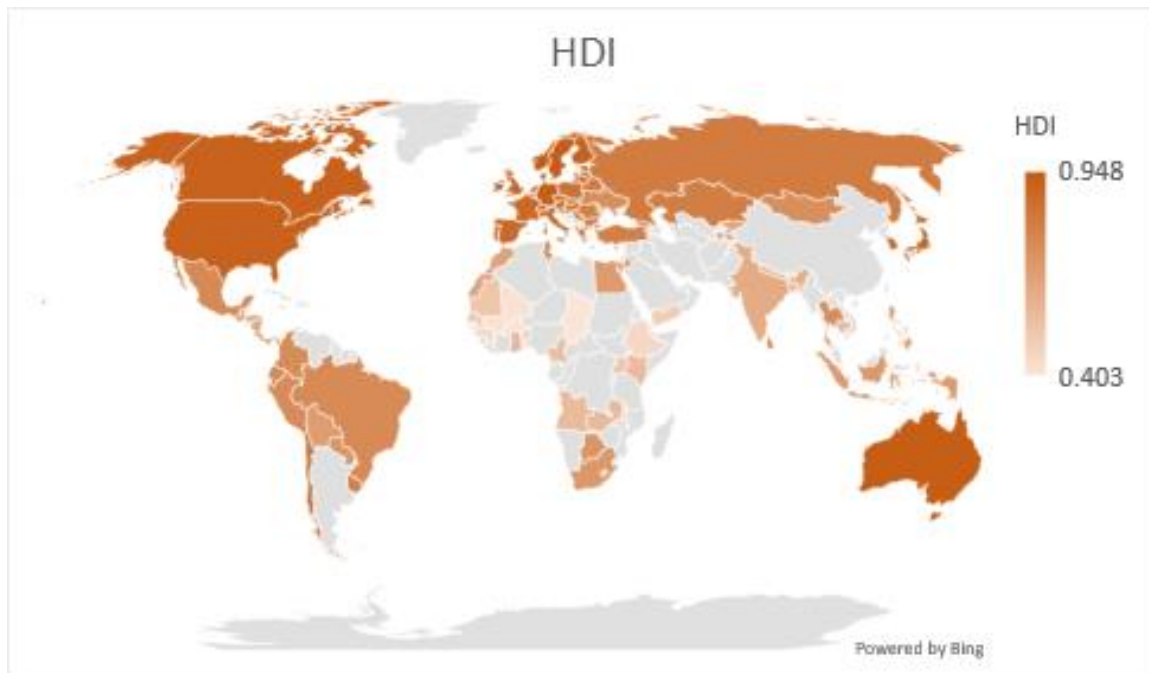


FIGURE 15(b): HDI 2015

We can see from the maps that countries that do well in HDI, perform well in our index too.

The Nordic countries (Iceland, Norway, Finland, Sweden, Denmark) do the best in both HDI and our index.

Moldova in spite of having a poor HDI ranking of 106, does pretty well in our index with a rank of 14. This is because it has a high GGI comparable to the countries ranking above it due to the joint UN Women-UNDP Women in Politics (WiP) initiative launched in 2014 which works to increase women's participation in Moldova politics and decision-making. Its denominator is also the least when compared to higher ranking countries which indicates that it does better in the environmental arena.

Sri Lanka's comparatively better ranking in our index can be explained by ecological indicator has a low value as it is a less intensive economy. It has invested heavily in public healthcare and education, illustrating that it is possible for poorer countries to significantly improve their social outcomes without requiring ecologically destructive levels of economic activity to do so.

Latvia has an HDI ranking of 42 whereas in our index it ranks at 20. The difference in rank arises because our index takes into consideration the gender gap and Latvia has fully closed the gender gap on both the Health and Survival and Educational Attainment sub-indexes.

Philippines has one of the smallest rates of gender disparity in the world; in its Global Gender Gap Index for 2015, the World Economic Forum (WEF) ranked it in the 7th place out of 145

countries. This explicates why despite a substandard performance in HDI with a rank of 107, Philippines manages to position itself at 21 in our index.

COUNTRY	NEW INDEX	HDI RANK
Iceland	1	8
Norway	2	1
Finland	3	12
Sweden	4	5
Ireland	5	11
Germany	6	4
Netherlands	7	9
Slovenia	8	25
Switzerland	9	2
Denmark	10	10
United Kingdom	11	15
Belgium	12	17
France	13	24
Moldova	14	106
Sri Lanka	15	70
Spain	16	26
Austria	17	19
Canada	18	13
Australia	19	3
Latvia	20	42
Philippines	21	107

TABLE 18: NEW INDEX VS HDI 2015

SUSTAINABLE DEVELOPMENT INDEX (SDI)

