

MEASURING ETHICAL PERFORMANCE ACROSS NATIONS AND REGIONS: THE ETPI AND RETPI INDICES WITH A COMPARATIVE METHODOLOGY, CULTURAL DIMENSIONS AND RESILIENCE ANALYSIS

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Abstract

This paper presents the third generation of the Ethics Perception Index (ETPI) and the Regional Ethics Perception Index (RETPI), which are used as quantitative tools to measure ethical and moral development at national and sub-national levels. Based on earlier conceptual versions, the present study introduces a transparent methodology integrating seven standardised components — corruption, economic freedom, human development, education, human rights, environmental performance and natural resource depletion — rescaled to a 0–100 scale with explicit treatment of negative indicators. The study employs a dynamic framework including time-series analysis, missing-data protocols and regional modifiers based on public engagement (e.g. Google Trends). This enables the indices to capture resilience and recovery potential following shocks. When this methodology is applied to global and regional datasets, the results confirm that Scandinavian countries consistently achieve the highest ETPI values, thus validating the framework against established perceptions of ethical leadership. The RETPI further reveals significant intra-national variation, highlighting regions that diverge from national averages and demonstrating the added value of sub-national analysis. This study contributes to existing knowledge by providing the first replicable ethics-focused indices that are longitudinal and regionally adaptable. These indices complement existing measures such as the Social Progress Index and the Human Development Index. These findings provide policymakers and researchers with a robust tool for assessing the ethical underpinnings of resilience, sustainability and inclusive development.

Keywords: Ethics Perception Index, ETPI, Regional Ethics Perception Index, RETPI, moral-ethical growth, sustainable development, quantitative ethical assessment, political decision-making.

INTRODUCTION

In an era where economic growth frequently takes precedence over other aspects of social development, the need for a more nuanced understanding of progress is becoming increasingly urgent. Joseph E. Stiglitz's seminal 2005 essay, 'The Ethical Economist: Growth May Be Everything, But It's Not the Only Thing', catalysed a critical reassessment of conventional measures of development. Stiglitz's work emphasises the shortcomings of

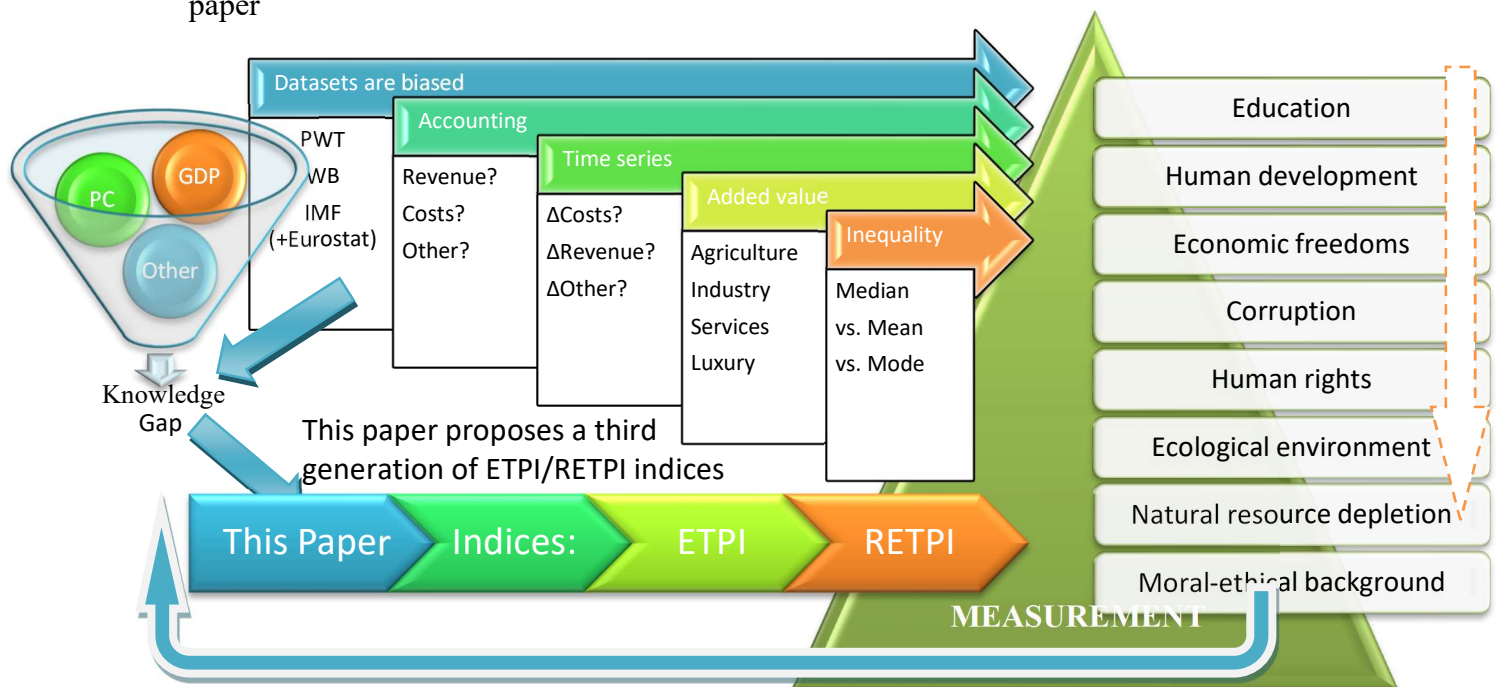
traditional methods that prioritise material well-being over the moral and ethical dimensions that are vital for sustainable development (Stiglitz, 2005).

His subsequent involvement in the Stiglitz-Sen-Fitoussi Commissions at the OECD reinforced the idea that policymakers have been misled by their over-reliance on Gross Domestic Product (GDP) as the primary measure of progress, obscuring issues such as inequality, environmental degradation and social well-being (Stiglitz et al., 2010, 2018).

These and other limitations of GDP are now well documented. For instance, GDP fails to account for income distribution, non-market activities or the depletion of natural resources (Shemetev, 2025; van den Bergh, 2009). Furthermore, it fails to capture the ethical and moral dimensions of development (Giannetti et al., 2015; Shemetev, 2025). Consequently, countries may appear to be prospering economically while simultaneously experiencing rising inequality, corruption or ecological collapse (Dědeček & Dudzich, 2022).

Alongside these critiques, the emerging field of development ethics has argued that progress should be evaluated in terms of both material output and values such as equity, human rights, empowerment and environmental sustainability (Drydyk, 2016). One of the founders of development ethics, Denis Goulet, already stressed that 'anti-development' occurs when growth undermines dignity, justice, or sustainability (Goulet, 1971). However, despite decades of debate, there is still a lack of robust quantitative indices that can systematically measure ethical progress across countries and regions (see Fig. 1).

Figure 1 Current state of knowledge of traditional economic metrics and the approach of this paper



Source: Own processing. For more information, see e.g. Shemetev (2022)

Moreover, recent global challenges, from the 2008 financial crisis to the ongoing military conflicts and the ongoing pandemic, have further exposed the vulnerabilities of growth models that ignore ethical and moral foundations. These events highlight the importance of frameworks that consider both economic and ethical aspects of progress.

