



A Method Discussion of The Inclusivity Index

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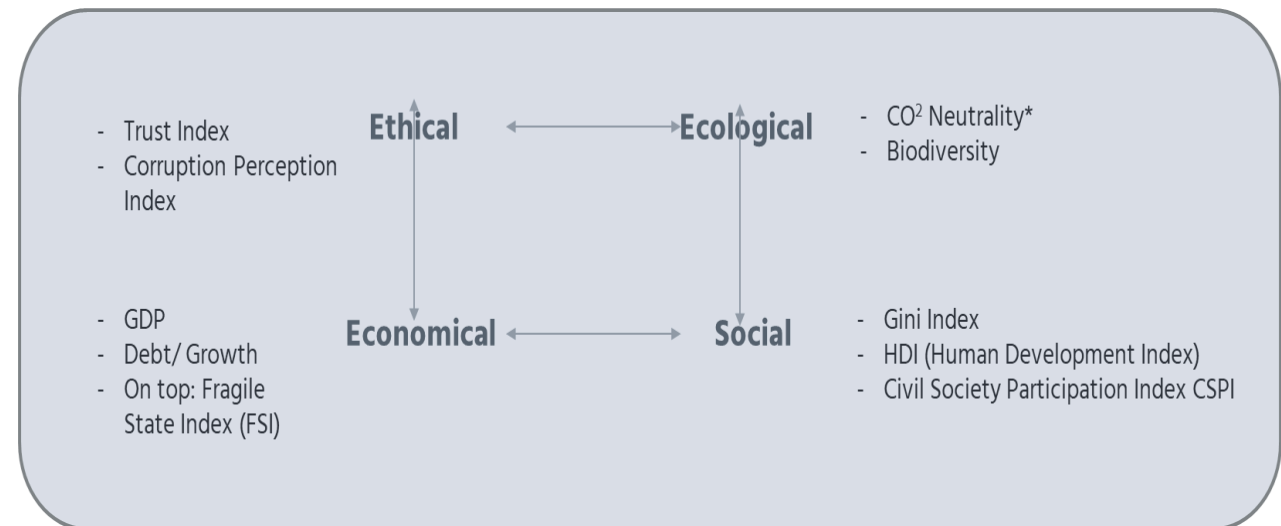
Explaining the Inclusivity Index: A Tool for a Global Social Strategy

- We propose the Inclusivity Index as a tool for assessing the performance of societies
- The Inclusivity Index presents societies and policy-makers with a comprehensive measurement of the degree of inclusivity within a society
- Inclusivity is defined as a measure of a world in balance on the level of countries
- The Inclusivity Index intentionally uses data from existing global indices
- The Inclusivity Index is an empirical base for designing social strategies and political action paths



Explaining the Inclusivity Index: Four Pillars of Inclusivity

- Inclusivity is defined as a measure of a world in balance on the level of countries
- This includes four essential dimensions
 - economic performance
 - social justice
 - environmental sustainability
 - ethical behaviour
- We frame inclusivity as a key indicator for the present and long-term success of society
- Improving the Inclusivity Index comprises the overcoming of bottlenecks and entails a higher quality of life
- **How do we turn the theoretical concept into practical application?**



Indices Overview: The Building Blocks of the Inclusivity Index

Index	Abbreviation	Dimension	Number of Countries	Last Updated	Next Update
Trust Index from WVS	Trust	Ethical	90	2017-2022	2025
Corruption Perception Index	CPI	Ethical	180	January 2024	2025
Environmental Performance Index	EPI	Ecological	180	2024	2025
CO2 per Capita	CO2 per Capita	Ecological	180+	2024	2025
Gini Coefficient	Gini	Social	180+	2024	2025
Human Development Index	HDI	Social	180	March 2024	2025
GDP per Capita	GDP per Capita	Economic	180+	2024	2025
Central Government Debt	CGD	Economic	180	2023	2024
Fragile State Index	FSI	NA (economic)	180	2024	2025
Civil Society Participation Index	CSPI	NA (social)	173	2024	2025