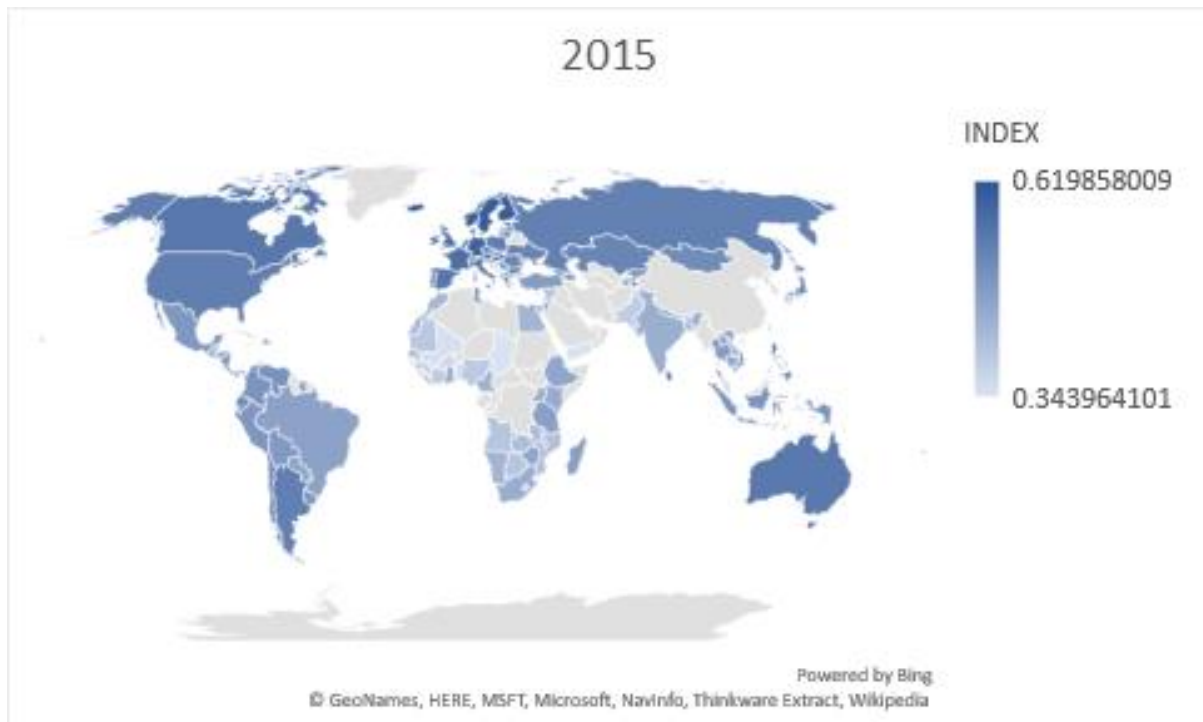


FIGURE 16(a): NEW INDEX 2015

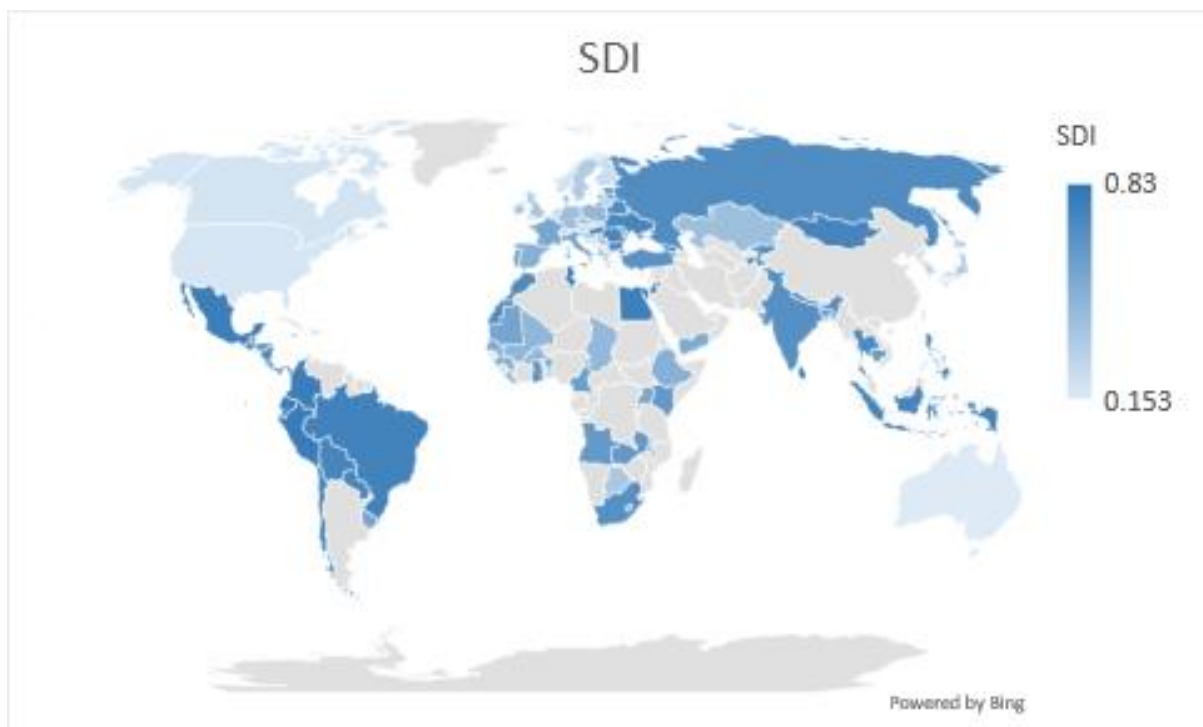


FIGURE 16(b): SDI 2015

These two indices move in completely opposite directions. Europe, North America and Australia were the top performers in our index whereas they do the worst in SDI. Also, Nordic countries which were topmost for all development indices fare very poorly in SDI. This is due to the reasons of historical emissions and high levels of pollution that were explained previously. Moldova and Sri Lanka have similar new index and SDI rankings. This is due to the less severe environmental impact of these two countries as was mentioned earlier.

COUNTRY	NEW INDEX	SDI RANK
Iceland	1	154
Norway	2	157
Finland	3	155
Sweden	4	143
Ireland	5	128
Germany	6	130
Netherlands	7	146
Slovenia	8	127
Switzerland	9	150
Denmark	10	138
United Kingdom	11	131
Belgium	12	121
France	13	95
Moldova	14	25
Sri Lanka	15	3
Spain	16	112
Austria	17	151
Canada	18	158
Australia	19	160
Latvia	20	89