In response to these challenges, recent scholarship has begun to explore whether ethical behaviour and governance quality directly impact sustainable development outcomes (Dermody et al., 2018; Johnson, 2013; Seiam & Salman, 2024; Wang et al., 2023). However, existing indices such as the Corruption Perceptions Index (Bevir & Letki, 2012; Heide, 2020) and the Dow Jones Sustainability Index (Carlos & Lewis, 2018; Johnson, 2013) remain partial and sector-specific, or focus too heavily on governance and finance. This leaves a gap in the area of comprehensive, multidimensional ethical assessment.

Therefore, the need for ethical considerations in development is not merely theoretical; it has practical implications for policymaking at local, regional, and national levels. Economic development usually progresses from the local to the regional, and then to the national and international levels. However, current policy frameworks often overlook this progression because they lack the tools to measure development simultaneously at these different levels (Sen, 2000; Sen & Nussbaum, 1993; Shemetev & Pěluha, 2023).

Against this backdrop, the present study aims to further the debate by proposing a third generation of indices (see the 'Discussion' section, subchapter 'From Concept to Maturity: Three Generations of the Ethics Perception Indices' for details of the differences between the three generations of these indices). The study focuses on the third generation of the two indices: the Ethics Perception Index (ETPI) and the Regional Ethics Perception Index (RETPI). These indices seek to incorporate ethical considerations into development assessments systematically, transparently and adaptably. By doing so, they address the urgent need for tools that can capture the ethical foundations of resilience and sustainability in the twenty-first century.

THEORETICAL BACKGROUND: INTEGRATING STIGLITZ'S CRITIQUE AND INDICES FOR HOLISTIC MEASUREMENT OF MORAL-ETHICAL GROWTH

The critique of GDP as a singular measure of progress

Historical development of GDP

GDP and related indicators have their roots in the work of Simon Kuznets, who developed them as a measure to assess the economic performance of nations (Kuznets, 1934, 1941, 1955). Over time, GDP has become the most widely used indicator of economic health, providing insight into a country's economic size and performance (Landefeld, 2000; Neil &

U.S. Bureau of Economic Analysis, 2020). Despite its widespread use, GDP has come under considerable criticism for its inability to capture the full extent of societal progress (van den Bergh, 2009).

Limitations of GDP and related indicators

Bergh (2009), Shemetev & Pélucha (2023), Stiglitz (2005) and several other authors highlight several critical limitations of GDP and related indicators. First, it does not take into account the distribution of income, which means that GDP growth can coexist with increasing inequality. Second, GDP does not take into account the environmental degradation and resource depletion that often accompany economic growth. Third, GDP does not measure non-market activities, such as household work and voluntary work, which are essential for social well-being. Finally, GDP overlooks the moral and ethical dimensions of progress, which are crucial for a holistic understanding of societal progress.

Broadening the scope: Introducing new moral-ethical growth indices

Introduction to Ethical Indicators

Ethical norms play a fundamental role in shaping the social, cultural, economic and political landscapes of societies (Ariely, 2012; Bauman, 2008; Gotoh & Dumouchel, 2009; Sen, 2004; Shemetev, 2022; Stiglitz, 2005). The complexity and variability of ethics across regions, countries and societies requires a nuanced understanding of how ethical norms are formed and measured (Bauman, 2007; Burnham & Phelan, 2001; Douglas & Isherwood, 1996a; Hickel, 2020; Wengrow, 2010). Historically, ethics has been viewed as a culturally embedded phenomenon, with each society developing its moral compass based on historical, religious, and social factors (Douglas & Isherwood, 1996b; Graeber, 2011; Harari, 2015; Harreld, 2016; Maddison, 2007; Narotzky, 1997; Shapiro, 2020; Wengrow, 2010). However, with the advent of globalisation, there is a growing need for comprehensive ethical indicators that can be applied at different levels – regional, national and local – to assess sustainable well-being.

This theoretical background explores the roots of ethical norms, the role of education in shaping ethics, and the potential for creating comprehensive ethical indices. By integrating previous research on the components of ethics and the methods for measuring them, this study aims to propose a novel approach to ethical indexing that is both quantitative and applicable across different socio-cultural contexts.

The roots of ethics

Ethics is not a monolithic concept, but a dynamic process shaped by various factors, including culture, religion and historical context (Broadie, 1994; Haeffele & Storr, 2019; Hauptman, 2019; Lord, 2010; White, 2019). Different societies may have different views of what constitutes ethical behaviour (Boucher, 2009; Carrier, 2005; Harari, 2014; Hauptman, 2019;

Hayek & Bartley, III, 1992; Sherwin, 2000). For example, while some indigenous tribes may view cannibalism as a virtuous act (see, for example, study of Keeley (1997)), other societies may condemn it as highly unethical (see, for example, the work of Kennedy (2007)). This divergence highlights the importance of understanding the roots of ethics within each region, country or society.

Ethical norms are often shaped by a combination of innate moral instincts (Bloom & Cook, 2013) and external influences such as education, religion and law (see, for example, Keeley's concept of civilisation (1997) or the collection of studies on ethics in White (ed.) (2019)). The concept of ethics as an innate understanding of 'right' and 'wrong' has been supported by psychological studies suggesting that even infants have a rudimentary sense of morality (Bloom, 2013). However, these innate tendencies are further shaped by societal influences, leading to the development of collective ethical standards through the process of civilisation (Keeley, 1997).

Fig. 2 conceptualises the sources of ethics as a stochastic process in which innate moral instincts are shaped and refined by external factors over time. This process results in a wide range of ethical norms, as seen in the different practices and beliefs of different societies.

Figure 2 The proposed concept of the sources of ethics



Source: Own processing. For more information, see e.g. Shemetev (2022)

This diagram (Fig. 2) illustrates how various external factors, such as cultural factors, religious beliefs, historical context, legal framework and environmental conditions, interact with innate moral instincts. These interactions lead to the development of ethical norms that vary from society to society.

The role of education in shaping ethics

Education plays a crucial role in filtering and refining ethical standards within a society (Halstead & Taylor, 2000; Nucci, 2003; Rest et al., 2014). It serves as a mechanism for selecting 'good' and 'bad' practices, thereby shaping collective ethical consciousness (Arthur, 2003; Lapsley & Narvaez, 2005, 2004; Smiles, 1862). The globalisation of education has the

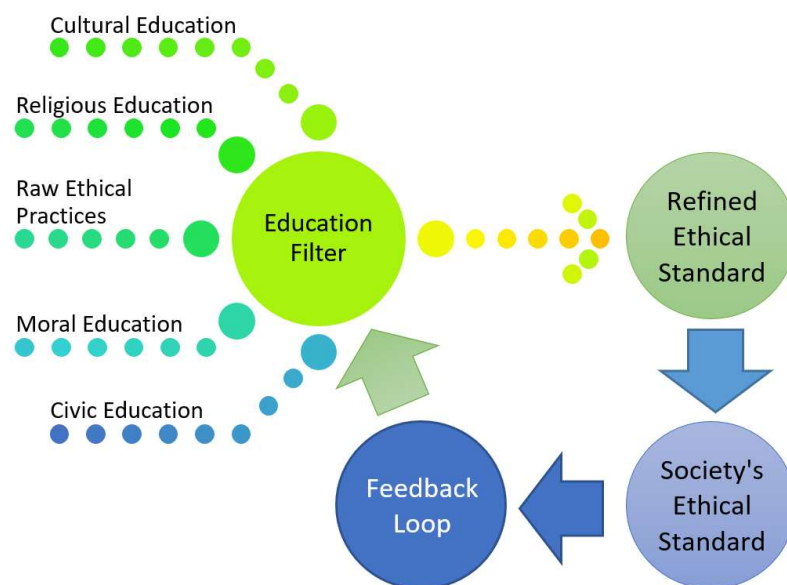
potential to create a globalised filter for ethical standards, promoting universally accepted norms while discouraging practices deemed unethical by the wider global community (Power, 2015).