Methodology (I): Data Collection, Normalisation, and Aggregation

Basic Inclusivity Index: Mean Aggregation of Normalised Indices (n = normalised, N = Number of available Indices)

$$\frac{Trust_n + CPI_n + GDP_n + CGD_n + CO2_n + EPI_n + HDI_n + Gini_n + FSI_n + FSPI_n}{N_i}$$

$$\frac{\sum V_n}{N_i}$$

Normalising Values: Two Ways

If the Index Value is smaller than the Threshold Value ($V_I =$ Value Index, $V_T =$ Threshold Value, $V_n =$ Normalised Index)

$$\frac{V_I}{V_T} = V_n$$

If the Index Value is equal to or bigger than the Threshold Value

$$V_n = 1$$

• Inclusivity Index Calculation

1. **Data Collection:** An Index is assumed to be global when typically, available for 180 countries:
 - UN Member states $N = 193$, not including the Vatican, Taiwan, Palestine and others
 - Trust Index 90 countries
 - CPI 173 countries, FSI 179 countries
2. **Normalisation:** Index values are normalised on a range of 0 to 1
 - Via division of the index value for each country by the selected threshold value. (see below)
 - If the Index value exceeds the maximum threshold value, the normalised value is automatically 1
3. **Aggregation:** The normalised values are aggregated by calculating the mean of all normalised values

Methodology (II): Defining Normalised Threshold Values (1)

Indicator	Threshold Value (green-light)	Explanation
Trust	33,5	Approx. 25% of countries are above that value
CPI	55	Approx. 25% of countries are above that value
GDP	50.000 USD	Subject for discussion
CGD	40% of GDP	Approx. 25% of countries fall below that value
CO2 PC	3t	Subject for discussion
EPI	75	Approx. 25% of countries are above that value
Gini	< 0,3	Approx. 25% of countries fall below that value
HDI	0,8	Breakoff point between high and very high HDI
FSI	50	Approx. 25% of countries fall below that value
CSPI	0,8	Approx. 25% of countries are above that value

- A further step is the preparation of data for aggregation
- This enables us to account for the different types of measurements used
 - Example: GDP in USD and CO² in metric tons
- For doing so, we used a selected threshold value
- The threshold value is a methodological assumption which refers to an index value expected to be sufficient for a society in balance
- Threshold values are open to discussion, criticism and further development
- Instead of using the non-normalised index value, the value for each country will be calculated using the reference threshold value as a reference
 - Example CPI: (Country Value e.g. Mexico) 31 (Threshold Value) 55 = 0,56 (=Normalised Value)

Methodology (III): Defining Normalised Threshold Values (2)

Indicator	Threshold Value (green-light)	Explanation
Trust	33,5	Approx. 25% of countries are above that value
CPI	55	Approx. 25% of countries are above that value
GDP	50.000 USD	Subject for discussion
CGD	40% of GDP	Approx. 25% of countries fall below that value
CO2 PC	3t	Subject for discussion
EPI	75	Approx. 25% of countries are above that value
Gini	< 0,3	Approx. 25% of countries fall below that value
HDI	0,8	Breakoff point between high and very high HDI
FSI	50	Approx. 25% of countries fall below that value
CSPI	0,8	Approx. 25% of countries are above that value

• Calculation Examples

- Instead of using the non-normalised index value, the value for each country will be calculated using the reference threshold value as a reference
- Example CPI: (Country Value e.g. Mexico) 31 (Threshold Value) 55 = 0,56 (=Normalised Value)
- Example CPI: (Country Value e.g. Denmark) 90 (Threshold Value) 55 = 1,64 (=Normalised Value)
- As no value should exceed 1, the value for Denmark will be adjusted from 1,64 to 1,00
- Conclusion: Threshold Values enable purposeful data aggregations between different indicators