TABLE 19: NEW INDEX VS SDI 2015

EASE OF DOING BUSINESS

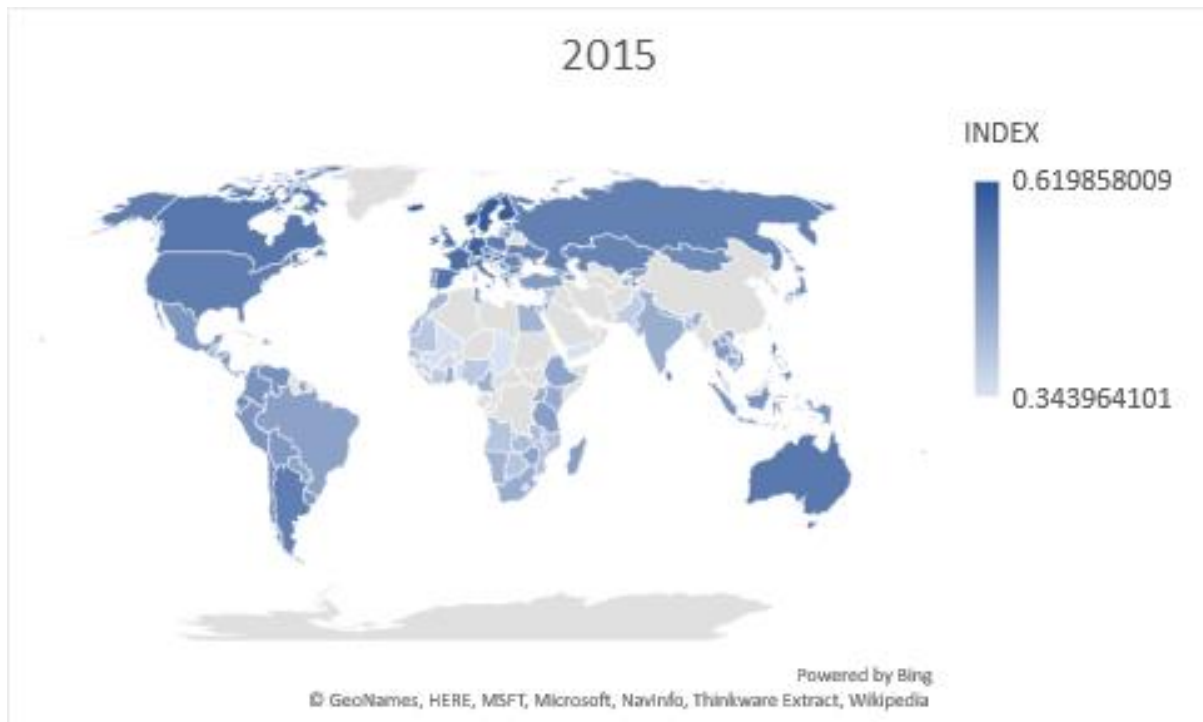


FIGURE 17(a): NEW INDEX 2015

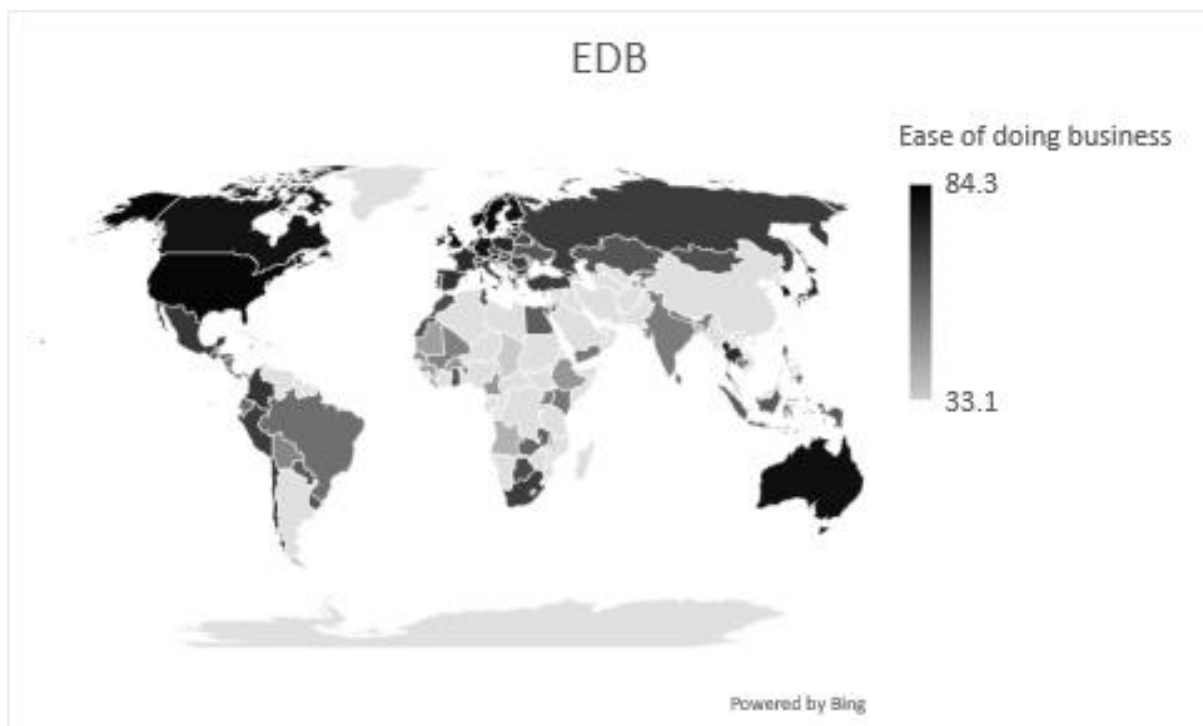


FIGURE 17(b): EASE OF DOING BUSINESS 2015

Ease of Doing Business ranks and the ranks for our index move in the same direction.

The North American region seems to be doing the best in terms of Ease of Doing Business. Iceland which is a top performer for most development indices and mostly maintains a single digit rank, falls to 12 in Ease of Doing Business.

In the European region, Denmark, Norway, UK and Finland are the leading performers. Countries like Netherlands, Slovenia, France, Belgium and Spain, have a considerable gap between the rankings in the 2 indices.

Sri Lanka and Moldova are average performers in the Ease of Doing Business Index. However, they rank in the top 20 countries for our index due to the aforementioned reasons.

COUNTRY	NEW INDEX	EASE OF DOING BUSINESS
Iceland	1	12
Norway	2	6
Finland	3	9
Sweden	4	11
Ireland	5	13
Germany	6	14
Netherlands	7	27
Slovenia	8	51
Switzerland	9	20
Denmark	10	4
United Kingdom	11	8
Belgium	12	42
France	13	31
Moldova	14	63
Sri Lanka	15	99
Spain	16	33
Austria	17	21
Canada	18	16
Australia	19	10
Latvia	20	23

TABLE 20: NEW INDEX VS EASE OF DOING BUSINESS 2015

WORLD HAPPINESS REPORT

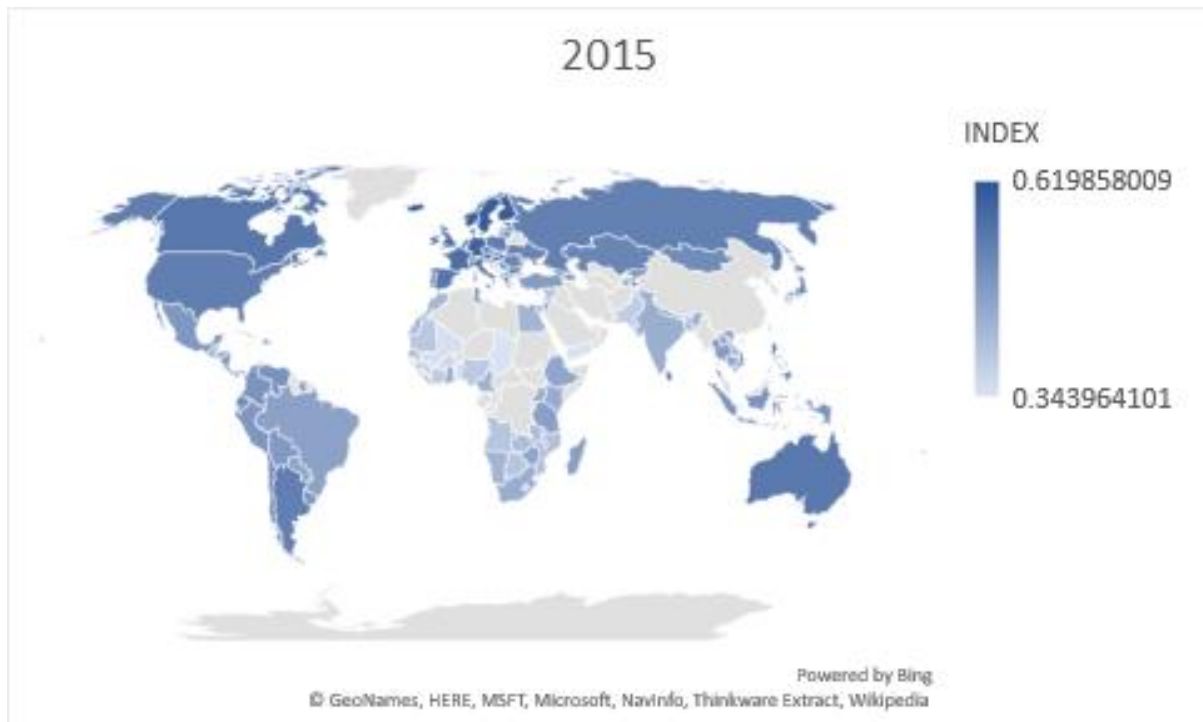


FIGURE 18(a): NEW INDEX 2015



FIGURE 18(b): HAPPINESS INDEX 2015

Both these indices move roughly in the same direction. Nordic countries, and Western Europe in general are the top performers in the World Happiness Report. The North American region also performs well with Canada being ranked as high as fifth. Australia and Thailand do the best in the East Asian and Pacific region. Brazil has the leading score in terms of happiness in the Latin American and Caribbean region. Sub Saharan Africa scores the lowest for both our index and the happiness report. Even though countries like Slovenia, Sri Lanka, Moldova and Latvia are in the top 20 ranks for our index, they are average performers when it comes to happiness, which is subjective.