Throughout history, education has played a central role in challenging and transforming societal norms (Arthur, 2003). For example, the abolition of slavery in nations such as Russia (Troinitsky, 1858) or the United States (Kennedy, 2007) was significantly influenced by the dissemination of new educational philosophies and ethical frameworks.

Xenophon's *Cyropedia* (c. 370 BC), a foundational European encyclopaedia, provides an example from history of how education can influence societal values. Cyrus, who received an excellent education for his time, embraced moral and political philosophy, and as a result freed some slaves, demonstrating the power of education to foster empathy and challenge entrenched social practices (Xenophon, 2011, Volume #1, Book 1-4, pp. 361-364; Volume #2, p. 9 ("...slavery is a great evil.") and pp.148-150 (People who treat others as slaves deserve nothing and often lose everything ["...because they preferred to treat (people) like slaves rather than as friends. Many, too, not satisfied to live contentedly in the enjoyment of their own proper share, have lost even that which they had, because they have desired to be lords of everything; and many, when they have gained the much coveted wealth, have been ruined by it." [p.149]])).

Fig. 3 illustrates the role of education as a filter that selects and promotes ethical practices, reinforcing the idea that education is a fundamental element in the development of a society's ethical standards.

Figure 3 The Role of Education in Shaping Ethical Standards



Source: Own processing. For more information, see e.g. Shemetev (2022)

Fig. 3 highlights the central role of education as a filtering mechanism that refines raw ethical practices (see, for example, the study of Macintyre (2007)). Various forms of education (moral, civic, cultural and religious) contribute to the formation of refined ethical standards, which in turn shape a society's ethical norms. A feedback loop from societal ethical norms helps to continually inform and adjust the educational filter.

The need for ethical indices

Despite the centrality of ethics to societal development (Foot et al., 1967; Habermas, 1987; Macintyre, 2007; Nussbaum, 2011; Rawls, 2005; Sen, 2000, 2013; Stiglitz, 2005), there is still no comprehensive index that systematically integrates ethical dimensions across economic, social, and environmental domains. Several indices exist, but each remains partial in scope. For example, the Corruption Perceptions Index (CPI) (Transparency International, 2020) measures perceived corruption but neglects broader ethical dimensions such as equity or sustainability. The Human Development Index (HDI) (United Nations Development Programme, 2025) incorporates health, education, and income but omits governance quality, corruption, and environmental stewardship. The Environmental Performance Index (EPI) (Conrad & Cassar, 2019; Wolf et al., 2022) focuses on ecological outcomes but does not address justice or human rights. Similarly, the Dow Jones Sustainability Index (DJSI) (Carlos & Lewis, 2018; Johnson, 2013) and the Standard Ethics Indices (Standard Ethics, 2021, 2024a) are primarily designed for corporate or financial benchmarking rather than holistic societal assessment.

These indices demonstrate that while important dimensions of ethics are being measured, they remain fragmented, sector-specific, or oriented toward corporate governance rather than societal ethics. No existing framework combines corruption, human rights, education, environmental sustainability, and economic freedom into a single, transparent, and reproducible measure. Moreover, none of the existing indices provide a **regional-level tool** that can capture intra-national variation in ethical development, despite evidence that ethical challenges often differ significantly across regions (Shemetev, 2022; Shemetev & Pěluha, 2023).

This fragmentation constitutes the research gap: the absence of a unified, multi-dimensional, and regionally adaptable index of ethical progress. To address this, the present study introduces the third generation of the Ethics Perception Index (ETPI) and the Regional Ethics Perception Index (RETPI). These indices integrate seven established components (CPI, HDI, EPI, EFI, HRI, NRD, EI) into a single framework, while also incorporating dynamic methods for handling missing data and regional modifiers. In doing so, ETPI and RETPI

provide the first comprehensive, scalable, and policy-relevant instruments for measuring ethical development at both national and regional levels.

Proposed ethical index: ETPI+RETPI

The development of these indices is based on the premise that ethics is a multifaceted phenomenon that cannot be fully captured by existing financial or freedom-based indices. Instead, ETPI and RETPI seek to provide a more holistic assessment of ethical standards, taking into account the various factors that influence ethics in different societies.

The Ethics Perception Index (ETPI)

The Ethics Perception Index (ETPI) is designed to provide a quantitative measure of moral-ethical growth at the national level. The ETPI includes indicators related to justice, equality, environmental protection and general ethical behaviour (see Tab. 1).

Table 1 The Designed ME-Matrix Principle to Process the Evaluation of the Missing Data

| Existing Macro Indicator (or set of indicators) | Limitation of Using the Indicator Individually or as a Traditional Metric | Key Benefit of ETPI/RETPI Integration in Comparison |
|---|--|--|
| GDP / GRP and similar indicators | Fail to capture the complexity of human development , overlooking the moral and ethical dimensions crucial for a holistic understanding of societal progress. Lack granularity for micro-regional/rural analysis (below NUTS III). | Holistic Measurement of Progress: Offers an alternative/supplementary tool that integrates ethical considerations, justice, equity, and environmental sustainability, ensuring progress is measured beyond economic output. |
| Individual Proxy Indicators (CPI, HDI, EPI, EFI, HRI, NRD, EI) | Each measures only one facet of ethics (e.g., corruption or education). Using them separately can lead to biased estimators in research, as ethical issues are intertwined. | Unified Ethical Assessment: Synthesizes these seven diverse components (covering corruption, human development, education, human rights, economic freedom, and environmental ethics) into a single, reliable measure of moral-ethical growth. |
| Individual Proxy Indicators (Data Frequency) | Many key components (like HRI, EFI, NRD) have low update frequencies , posing a challenge for effective time-series analysis. | Dynamic & Longitudinal Utility: ETPI (the third generation presented in this paper) provides a dynamic methodology for time-series analysis . It also incorporates data management tools (like the ME-Matrix and interpolation) to handle missing and low-frequency data, enhancing its utility for longitudinal studies. |
| Existing Economic/Resilience Models | Classic regional recovery models primarily capture employment trends (Giannakis & Bruggeman, 2020) but fail to explicitly incorporate moral-ethical dimensions. | Measures Ethical Resilience/Recovery Potential: ETPI provides the only known quantitative method to estimate the moral-ethical economic potential of recovery and resilience. Moral-ethical growth creates a long-term stable basis for recovery, unlike unstable economic indicators. |

Source: Own work.