Methodology (IV): Why Data Normalisation is Necessary

Normalising Values: Two Ways

If the Index Value is smaller than the Threshold Value (V_I = Value Index, V_T = Threshold Value, V_n = Normalised Index)

$$\frac{V_I}{V_T} = V_n$$

If the Index Value is equal to or bigger than the Threshold Value

$$V_n = 1$$

- Normalised data using threshold values enable purposeful data aggregations between different indicators
- This is helpful for understanding for the inclusivity index and avoiding confusion e.g. comparing metric tons and dollars

Methodology (V): Why Threshold Values instead of Absolute Data?

- Why threshold values and not maximum values?
- The advantage of using threshold instead of maximum values is that these are less affected by outliers
- Further, the maximum values might not be a representative benchmark for assessing the performance of country
- This can be illustrated by striking examples where the highest absolute would give a very biased reference for most of the other countries

Methodology (VI): Dealing with Outliers using Threshold Values

- In the data set containing the GDP per capita, we see that Monaco is not just the highest-ranking country worldwide but also outpaces any other country significantly with a GDP per capita of over 240.000 USD
- Using this value for data normalisation would significantly reduce the Inclusivity Index value of almost all other countries
- The economic dimension would thus disproportionately affect the Inclusivity Index
- Further, countries that rank significantly lower might still provide satisfactory levels of economic wealth (e.g. Germany)
- Selected Threshold Value: 50.000 USD.

Country	GDP	Rank (out of 180)
Monaco	240.862	1
Liechtenstein	197.505	2
Luxembourg	125.006	3
Bermuda	118.775	4
Norway	108.729	5
Germany	48.718	29

Methodological Comparison: Different Outcomes using Absolute and Threshold Values

- The different methods of data normalisation produce different results once all normalised values are aggregated
- When comparing the results of both methods, we notice a couple of differences
 - Inclusivity Index Values are generally higher when using Threshold Values
 - Economic factors will be less dominant when using threshold values
- Example: Absolute values, even a very rich country such as Switzerland would have a value of only 0,640 instead of 0,948. This would result in a distorted and significantly lower value

Data Normalisation with MV		Data Normalisation with TV	
Top 5 Countries	Inclusivity Index Value	Top 5 Countries	Inclusivity Index Value
Norway	0,713	Sweden	0,973
Denmark	0,683	Denmark	0,960
Finland	0,662	Switzerland	0,948
Switzerland	0,640	Norway	0,934
Iceland	0,637	Germany	0,915