COUNTRY	NEW INDEX	HAPPINESS
Iceland	1	2
Norway	2	4
Finland	3	6
Sweden	4	8
Ireland	5	19
Germany	6	26
Netherlands	7	7
Slovenia	8	55
Switzerland	9	1
Denmark	10	3
United Kingdom	11	21
Belgium	12	18
France	13	29
Moldova	14	52
Sri Lanka	15	126
Spain	16	36
Austria	17	13
Canada	18	5
Australia	19	10
Latvia	20	86

TABLE 21: NEW INDEX VS HAPPINESS INDEX 2015

INDEX OF SOCIAL PROGRESS

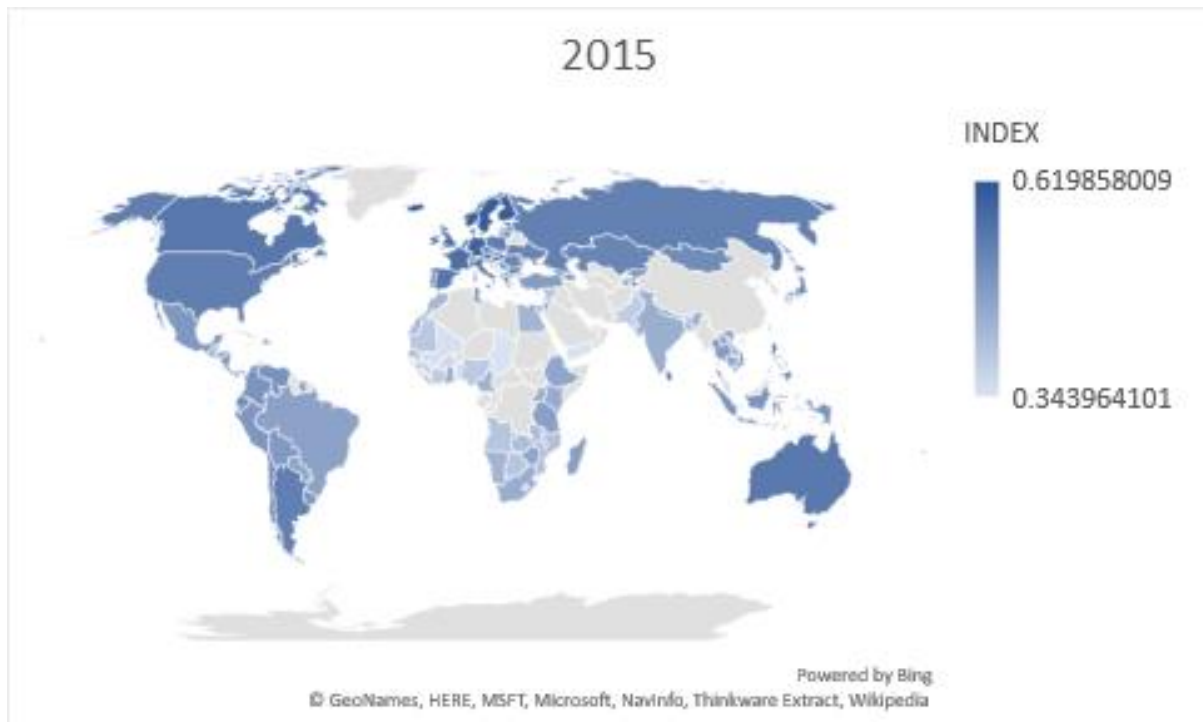


FIGURE 19(a): NEW INDEX 2015



FIGURE 19(b): INDEX OF SOCIAL PROGRESS 2015

Rankings in our index move in a similar direction to those of social progress as can be observed from the maps. This is good since social progress as an indicator of development probably comes the closest to the idea behind the construction of our index – moving towards a measure that gives more importance to the social aspects of development than the economic ones. USA, Canada, most countries in Europe, especially the Nordic ones and Australia are the best performers in the Index of Social Progress. Africa does the worst, however data for a lot of Asian and Middle Eastern countries was not available. Moldova and Sri Lanka are average performers in terms of social progress but do very well in our index due to their minimal deleterious impact on the environment.

COUNTRY	NEW INDEX	SOCIAL PROGRESS
Iceland	1	4
Norway	2	1
Finland	3	7
Sweden	4	2
Ireland	5	12
Germany	6	14
Netherlands	7	9
Slovenia	8	19
Switzerland	9	3
Denmark	10	8
United Kingdom	11	11
Belgium	12	17
France	13	21
Moldova	14	70
Sri Lanka	15	88
Spain	16	20
Austria	17	13
Canada	18	6
Australia	19	10
Latvia	20	33