By systematically assessing these dimensions, the ETPI provides a comprehensive framework for assessing societal progress beyond traditional economic measures.

The Regional Ethics Perception Index (RETPI)

The Regional Ethics Perception Index (RETPI) extends the principles of the ETPI to a more localised context. By focusing on regional differences, the RETPI allows for a more nuanced understanding of moral-ethical growth in different areas of a country. This localised approach is particularly valuable for identifying regions that may be lagging behind in ethical development, despite overall national progress.

METHODOLOGY

Math model

The ETPI index has 7 measurable components:

- ✓ economic freedom (measured by the Economic Freedom Index),
- ✓ patterns of corruption (measured by the Corruption Perception Index),
- ✓ level of human development (measured by the Human Development Index),
- ✓ level of skills and education (measured by the Education Index),
- ✓ maintenance of a sustainable ecology (measured by the Environmental Performance Index)
- ✓ Level of human rights development and protection (measured by the Human Rights Index)
- ✓ preservation of natural resources for future generations (measured by the depletion of natural resources as a percentage of GDP).

Let components C be scaled either positively or negatively by their original methods. Positive scaling means that higher values of the ETPI components (C) lead to a better situation in a particular area of ethics. The positively scaled components for the ETPI Index are:

- ✓ Economic Freedom Index
- ✓ Corruption Perception Index
- ✓ Human Development Index
- ✓ Education Index
- ✓ Environmental Performance Index
- ✓ Human Rights Index

So that:

$$C_{it} = \left(\frac{X_{it}}{\max(X)} \right) \times 100 \tag{1}$$

Notes: Own formula. C: A specific positive-scale component used to estimate the ETPI (Index Generation III, for time series analysis). X: One of the positive-scale components used to measure ethics. These are: Economic Freedom Index, Corruption Perception Index, Human Development Index, Education Index and Environmental

Performance Index; max: the maximum value taken for all countries or territories and all time periods in the time series analysis; i: a specific country or territory; t: time.

Conversely, negative scale components are possible. Methodologically, a negative scale means that higher values of an ETPI component (C) lead to a worse overall ethical situation. ETPI has only one negative scale component – natural resource depletion as a percentage of GDP.

$$NRD_{it}^R = 100 - \left(\frac{NR_{it} - \min(NRD)}{\max(NRD) - \min(NRD)} \right) \times 100 \quad (2)$$

Notes: Own formula. NRD: natural resource depletion. i: specific country or territory. t: time. R: rescaled. min: minimum value (taken for all countries or territories and all time periods in the time series analysis). max: maximum value (taken for all countries or territories and all time periods in the time series analysis).

There is a conceptual distinction between the two levels of this framework. At the national level, the ETPI acts as an Ethical-Institutional Performance Index, aggregating standardised global indicators in order to measure a nation's institutional stock and objective conditions. Conversely, the RETPI functions as a perception index, incorporating the regional modifier (E) to shift the focus from structural institutional data to real-time ethical engagement and public perceptions within a specific territory.

Dealing with missing data between periods

However, previous generations of the ETPI index were designed for the static analysis of ethics. In other words, they allow for the comparison of countries within a given year, but limit time series analysis. This paper presents the third generation of the ETPI index, which can be used to estimate time series and track changes in ethics over time in different countries. Let C_{it} be the value of the positive scale component i within a time t . Some values (less than 3% of the total number of observations) can have missing values for certain dates in between. The linear interpolation method allows these values to be filled in, thus improving the ETPI index once the missing values appear:

$$C_{it} = C_{it_0} + \frac{C_{it_1} - C_{it_0}}{t_1 - t_0} \times (t_j - t_0) \quad (3)$$

Notes: Own formula. C: Components of the ETPI. i: Specific country or territory. j: Current time with unavailable data (at the time of index estimation). 1: Final period. 0: Base period. t: Time.

For example, suppose country N has an economic freedom index available for 1990 of 100 and for 2000 of 200, with currently missing data in between. Then:

$$C_{N1991} = 100 + \frac{200 - 100}{2000 - 1990} \times (1991 - 1990) = 110$$

$$C_{N1992} = 100 + \frac{200 - 100}{2000 - 1990} \times (1992 - 1990) = 120$$

And similarly for other years (1993-1999). As soon as the economic freedom index data for country N for the years in between (1991-1999) become available, they should replace these interpolated values and thus adjust the estimation of the ETPI. A similar process occurs with the estimation of other key social and economic indicators, such as GDP, where data revisions are common within the further half-decade period, potentially correcting the value of GDP for country X for time t .

Handling temporary unavailability of data in recent periods

Given a data set D with a set of countries $\{I_1, I_2, I_3, \dots, I_n\}$, a set of years $\{y_1, y_2, y_3, \dots, y_n\}$ and a set of input components of the ETPI index $\{C_1, C_2, C_3, \dots, C_n\}$, where D_{IYj} represents the value of the variable C_j for country I in year y . Let Y_I be an ordered set of years for which data exist for country I , so that $Y_I = \{y_1, y_2, \dots, y_k\}$. For each country I it is possible that the last value(s) $[LV_{Ij}]$ of the variable C_j may be missing, which is often observed in the datasets. The following iterative algorithm can solve this problem. For each variable C_j for each country I , where LV_{Ij} is a missing value (NA) for each year $y \in Y_I$ (in ascending order):

$$D_{I,y,j} = \begin{cases} D_{I,y,j} \rightarrow \text{if } D_{I,y,j} \neq NA \\ LV_{I,j} \rightarrow \text{if } D_{I,y,j} = NA \cap LV_{I,j} = NA \\ NA \rightarrow \text{if } D_{I,y,j} = NA \cap LV_{I,j} \neq NA \end{cases} \quad (4)$$

Source: The author's work.

Thus, this algorithm updates the LV_{Ij} after each year iteration if (see Fig. 4).

Figure 4 Process of imputation of missing values for recent data



Notes: Own elaboration.

It is worth noting that as soon as the most recent values of the C_j become available, – we update the values of the D_{IYj} , which consequently updates the ETPI itself.

This is a similar methodological approach to the estimation of macroeconomic indicators, where even such popular components as GDP can be updated within half a decade of the original publication of the estimate.

Rules for missing data handling:

1) Acceptable gaps:

- ✓ Short gaps of one to three consecutive years are routinely interpolated using linear interpolation.
- ✓ Medium-sized gaps of up to five years may also be interpolated, but the results are flagged as provisional.
- ✓ Gaps of 10 years or more are treated with caution: interpolation is possible, but the resulting values are marked as estimates with limited reliability for interpretation.

2) Interpolation method:

- ✓ When data are available at two points (e.g. 2020 and 2025), missing years are filled using linear interpolation.
- ✓ Once intermediate data points become available (e.g. 2023), the series is recalculated in segments (e.g. 2020–2023, 2023–2025) to ensure continuous improvement in accuracy.