Germany (I): Data Collection and Normalisation

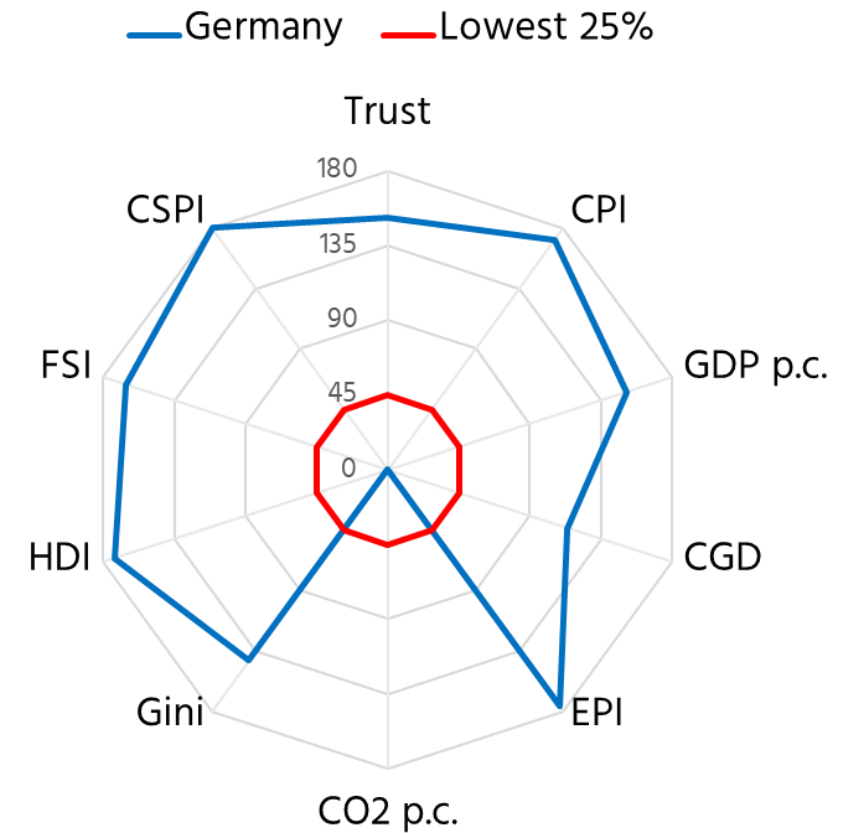
Index	Threshold Value	Value Germany	Value Normalised*	Value Normalised 2
Trust	33,5	41,6	1,24	1
CPI	55	78	1,42	1
EPI	75	88,5	1,18	1
CO2 per Capita	3t	8,16	0,37	0,37
Gini	< 0,3	0,32	0,94	0,94
HDI	0,8	0,95	1,19	1
GDP per Capita	50.000 USD	48.718	0,97	0,97
CGD	40% of GDP	45,95	0,87	0,87
FSI	50	24,6	2,03	1
CSPI	0,8	0,98	1,23	1

* Value Normalised = Country Value/Threshold Value or Value Normalised = Country Value/Threshold Value; depending on case

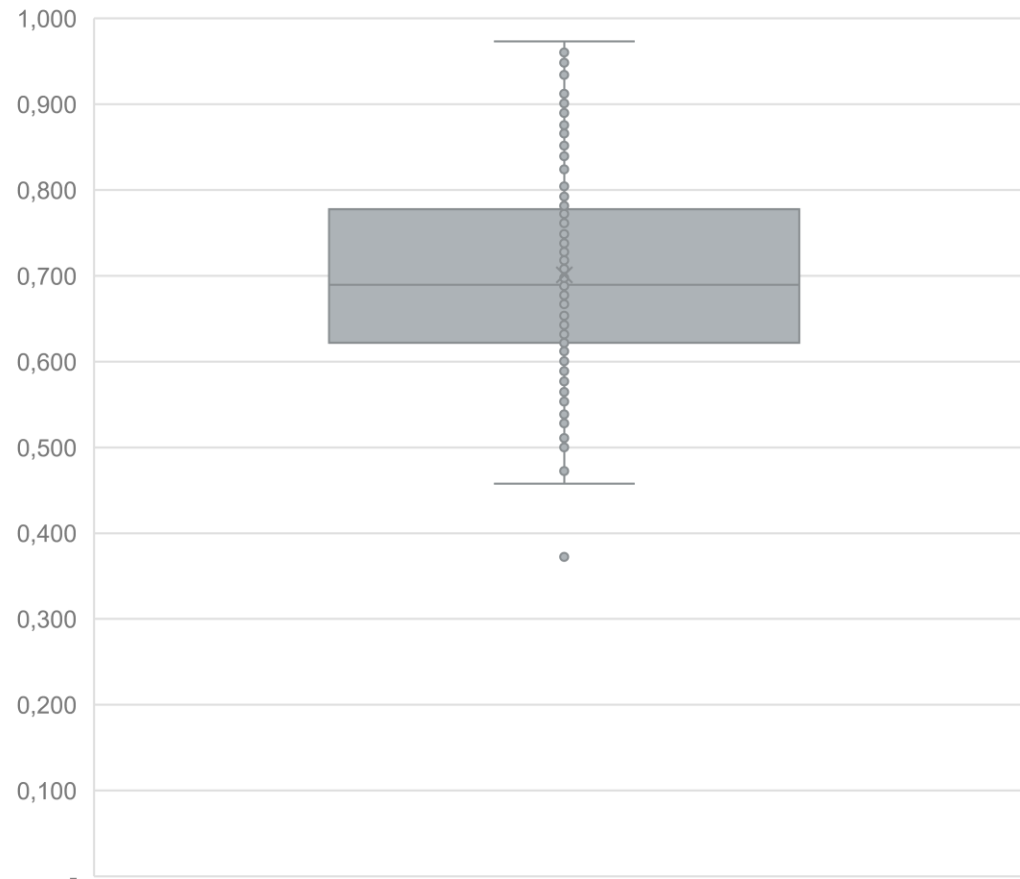
Germany (II): Data Aggregation and Further Steps