TABLE 22: NEW INDEX VS INDEX OF SOCIAL PROGRESS 2015

GLOBAL PEACE

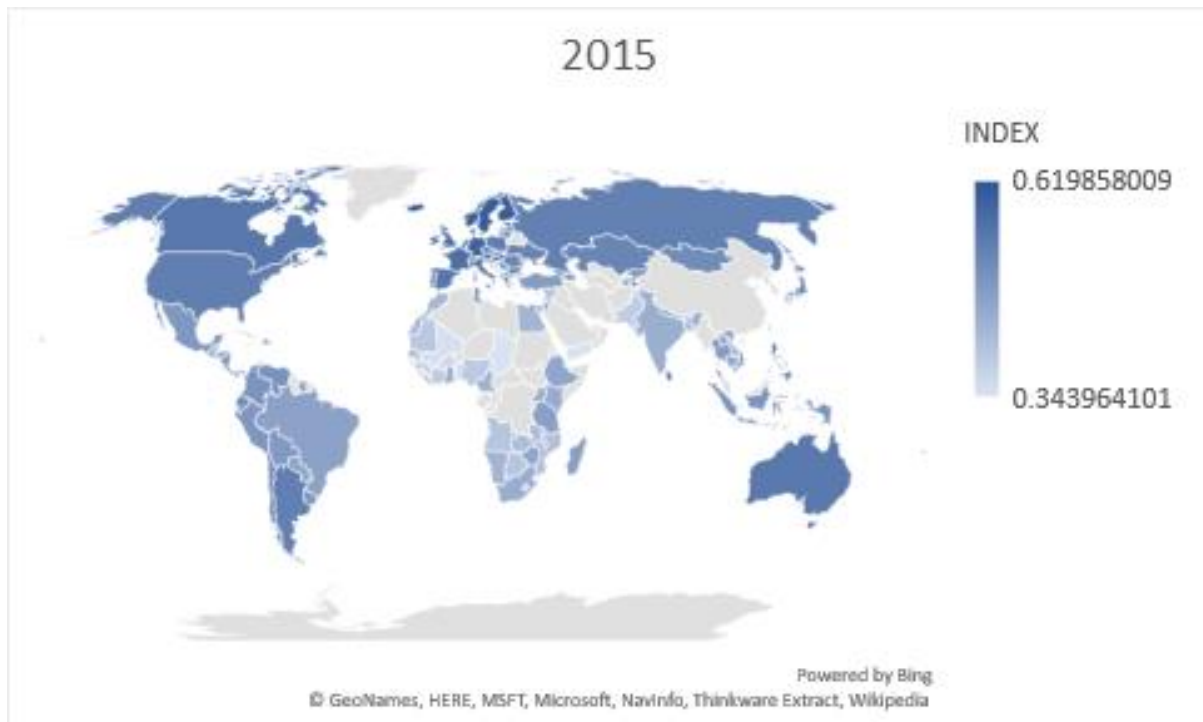


FIGURE 20(a): NEW INDEX 2015

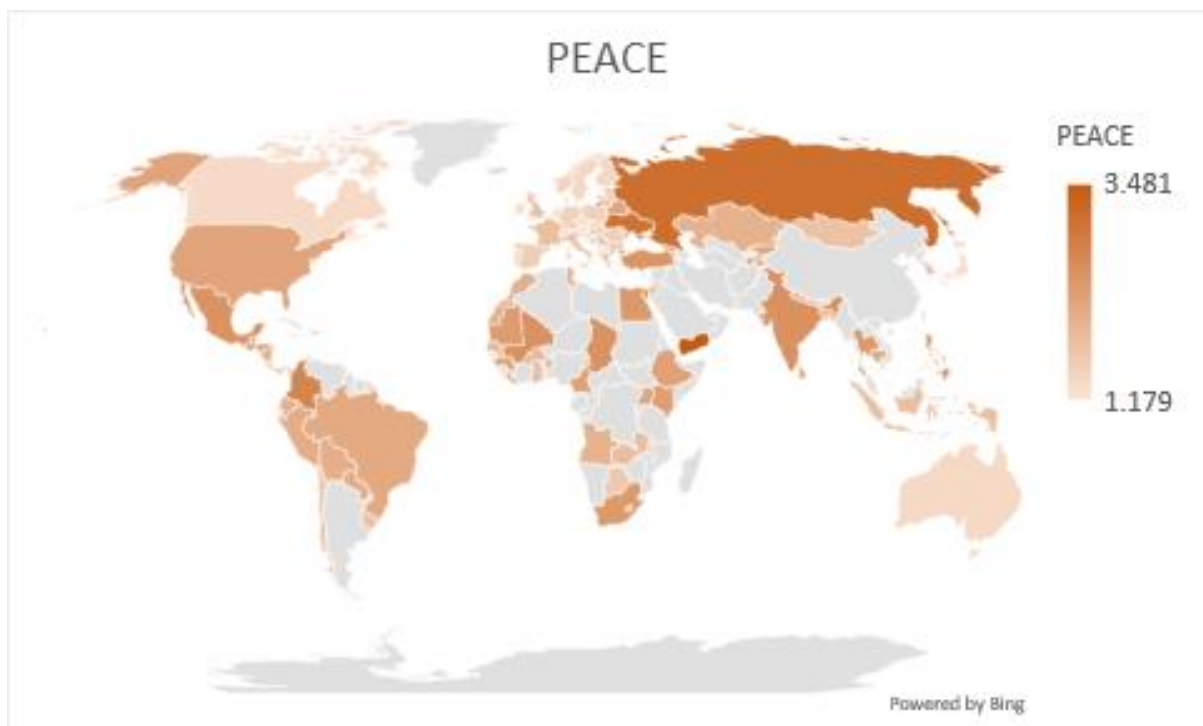


FIGURE 20(b): GLOBAL PEACE INDEX 2015

It seems from the maps that rankings for the two indices move in different directions. However, that is not true as lower values in the Global Peace Index indicate higher levels of peace in the countries. Thus while for all other maps, lighter shades indicate a bad performance and darker shades a better performance, the opposite is true for peace. From the map we see that Yemen, Russia and Ukraine are the least peaceful countries. Colombia is the least peaceful country in the Latin American and Caribbean region judging by the data available. In the North American region, USA does very poorly while Canada is the 6th most peaceful country in the world for the year 2015. European countries and Australia are amongst the top performers in the Global Peace Index.

COUNTRY	NEW INDEX	PEACE
Iceland	1	1
Norway	2	18
Finland	3	11
Sweden	4	9
Ireland	5	14
Germany	6	17
Netherlands	7	22
Slovenia	8	13
Switzerland	9	16
Denmark	10	2
United Kingdom	11	51
Belgium	12	15
France	13	49
Moldova	14	62
Sri Lanka	15	108
Spain	16	24
Austria	17	4
Canada	18	6
Australia	19	7
Latvia	20	35

TABLE 23: NEW INDEX VS GLOBAL PEACE INDEX 2015

RULE OF LAW

We now incorporate rule of law into our index. We do this so that our index considers the following social factors - limited government powers, absence of corruption, order and security, fundamental rights, open government, regulatory enforcement, civil justice and criminal justice.

Rule of Law is included in the new index by taking the geometric mean of IHDI, GGI and Rule of Law as the numerator instead of just IHDI and GGI. The denominator remains the same. The number of countries previously was 124 and on including Rule of Law it reduces to 77.