3) Substitutability of indicators:

- ✓ The indices are designed in a modular 'LEGO-style'. If one component is missing, a comparable indicator can be used instead (for example, the Our World in Data human rights index could be replaced with the Fariss et al. (2020) human rights index, which has been rescaled to 0–100).

Notes: Each component index can be replaced by an equivalent theoretical and comparable empirical proxy. However, this substitution must be formally documented by future users to maintain replication integrity. This ensures that the modular architecture remains fit for purpose and can be reproduced for high-impact longitudinal studies.

- ✓ The core demand is for consistency within each analysis. In other words, if a substitute index is chosen, it should be implemented for all countries and all time periods to avoid potential bias.
- ✓ If Google Trends are unavailable, RETPI's regional engagement component can be derived from alternative digital sources (e.g. social media data).

4) Limitations:

- ✓ Long gaps reduce the reliability of trend analysis and resilience/recovery estimates.

- ✓ Results for countries with persistent data scarcity should be interpreted as indicative rather than definitive.
- ✓ All interpolated or substituted values are transparently documented, and outputs are updated whenever new data become available.

Modelling the Regional Ethics Perception Index (RETPI): Conceptual Framework and Analysis

Let E represent the Ethical Engagement, as measured by online activity ($E \in [0,1]$). T denotes the ETPI (Ethics Perception Index) for a specific country ($T \in [0,1]$). L and H represent the lower and upper bounds, respectively, of the modifiers applied to T ($L, H \in [0,1]$). The RETPI (Regional Ethics Perception Index) is then defined by the following function (5):

$$RETPI^U = \begin{cases} T & \text{if } E = 0.5 \\ (1-L)T & \text{if } E = 0 \\ (1-L)T + \left(\frac{E}{0.5}\right)(TL) & \text{if } E \in (0; 0.5) \\ (1+H)T & \text{if } E = 1 \\ T + \left(\frac{E-0.5}{0.5}\right)(TH) & \text{if } E \in (0.5; 1) \end{cases}$$

Notes: Own formula. T: ETPI (Ethics Perception Index) value ($T \in [0;1]$); L: Lower bound ($L \in [0;1]$);

H: Higher bound ($H \in [0;1]$); E: Interest in ethical questions, as measured by internet activity; $E \in [0;1]$;

$RETPI^U$: Unscaled Regional Ethics Perception Index.

So that:

$$RETPI = 100 \left(\frac{RETPI^U_{E,T}}{\max(RETPI^U)} \right) \tag{6}$$

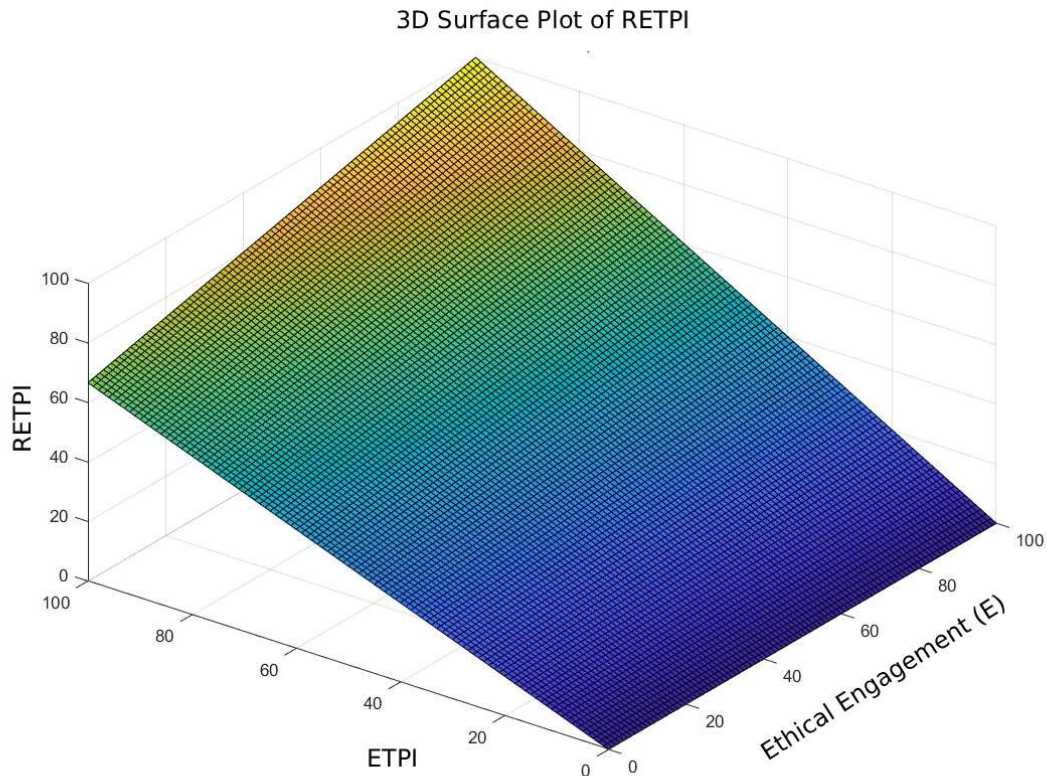
Notes: Own work. RETPI: Scaled [from 0 to 100] Regional Ethics Perception Index;

$\max(RETPI^U)$: the maximum value of the Unscaled Regional Ethics Perception Index;

100 – multiplier to shift the scale of the RETPI index to values between 0 and 100.

Analysis

Fig. 5 illustrates the range of $RETPI^U$ values under the conditions set for this study, where $H=L=0.2$.