$$Inclusivtiy = \frac{1 + 1 + 0,974 + 0,871 + 0,368 + 1 + 1 + 0,940 + 1 + 1}{10}$$

Inclusivtiy = 0,915



























Global Inclusivity: Distribution Across Countries



- The values of the Inclusivity Index range from 0,373 (Eritrea) to 0,973 (Sweden)
- Eritrea (0,373) can be deemed as a statistical outlier
- They have a Mean of 0,701 and a Median of 0,690
- The values deviate on average 0,113 points from the mean
- 50% of values between 0,776 and 0,623

Global Inclusivity: Top and Low 12

Country Name	Flag	Inclusivity Index	Rank (out of 179)
Sweden		0,973	1
Denmark		0,960	2
Switzerland		0,948	3
Norway		0,934	4
Germany		0,915	5
Netherlands		0,912	6
Austria		0,909	7
Australia		0,907	8
Finland		0,906	9
Luxembourg		0,902	10
New Zealand		0,901	11
Malta		0,901	12

Country Name	Flag	Inclusivity Index	Rank out (of 179)
Eritrea		0,373	179
Libya		0,458	178
Myanmar		0,472	177
Syria		0,476	176
Yemen		0,500	175
Turkmenistan		0,511	174
South Sudan		0,514	173
Bahrain		0,528	172
Somalia		0,531	171
Burundi		0,537	170
Lebanon		0,538	169
Sudan		0,541	168

“Traffic Light Visualization” based on Rankings by the Example of Germany



Trust



CPI



GDP per capita



CSPI



HDI



CGD



EPI



CO2 per capita



FSI



Gini

“Traffic Light Visualization” based on Rankings by the Example of Mexico



Trust



CPI



GDP per capita



CSPI



HDI



CGD



EPI



CO2 per capita



FSI



Gini

“Traffic Light Visualization” based on Rankings by the Example of Turkey



Trust



CPI



GDP per capita



CSPI



HDI



CGD



EPI



CO2 per capita



FSI



Gini

Conclusion, Applications and Possible Next Steps

- The Inclusivity Index is a robust and methodologically solid instrument for the assessment of inclusive development in individual countries and regions
- It is highly flexible due to the possibility of individual adjustments concerning the weight and importance of different dimension
- It is open for discussions and further development by including or eliminating indices for given dimensions (e.g. substituting the HDI for the social dimension)
- Application reaches from historical comparisons (e.g. the development of corruption perception during the last 10 years) to the deduction of social and political action steps on a national and international level
- Beyond, the Inclusivity Index can be used as a **covenant tool for international loans** and other agreements, e.g. via the **connectivity of social and economic measures**
- Example: Linking credits to the Gini Coefficient