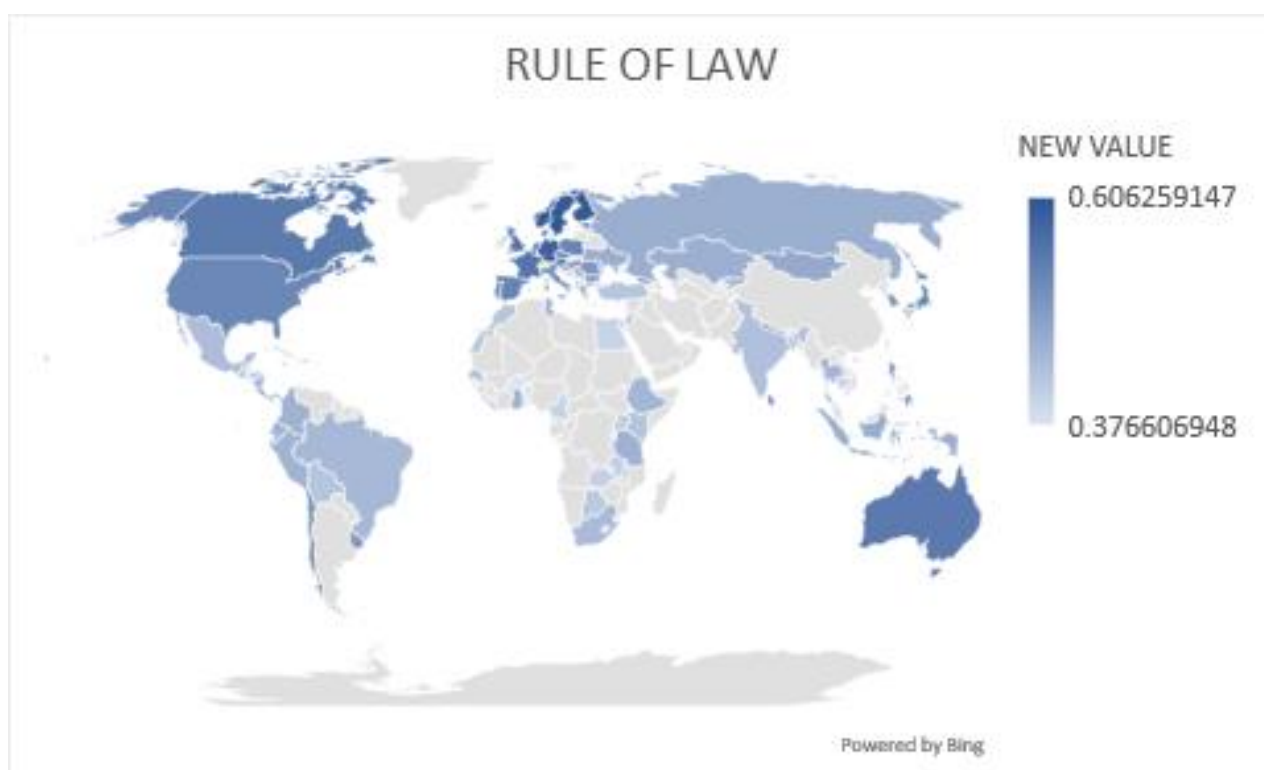


FIGURE 21: NEW INDEX WITH RULE OF LAW

As we can see from the map, the Nordic countries do the best. The U.S and Canada in the North American region do quite well compared to the other regions of the world. In the East Asian and Pacific region, Australia does the best. Data for most Sub Saharan African countries is not available. Though this region has consistently performed the worst in our index, on including rule of law, countries from this region like Ethiopia, Malawi, Nicaragua, South Africa and Senegal do better than South Asian countries like India and Bangladesh.

COMPARISON OF NEW INDEX WITH INDEX INCLUDING RULE OF LAW

COUNTRY	INDEX WITH RULE OF LAW	NEW INDEX
Norway	1	2
Sweden	2	4
Finland	3	3
Denmark	4	10
Germany	5	6
Netherlands	6	7
United Kingdom	7	11
Belgium	8	12
Austria	9	17
France	10	13
Australia	11	19
Canada	12	18
Slovenia	13	8
Estonia	14	25
Czech Republic	15	24
Portugal	16	23
Spain	17	16
Japan	18	45
Costa Rica	19	38
Poland	20	28

TABLE 24: NEW INDEX VS NEW INDEX WITH RULE OF LAW

Iceland was ranked one in our index. However, data for this country was not available in the Rule of Law index. The inconsistency in rankings stems due to inclusion of Rule of Law. Philippines, Moldova and Sri Lanka move further down and are replaced by countries like Estonia, Japan and Czech Republic. In 2015, Japan ranked 11, Estonia 14 and Czech Republic 17 in the Rule of Law Index. It is due to these high ranks that the index values for these countries are considerably higher.

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APPENDIX

REGIONWISE ANALYSIS OF NEW INDEX

2011

NORTH AMERICA

RANK: 1

COUNTRY	INDEX	RANKING
Canada	0.54373236	16
United States	0.52629727	25

EUROPE AND CENTRAL ASIA

RANK : 2

COUNTRY	INDEX	RANKING
Norway	0.60316703	1
Iceland	0.59587471	2
Finland	0.59128341	3
Sweden	0.58619064	4
Denmark	0.58450112	5
Germany	0.58041234	6
Moldova	0.57927407	7
Ireland	0.57799965	8
Switzerland	0.57260257	9
Belgium	0.57024183	10
Netherlands	0.56636997	11
United Kingdom	0.56050231	12
Spain	0.55652516	13
Slovenia	0.54946953	15
Austria	0.54304935	18
France	0.54035023	19
Latvia	0.53856004	21
Czechia	0.5342764	22
Portugal	0.53144112	23
Hungary	0.52871209	24
Italy	0.52530623	28
Estonia	0.52457623	29

Poland	0.52369428	30
Russian Federation	0.52114028	31
Lithuania	0.52083635	32
Bulgaria	0.51967549	33
Armenia	0.51771097	34
Slovakia	0.51476031	37
Croatia	0.5146028	38
Azerbaijan	0.51363342	39
Albania	0.51215618	40
Romania	0.5100109	41
Ukraine	0.50952537	42
Greece	0.50877663	43
Cyprus	0.50380497	44
Georgia	0.49942955	48
Kazakhstan	0.49700791	50
North Macedonia	0.48863664	52
Tajikistan	0.48852362	53
Kyrgyzstan	0.48520571	55
Turkey	0.43569926	81

EAST ASIA AND PACIFIC

RANK : 3

COUNTRY	INDEX	RANKING
Australia	0.5433753	17
Philippines	0.52628704	26
Mongolia	0.50097075	47
Korea	0.4839676	56
Viet Nam	0.4779088	59
Indonesia	0.4772278	61
Thailand	0.47231625	63
China	0.45093993	71

LATIN AMERICA AND CARIBBEAN

RANK : 4

COUNTRY	INDEX	RANKING
Trinidad and Tobago	0.53868893	20
Costa Rica	0.51699372	35
Argentina	0.51658865	36
Bahamas	0.50306596	45
Chile	0.50278909	46
Jamaica	0.49935004	49
Panama	0.48874912	51
Uruguay	0.48578466	54

Peru	0.47971741	57
Ecuador	0.47746738	60
Venezuela	0.47306992	62
Nicaragua	0.46705407	64
Mexico	0.46646564	65
Dominican Republic	0.46251174	66
Paraguay	0.46021364	68
El Salvador	0.44707703	73
Brazil	0.44584388	74
Colombia	0.44518703	75
Bolivia	0.44052292	76
Honduras	0.43577313	80
Cambodia	0.42499406	86
Guatemala	0.41788552	90

MIDDLE EAST AND NORTH AFRICA

RANK : 5

COUNTRY	INDEX	RANKING
Israel	0.52624496	27
Jordan	0.46083189	67
Tunisia	0.45503125	69
Syria	0.43953161	78
Lebanon	0.43451135	82
Egypt	0.43370161	83
Morocco	0.41084259	94
Yemen	0.3577463	106