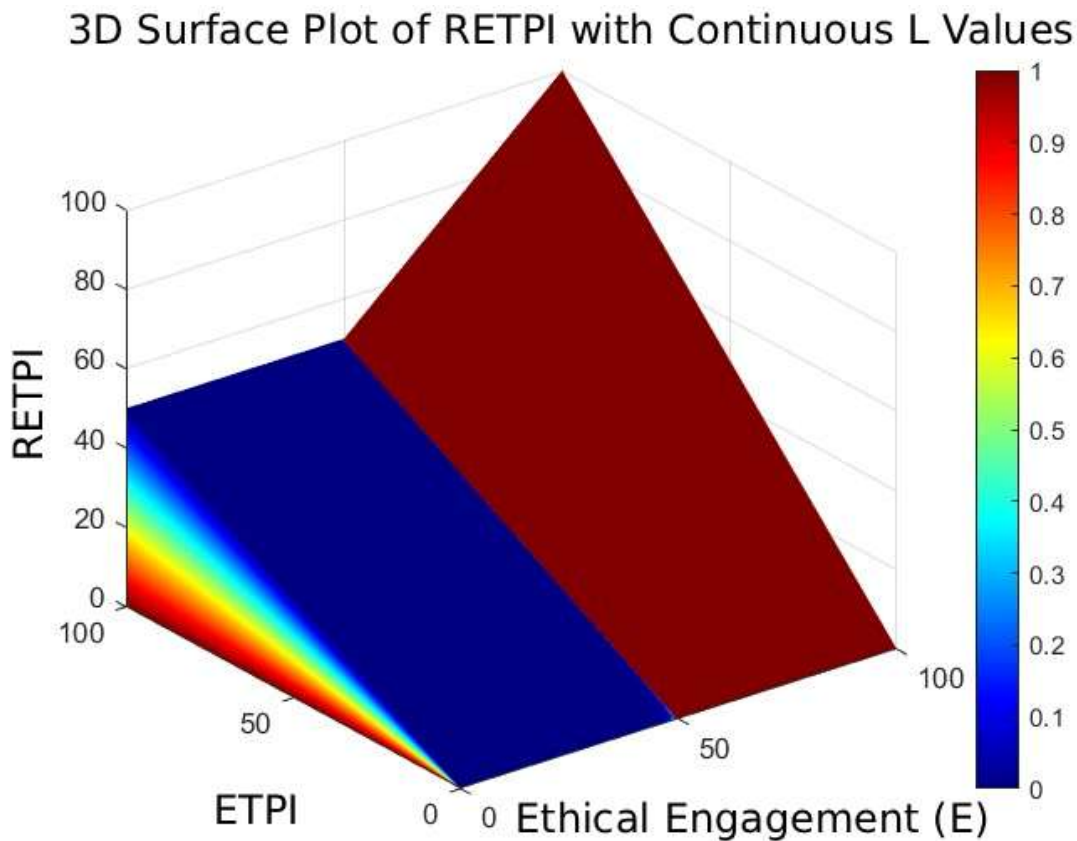
Figure 5 RETPI values modulation when $H=L=0.2$ 

Notes: Own elaboration in MatLab 2022.

It is evident from Fig. 5 that the maximum value of this function is achieved by maximising both ETPI (which reflects a nation's commitment to ethics, including anti-corruption efforts, human development, and ecological sustainability) and "Ethical Engagement" (a variable indicating the overall interest in ethics-related issues based on online activity). Minimising ETPI leads to a corresponding decrease in RETPI, while a low "Ethical Engagement" score reduces the overall RETPI value.

Mathematically, L and H can be adjusted or even defined as functions, offering flexibility for different modulations (see Fig. 6 and 7).

This plot (Fig. 6) illustrates the relationship between national ETPI scores (X-axis), Ethical Engagement (E) (Z-axis) and resulting RETPI values (Y-axis). The colour gradient (blue = low L values; red = high L values) reflects the magnitude of the continuous L parameter, which adjusts national ETPI values to account for regional engagement and interest. The surface shows how RETPI values change depending on the initial ETPI value and the intensity of regional ethical discourse, revealing the non-linear interactions between structural performance and public engagement.

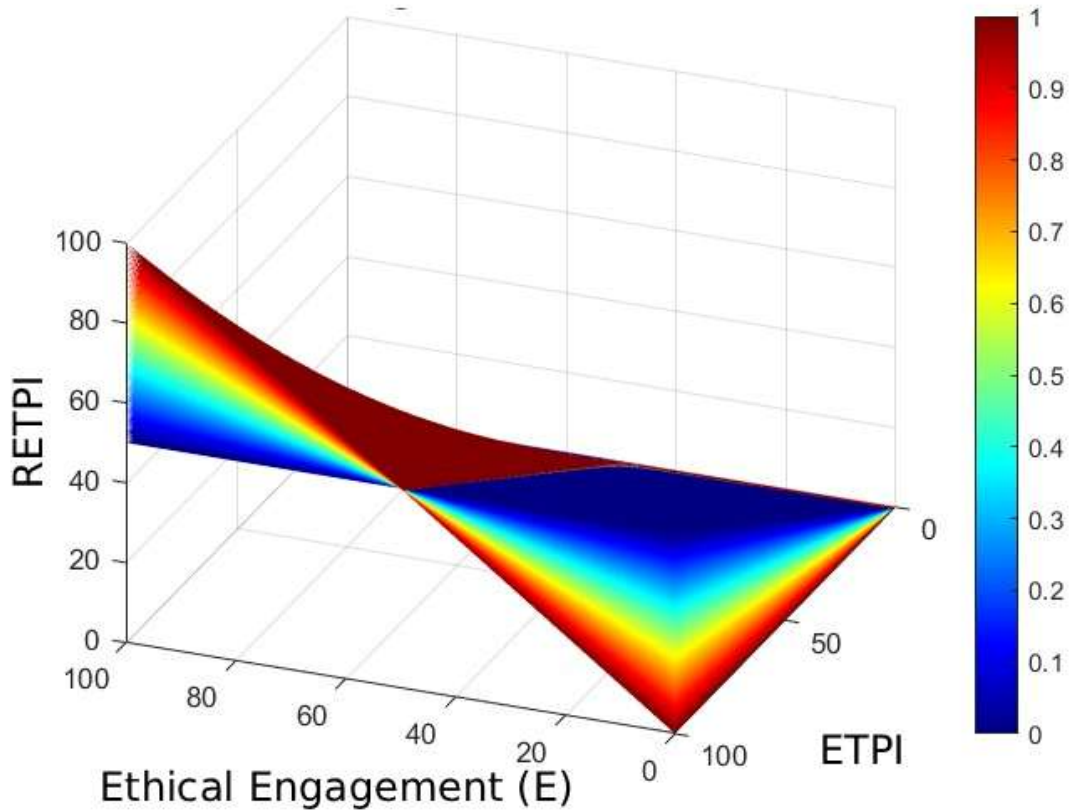
Figure 6 3D RETPI values modulation when $H=L=X$ (detailed outlook of the ETPI)

Notes: This is the author's own MatLab 2022 elaboration (the legend shows the $L=H$ values between 0 and 1). The ETPI, RETPI and 'Ethical Engagement' (E) are on a 0–100 scale (rescaled percentages). Own work.

This non-linear shape of the surface highlights that regional ethical resilience is not simply a linear function of national scores. Countries with moderate ETPI values but strong regional engagement can achieve relatively high RETPI. Conversely, even high-scoring countries may see reduced RETPI if regional engagement is weak. This visualisation confirms the added value of RETPI as a dynamic extension of ETPI that is sensitive to regional factors and capable of capturing both structural and cultural dimensions of ethical development.

Figure 7 3D RETPI values modulation when $H=L=X$ (detailed overview of the 'Ethical Engagement (E)').

3D Surface Plot of RETPI with Continuous L Values



Notes: This is the author's own MatLab 2022 elaboration (the legend shows the $L=H$ values between 0 and 1). The ETPI, RETPI and 'Ethical Engagement (E)' are on a 0–100 scale (rescaled percentage). Own work.

The next plot, Fig. 7, shows the RETPI plotted against continuous L values from a different perspective, which illustrates the relationship between the RETPI index and ethical topics more clearly. The X-axis represents ethical components, the Y-axis represents the resulting RETPI, and the Z-axis represents the baseline ETPI. The colour gradient (blue = low L values, red = high L values) reflects the strength of the L adjustment, capturing regional engagement with ethical topics. The surface shows that L has significant strength in adopting the RETPI to capture different types of future study targeting specific Ethical Engagements (E). This enables analysts to use the ETPI/RETPI framework to capture regional variations at their preferred level of sensitivity.