Indices Overview: High Availability of Selected Indices

Index	Abbreviation	Dimension	First Release /year available	Frequency	Scope	Number of Countries	Potential Challenges
Trust Index from WVS	Trust	Ethical	1981	Approximately every 5 years	Varying	20-90	Irregular Release Cycles
Corruption Perception Index	CPI	Ethical	1995	Yearly	Global	180	
Environmental Performance Index	EPI	Ecological	2006	Biennially in even-numbered years	Global	180	
CO2 per Capita	CO2 per Capita	Ecological	1970	Yearly	Global	180+	
Gini Coefficient	Gini	Social	1960	Yearly	Global	180+	
Human Development Index	HDI	Social	1990	Yearly	Global	180	
GDP per Capita	GDP per Capiat	Economic	1960	Yearly	Global	180+	
Central Government Debt	CGD	Economic	1950	Almost yearly	Global	180	Use of General Government Debt when CGD not available
Fragile State Index	FSI	NA (economic)	2005	Yearly	Global	180	
Civil Society Participation Index	CSPI	NA (social)	1789	Yearly	Global	173	Data on years far in the past might not be very reliable

Indices Overview: Regular Updates Insure

Index	Last Updated	Next Update
Trust Index from WVS	2017-2022	2024
Corruption Perception Index	2023	2024
Environmental Performance Index	2022	2024
CO2 per Capita	2023	2024
Gini Coefficient	2023	2024
Human Development Index	2023	2024
GDP per Capita	2023	2024
Central Government Debt	2022	2024
Fragile State Index	2023	2024
Civil Society Participation Index	2023	2024

Methodological Issues): Horizon and Limits of Data Selection

- Using global indices relies and depends on their individual strengths and weaknesses
- Example: The HDI Index partially uses income data strongly correlated to GDP
- The Inclusivity Index comprises data from 10 Indices
- The 4 dimensions of inclusivity are represented by two indices each
- On top, two additional indices are included
- Thus, we obtain ten index values for every country under investigation

Methodological Variations (I): Data Aggregation and Weighting

- After data normalisation, the next step is to aggregate the normalised values
- So far, we have used only the mean without further consideration of weighting specific values over others
- However, a next step is to introduce weighted values
- This allows us to emphasize those variables that we consider especially important for a society in balance
- Example: If ecological and corruption perception concerns receive double weight, the Inclusivity Performance Value changes significantly

Weighted Indices	Weighting Factor	Reason
FSI	2	State stability is a prerequisite for any society to properly function
CO2 per Capita	2 or 3	Carbon emissions are a main driver for climate change and are thus a main predictor for climate change
CPI	2	Corruption has been linked to decreased efficiency in any society. Thus, it is a major obstacle for societies for achieving balance

Methodological Variations (II): Calculating different Data Weightings

- One possible way of changing the weighting of the individual indicators is to multiply the individual indicators by the previously mentioned factors
- This will be done after data normalisation so that the new values can have a range from 0 to 2.
- Additionally, the value of every doubled indicator will be doubled in the denominator to guarantee a range of 0 to 1 for the Inclusivity Index
- Note: Formula V1 and V2 are the same formula using different notations

V1 Advanced Inclusivity Index: Mean Aggregation of Normalised Indices (n = normalised, Ni = Number of available Indices, Nm = Number weighting factors)

$$\frac{Trust_n + CPI_n \times 2 + GDP_n + CGD_n + CO2_n \times 2 + EPI_n + HDI_n + Gini_n + FSI_n \times 2 + FSPI_n}{N_i + N_m}$$

V2 Advanced Inclusivity Index: Mean Aggregation of Normalised Indices (n = normalised, N = Number of available Indices)

$$\frac{1}{13} \times Trust_n + \frac{2}{13} \times CPI_n + \frac{1}{13} \times GDP_n + \frac{1}{13} \times CGD_n + \frac{2}{13} \times CO2_n + \frac{1}{13} \times EPI_n + \frac{1}{13} \times HDI_n + \frac{1}{13} \times Gini_n + \frac{2}{13} \times FSI_n + \frac{1}{13} \times FSPI_n$$