SOUTH ASIA

RANK : 6

COUNTRY	INDEX	RANKING
Sri Lanka	0.55454677	14
Bangladesh	0.45438434	70
Maldives	0.42899872	84
India	0.41278711	93
Nepal	0.3941398	98
Pakistan	0.37443639	103

SUB SAHARAN AFRICA

RANK : 7

COUNTRY	INDEX	RANKING
Mauritius	0.47969393	58
Madagascar	0.45036397	72
Tanzania	0.43995095	77
Suriname	0.4368228	79

Ghana	0.42714769	85
Uganda	0.4221081	87
Ethiopia	0.42037697	88
Zimbabwe	0.41987879	89
Malawi	0.4173221	91
Zambia	0.41615322	92
Kenya	0.40812469	95
Mozambique	0.39660308	96
Cameroon	0.39583747	97
Senegal	0.38741592	99
Mauritania	0.38222746	100
Lesotho	0.38048641	101
Namibia	0.37880649	102
Nigeria	0.36708171	104
Côte d'Ivoire	0.36621809	105
Benin	0.35129419	107
Burkina Faso	0.33777372	108
Chad	0.31972222	109

2012

NORTH AMERICA

RANK : 1

COUNTRY	INDEX	RANK
Canada	0.543819	17
United States	0.534059	21

EUROPE AND CENTRAL ASIA

RANK : 2

COUNTRY	INDEX	RANK
Iceland	0.599934	1
Norway	0.598686	2
Finland	0.592673	3
Sweden	0.589363	4
Moldova	0.588261	5
Denmark	0.583646	6
Germany	0.581166	7
Ireland	0.579575	8
Switzerland	0.574241	9
Netherlands	0.574037	10
Belgium	0.573343	11

United Kingdom	0.557449	12
Austria	0.554029	14
Slovenia	0.549989	15
Latvia	0.543666	18
Spain	0.542884	19
France	0.539405	20
Hungary	0.532332	22
Czech Republic	0.531532	23
Portugal	0.527867	26
Bulgaria	0.526418	27
Poland	0.52207	29
Estonia	0.51914	30
Lithuania	0.518994	31
Italy	0.518882	32
Croatia	0.51717	33
Armenia	0.516588	34
Slovakia	0.51478	36
Azerbaijan	0.512308	38
Romania	0.512242	39
Ukraine	0.511898	40
Albania	0.511452	42
Serbia	0.507514	43
Cyprus	0.505198	44
Greece	0.504043	45
Kazakhstan	0.503499	46
Georgia	0.499786	47
Macedonia	0.493884	49
Tajikistan	0.48811	53
Kyrgyz Republic	0.477711	62
Turkey	0.439089	78

EAST ASIA AND PACIFIC

RANK : 3

COUNTRY	INDEX	RANK
Australia	0.544143	16
Philippines	0.530825	24
Mongolia	0.494915	48
Korea	0.48603	54
Vietnam	0.483587	55
Indonesia	0.477748	61
Thailand	0.471871	64

China	0.451305	72
Cambodia	0.429945	82

LATIN AMERICA AND CARIBBEAN

RANK : 4

COUNTRY	INDEX	RANK
Trinidad and Tobago	0.524065	28
Argentina	0.515284	35
Costa Rica	0.512332	37
Panama	0.491256	50
Chile	0.490942	51
Jamaica	0.489992	52
Ecuador	0.481992	57
Nicaragua	0.480806	58
Uruguay	0.480592	59
Venezuela	0.478	60
Peru	0.473517	63
Mexico	0.470865	65
Colombia	0.46541	66
Dominican Republic	0.456539	68
Brazil	0.456186	70
Bolivia	0.450017	74
El Salvador	0.44843	75
Suriname	0.443039	76
Honduras	0.441156	77
Guatemala	0.415339	90

MIDDLE EAST AND NORTH AFRICA

RANK : 5

COUNTRY	INDEX	RANK
Israel	0.528371	25
Malta	0.511528	41
Jordan	0.460777	67
Egypt	0.436172	80
Lebanon	0.430484	81
Syria	0.42791	84
Morocco	0.414357	91
Yemen	0.360448	104

SOUTH ASIA

RANK : 6

COUNTRY	INDEX	RANK
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Sri Lanka	0.55499	13
Bangladesh	0.451292	73
Maldives	0.436863	79
India	0.419864	88
Nepal	0.401744	93
Pakistan	0.37356	100

SUB SAHARAN AFRICA

RANK : 7

COUNTRY	INDEX	RANK
Mauritius	0.482792	56
Madagascar	0.456309	69
Tanzania	0.455969	71
Malawi	0.429338	83
Ghana	0.42739	85
Ethiopia	0.425489	86
Uganda	0.423597	87
Kenya	0.415878	89
Cameroon	0.406051	92
Zambia	0.396385	94
Senegal	0.395503	95
Mozambique	0.392612	96
Mauritania	0.383372	97
Namibia	0.379366	98
Lesotho	0.376835	99
Côte d'Ivoire	0.368026	101
Nigeria	0.367652	102
Benin	0.367153	103
Burkina Faso	0.35058	105
Chad	0.32784	106

2013

EUROPE AND CENTRAL ASIA

RANK : 1

COUNTRY	INDEX	RANK
Iceland	0.608164	1
Norway	0.601991	2
Finland	0.594959	3
Sweden	0.593527	4
Denmark	0.582119	5
Ireland	0.58102	6
Germany	0.578183	7

Switzerland	0.57426	8
Netherlands	0.573582	9
Belgium	0.573063	10
United Kingdom	0.561443	11
Slovenia	0.554223	13
Austria	0.553005	14
Latvia	0.547986	16
France	0.544303	18
Moldova	0.542895	19
Spain	0.541966	21
Hungary	0.535614	23
Czech Republic	0.534711	24
Portugal	0.531435	25
Croatia	0.530628	26
Bulgaria	0.52944	27
Poland	0.52744	28
Italy	0.526055	30
Lithuania	0.524794	32
Russian Federation	0.521436	34
Romania	0.520643	35
Armenia	0.519755	36
Estonia	0.519294	37
Slovakia	0.516554	40
Ukraine	0.512381	42
Cyprus	0.511932	43
Greece	0.511864	44
Azerbaijan	0.51036	45
Kazakhstan	0.509281	46
Georgia	0.506083	48
Albania	0.50591	49
Serbia	0.50503	50
Macedonia	0.49966	53
Tajikistan	0.48819	58
Kyrgyz Republic	0.478226	67
Turkey	0.46519	74

NORTH AMERICA

RANK : 2

COUNTRY	INDEX	RANK
Canada	0.548893	15
United States	0.518581	38

EAST ASIA AND PACIFIC

RANK : 3

COUNTRY	INDEX	RANK
Australia	0.546464	17
Philippines	0.542059	20
Mongolia	0.51326	41
Japan	0.507566	47
Korea	0.483768	62
Vietnam	0.48127	64
Indonesia	0.477694	69
Fiji	0.477252	70
Thailand	0.473432	72
Laos	0.450532	81
Cambodia	0.438017	86