Taken together, Fig. 6 and 7 demonstrate how varying L (and H) between 0 and 1 influences RETPI values. These figures highlight that increasing $L(H)$ enhances the RETPI scores in regions with greater interest in ethics-related topics, while penalising regions with minimal interest.

Implications:

The parameters H and L in this model reflect key choices in how ethics is quantified – whether to emphasise a solid ethical foundation (similar to feeding plants with nutrients) or active engagement with ethical issues (similar to plant growth). Both aspects are important to consider. In this study, we set $H = L = 0.2$ to balance these factors, emphasising foundational ethics while allowing for active pursuit (approximately 20%). Further details on why the 20% threshold is an optimal choice for this study can be found in the “Replication Protocol for ETPI and RETPI” subsection in the methodology section, Step 6.

Managing Low-Frequency Data in Ethics Indicators with the ME-Matrix

A challenge arises when ethics-related indices (e.g. HRI, EI, NRD, EFI) have low update frequencies. To address this, we design the ME (Moral-Ethical Missing Data Evaluation) matrix to handle incomplete data by updating ETPI values as new data becomes available. For example, the matrix handles gaps by using the most recent data available (LD) until updates occur. This approach ensures accuracy in ETPI updates, similar to the delayed updates found in widely used indicators such as GDP.

Table 2 The Designed ME-Matrix Principle for Processing the Evaluation of Missing Data

| Indicator | 2022 | 2023 | 2024 | 2025 | 2026 |
|-----------|---|------|------|------|------|
| CPI | | | | | LD |
| EFI | | | | | LD |
| EI | | | LD | | |
| HDI | | | LD | | |
| HRI | | | LD | | |
| NRD | | | LD | | |
| EPI | | | LD | LD | |
| | The data is missing, but will appear as soon as it is available. The ETPI values will be updated at that point. | | | | |
| | These data are valid for this year | | | | |
| LD | The latest available data for calculating the index is the LD (latest date when data are available). | | | | |

Source: Own concept. Notes: CPI: Corruption Perception Index. EFI: economic freedom index.

EFI: index of economic freedom (a more frequent substitute for the EFI). EI: education index.

HDI: human development index. HRI: human rights index. NRD: natural resource depletion.

EPI: environmental performance index. This is an example of an ME matrix.

Handling of Missing Time-Series Data

The ETPI and RETPI frameworks are designed to maximise the probability of obtaining usable data across countries and years. However, gaps in time-series data are inevitable,

particularly for countries with restricted access to data (e.g. North Korea) or very small countries (e.g. San Marino, Saint Kitts and Nevis, Nauru). In such cases, we follow the general academic principle of working with the best available evidence while transparently updating results as new data becomes available.

Replication Protocol for ETPI and RETPI

To ensure transparency and replicability, this section provides a step-by-step description of the procedures used to construct the Ethics Perception Index (ETPI) and the Regional Ethics Perception Index (RETPI). Each step is designed to be reproducible using publicly available data and standard statistical software.

Step 1. Data sources

The ETPI and RETPI are constructed from seven established indicators, all of which are publicly available.

- ✓ Corruption Perceptions Index (CPI) – Transparency International.
- ✓ Economic Freedom Index (EFI) – Fraser Institute.
- ✓ Human Development Index (HDI) – UNDP.
- ✓ Education Index (EI): UNDP.
- ✓ Human Rights Index (HRI) – Our World in Data.
- ✓ Environmental Performance Index (EPI): Yale University.
- ✓ Natural Resource Depletion (NRD, % of GDP): World Bank/UNDP.

Notes: Each component index can be replaced by an equivalent theoretical and comparable empirical proxy, provided this substitution is explicitly documented and justified. This modular architecture, conceptualised as a 'LEGO-style' principle in the methodology section, preserves structural coherence while allowing adaptability to data constraints or updated measurement frameworks. In the most recent empirical specification presented in this study, the Index of Economic Freedom (The Heritage Foundation, 2025) is used as a substitute with a higher frequency for the Fraser-based EFI. For consistency of notation, the abbreviation 'EFI' is retained.

All data were collected at the national level for the relevant period (where available). Where possible, regional data should be obtained by disaggregating national data (from sources such as Eurostat, national statistical offices, Google Trends and social network statistics).

Step 2. Scaling of components

All components are normalised to a 0–100 scale (Steps 1 and 2) before aggregation (Step 3). This ensures comparability across indicators with different units, such as percentages, ordinal scores and composite indices. Normalisation (scaling) is performed using min–max scaling across the full dataset (all countries and all years).

One important point to note is how outliers are handled. Rather than being removed, outliers are absorbed by the scaling procedure (Steps 1 and 2). This ensures that extreme values (e.g. extremely high levels of corruption or extremely low levels of human rights) are reflected in the index rather than being excluded. Researchers replicating the index should avoid trimming or winsorising, unless they are explicitly testing for robustness.

The next note concerns Time-Series Consistency. For longitudinal analysis, the same scaling parameters (minimum and maximum values) are applied across the entire time horizon. This prevents artificial jumps in the index caused by rescaling each year separately. As new data becomes available, the scaling parameters can be updated, but any changes must be documented.

To ensure comparability, the min-max procedures defined in Equations (1) and (2) are used to rescale components to a 0–100 range.

Higher depletion (NRD_{it}) reduces the positively rescaled NRD_{it}^R index.

Step 3. Aggregation into ETPI

The ETPI for country i at time t is the mean of the N scaled components:

$$ETPI_{it} = \left(\frac{1}{N}\right) \times \sum_{j=1}^N R_{jit} \quad (7)$$

Notes: Own formula. R is a rescaled (0–100) ETPI component (C_{it} for CPI, EFI, HDI, EI, HRI and EPI, and NRD_{it}^R for NRD). $N = 7$ for the third generation of the ETPI index (seven components in total).

In the third generation of the ETPI index, all seven components are given equal weighting: CPI, EFI, HDI, EI, HRI, EPI and NRD. This approach is based on the principle of transparency and avoids subjective prioritisation. However, researchers wishing to test alternative weighting schemes (e.g. based on factor analysis or expert surveys) must explicitly report the procedure.

This yields a value between 0 and 100, with higher values indicating stronger ethical development.

Step 4. Treatment of missing data (see the Math Model section)

Step 5. Construction of the RETPI

The RETPI builds on the ETPI by incorporating regional modifiers that reflect public interest in ethics.

- ✓ RETPI is derived from ETPI by applying regional modifiers.
- ✓ The regional modifier (E) is based on the level of online interest in ethics-related topics (as measured by Google Trends, Social Nets, or an equivalent tool).
- ✓ Regional boundaries should follow official statistical classifications (e.g. NUTS-3 in the EU and state/province level elsewhere).
- ✓ Where regional data for one or more components is missing, national averages are used as proxies, which is clearly indicated. This approach was used for Latvia and Iceland (two relatively small countries) in the current study, while elsewhere 'NA' was retained.
- ✓ Bounds (L, H): Set at 0.2 in this study, but adjustable.
- ✓ Unscaled RETPI: see formula (5).