LATIN AMERICA AND CARIBBEAN

RANK : 4

COUNTRY	INDEX	RANK
Trinidad and Tobago	0.526155	29
Argentina	0.525294	31
Costa Rica	0.518405	39
Panama	0.503583	51
Venezuela	0.501881	52
Ecuador	0.498704	54
Bahamas	0.4964	55
Jamaica	0.491346	56
Chile	0.490461	57
Nicaragua	0.488065	59
Uruguay	0.486278	60
Colombia	0.481449	63
Mexico	0.478561	66
Peru	0.477822	68
Dominican Republic	0.47671	71
Bolivia	0.470849	73
Brazil	0.462971	75
Paraguay	0.458554	78
El Salvador	0.447256	82
Suriname	0.439497	83

Honduras	0.427448	94
Guatemala	0.417446	98

MIDDLE EAST AND NORTH AFRICA

RANK : 5

COUNTRY	INDEX	RANK
Israel	0.536272	22
Malta	0.521664	33
Jordan	0.461178	76
Egypt	0.438223	85
Lebanon	0.437121	87
Morocco	0.417353	99
Syria	0.410674	100
Iran	0.405489	103
Yemen	0.362282	115

SOUTH ASIA

RANK : 6

COUNTRY	INDEX	RANK
Sri Lanka	0.555851	12
Bangladesh	0.451671	79
Maldives	0.43481	88
Bhutan	0.432527	90
India	0.428838	93
Nepal	0.421484	95
Pakistan	0.376758	110

SUB SAHARAN AFRICA

RANK : 7

COUNTRY	INDEX	RANK
Mauritius	0.48393	61
Cape Verde	0.479246	65
Madagascar	0.460605	77
Tanzania	0.451208	80
Ethiopia	0.438336	84
Ghana	0.43302	89
Malawi	0.432524	91
Uganda	0.432374	92
Kenya	0.420124	96
Cameroon	0.418884	97
Mozambique	0.409025	101

Burundi	0.409011	102
Senegal	0.404327	104
Zambia	0.40364	105
Botswana	0.385008	106
Namibia	0.381888	107
Nigeria	0.38177	108
Lesotho	0.380186	109
Angola	0.374628	111
Côte d'Ivoire	0.372027	112
Mauritania	0.37054	113
Benin	0.362488	114
Burkina Faso	0.35307	116
Chad	0.33817	117

2014

EUROPE AND CENTRAL ASIA

RANK : 1

COUNTRY	INDEX	RANK
Iceland	0.604547	1
Norway	0.601259	2
Finland	0.597485	3
Sweden	0.59506	4
Denmark	0.591116	5
Germany	0.587286	6
Ireland	0.582231	7
Belgium	0.58004	8
Netherlands	0.578985	9
Switzerland	0.578699	10
France	0.566095	11
Slovenia	0.565163	12
Moldova	0.564968	13
United Kingdom	0.562211	14
Latvia	0.548837	16
Austria	0.547253	18
Bulgaria	0.544438	20
Spain	0.54399	21
Portugal	0.538863	23
Croatia	0.537243	24
Hungary	0.535264	25
Czech Republic	0.535185	26

Italy	0.531817	28
Poland	0.529011	29
Lithuania	0.525813	32
Russian Federation	0.524518	33
Albania	0.524112	34
Ukraine	0.522908	35
Romania	0.522546	36
Armenia	0.52021	39
Estonia	0.519279	40
Slovakia	0.515596	42
Azerbaijan	0.51526	43
Georgia	0.51516	44
Kazakhstan	0.511617	46
Cyprus	0.511138	47
Greece	0.50982	49
Serbia	0.508933	50
Tajikistan	0.491113	59
Kyrgyz Republic	0.489603	61
Macedonia	0.489519	62
Turkey	0.472125	73

NORTH AMERICA

RANK : 2

COUNTRY	INDEX	RANK
Canada	0.547734	17
United States	0.522199	37

EAST ASIA AND PACIFIC

RANK : 3

COUNTRY	INDEX	RANK
Australia	0.545848	19
Philippines	0.543266	22
Japan	0.512783	45
Mongolia	0.510964	48
Korea, Rep.	0.489622	60
Indonesia	0.486748	63
Thailand	0.478818	70
Fiji	0.478692	71
Vietnam	0.475229	72
Laos	0.45042	85
Cambodia	0.440835	90

LATIN AMERICA AND CARIBBEAN
RANK : 4

COUNTRY	INDEX	RANK
Argentina	0.532246	27
Trinidad and Tobago	0.526189	31
Costa Rica	0.51818	41
Nicaragua	0.506281	51
Panama	0.504596	52
Chile	0.504469	53
Ecuador	0.502394	54
Jamaica	0.49687	55
Peru	0.49685	56
Venezuela	0.49499	57
Uruguay	0.493796	58
Colombia	0.486584	64
Dominican Republic	0.481472	66
Mexico	0.481185	67
Paraguay	0.471414	74
Belize	0.467067	75
Bolivia	0.466098	77
Brazil	0.465907	78
El Salvador	0.455417	82
Guatemala	0.454478	84
Suriname	0.444615	86
Honduras	0.434875	94

MIDDLE EAST AND NORTH AFRICA
RANK : 5

COUNTRY	INDEX	RANK
Israel	0.528817	30
Malta	0.52161	38
Tunisia	0.466636	76
Jordan	0.463266	79
Egypt	0.444557	87
Lebanon	0.431683	96
Morocco	0.424563	99
Syria	0.406725	103
Iran	0.405095	104
Yemen	0.360147	116

SOUTH ASIA

RANK : 6

COUNTRY	INDEX	RANK
Sri Lanka	0.560681	15
Bangladesh	0.455277	83
Nepal	0.443612	88
Maldives	0.437341	93
India	0.429113	98
Bhutan	0.399184	106
Pakistan	0.382791	113

SUB SAHARAN AFRICA

RANK : 7

COUNTRY	INDEX	RANK
Mauritius	0.484313	65
Madagascar	0.481125	68
Cape Verde	0.479218	69
Tanzania	0.46136	80
Zimbabwe	0.45696	81
Kenya	0.442243	89
Ethiopia	0.439927	91
Malawi	0.439199	92
South Africa	0.43478	95
Uganda	0.429242	97
Burundi	0.423175	100
Ghana	0.422688	101
Zambia	0.410022	102
Senegal	0.402803	105
Mozambique	0.398823	107
Botswana	0.398062	108
Angola	0.392792	109
Namibia	0.388658	110
Nigeria	0.388151	111
Mauritania	0.386182	112
Côte d'Ivoire	0.376282	114
Lesotho	0.375795	115
Burkina Faso	0.354977	117
Chad	0.341433	118
Mali	0.337179	119