- ✓ Scaled RETPI: see formula (6)

Step 6. Regional Modifiers in the RETPI Framework

The Regional Ethics Perception Index (RETPI) is based on the national-level ETPI and incorporates modifiers that capture regional variations in ethical awareness and engagement. Denoted E , L and H , these modifiers adjust the baseline ETPI score to reflect regional differences in interest in ethical issues, as well as the potential amplification or attenuation of ethical performance. This means that the RETPI is not just a smaller-scale replication of the ETPI, but a genuinely region-sensitive measure. These regional modifiers are one of the new features of the third generation of ETPI and RETPI indices.

Modifier E (Ethical Engagement):

- ✓ Definition: E represents the level of public interest in ethical issues in a given region.
- ✓ Measurement: This is determined using proxies such as the frequency with which ethics-related terms (e.g. 'ethics', 'justice', 'corruption', 'human rights') are searched for online, as measured by tools such as Google Trends, Yandex Wordstat, social nets, or equivalent regional data sources.
- ✓ Scaling: Values are normalized to the interval $[0, 1]$, where 0 indicates no measurable interest and 1 indicates the highest level of interest observed across all regions.
- ✓ Interpretation: A higher E value suggests that ethical issues are salient in public discourse, which is assumed to strengthen the impact of ethical performance on regional development.

Modifier L (Lower Bound Adjustment):

- ✓ Definition: L sets the lower limit for adjustments when ethical engagement is weak.
- ✓ Function: Prevents RETPI from overstating ethical performance in regions where public interest in ethics is minimal.
- ✓ Mathematical role: When E approaches 0, the RETPI value is reduced by a factor proportional to $(1 - L)$.
- ✓ Interpretation: L ensures that regions with low ethical engagement cannot achieve artificially high RETPI scores based solely on national-level ETPI values.

Modifier H (Upper Bound Adjustment):

- ✓ Definition: H sets the upper limit of adjustment when there is strong ethical engagement.
- ✓ Function: Allows RETPI to reward regions with high public interest in ethics, amplifying the ETPI baseline.

- ✓ Mathematical role: When E approaches 1, the RETPI value increases by a factor proportional to $(1 + H)$.
- ✓ Interpretation: H ensures that regions with strong ethical engagement are recognised as having greater potential for ethical resilience and sustainable development.

The use of internet search activity as a proxy for modifier E is theoretically grounded in the transition from institutional to perceptual measurement. While national institutions are slow-moving 'stocks', regional ethical engagement is a 'flow' of public perception and salience. This allows the RETPI to capture a region's cultural-institutional accumulation, demonstrating how national institutional quality is perceived and utilised by local actors.

Choice of parameter values ($L = H = 0.2$ for this study):

In this study, L and H are both set to 0.2. This reflects a balanced compromise between sensitivity and stability.

- ✓ Moderation: A value of 0.2 enables meaningful adjustments to be made without overwhelming the baseline ETPI. In practice, this means the RETPI can vary by $\pm 20\%$ relative to the ETPI, depending on regional engagement.
- ✓ Comparability: Setting both bounds symmetrically ensures that upward and downward adjustments are of equal magnitude, thus avoiding bias towards either penalisation or reward.
- ✓ Transparency: The value 0.2 is not arbitrary, but has been chosen to strike a balance between interpretability (it is easy to explain to policymakers) and analytical robustness (it is sufficient to capture regional variation without exaggeration).
- ✓ Future flexibility: Although 0.2 is used here, the framework permits L and H to be adjusted, or even defined as functions of empirical data (e.g. variance in regional ethical engagement). Researchers replicating RETPI may test alternative thresholds, but must report these explicitly.

Modelling precedent: why is 20% a widely accepted threshold?

In applied probability and resilience modelling, moderate, symmetrical thresholds are commonly introduced to account for uncertainty without destabilising the model (Cao & Feng, 2025; Jiménez-Valverde & Lobo, 2007; Wen et al., 2019). A threshold of 20% (0.2) is often used for this purpose as it strikes a balance between sensitivity and robustness.

This choice is supported across multiple disciplines.

- 1) In machine learning, for example, thresholds between 0.2 and 0.255 often yield the highest F-values, leading to optimal predictive performance (Brownlee, 2025).

- 2) In resilience engineering and infrastructure modelling, 20% is recognised as an effective boundary for capturing system fragility without overfitting (Hsu & Mostafavi, 2025).
- 3) In clinical decision-making and medical risk assessment, thresholds around 20% are commonly used to flag significant yet manageable risks (Patel et al., 2021).
- 4) In finance, thresholds of 20% or below are standard for interpreting financial ratios and stress indicators (Shemetev, 2012).
- 5) In uncertainty quantification, 20% is often cited as an optimal cut-off point for distinguishing signal from noise (Lye et al., 2019).

Taken together, these precedents justify the use of a 20% threshold in our study, demonstrating its methodological soundness and cross-disciplinary relevance.

Step 7. Estimating RETPI with Google Trends Data

The RETPI builds on the ETPI by incorporating a regional modifier (E), which reflects public engagement with ethical issues. Google Trends provides a transparent, reproducible and freely available proxy for this engagement. The following protocol outlines how to estimate the RETPI using Google Trends data.

Sub-step 1: Define the search terms

Select a set of ethics-related keywords that are relevant across languages and regions. Examples: 'ethics', 'justice', 'corruption', 'human rights', 'sustainability'.

Where possible, use Google Trends' "topics" (which aggregate synonyms and translations) rather than single keywords to reduce linguistic bias.

Sub-step 2: Collect regional data

Go to Google Trends (can be replaced with other data sources).

Enter the chosen keywords/topics.

Set the geographical scope to the country of interest and select sub-regions (e.g. NUTS-2 or 3 regions in the EU, states in the US or provinces elsewhere).

Set the time frame (e.g. 2015–present or a specific decade).

Export the data as a CSV file. Each region will have a score between 0 and 100 representing relative search interest.

Sub-step 3: Normalise the modifier E.

Google Trends already scales values to [0, 100] within the chosen dataset.

Convert these to the interval [0, 1] by dividing by 100. Example: A region with a Trends score of 65 has an E value of 0.65.

This ensures comparability across regions and over time.

Sub-step 4: Apply the RETPI formula.

Remember the RETPI adjustment function (see formula (5)).

Finally, scale ETPI to [0, 100] (see formula (6)).

Sub-step 5: Worked example (test case):

Suppose we want to estimate the ETPI for Region A in 2025.

✓ ETPI baseline (T):

From the ETPI dataset, the ETPI for Region A's country is 0.72(on a scale of 0–1).

✓ Google Trends data (E):

The average trends score for ethics-related terms in Region A is 65, so $E = 0.65$.

✓ Parameters:

$L = 0.2, H = 0.2$.

Apply the formula: Since $E = 0.65 > 0.5$, the upper-bound adjustment is used.

$$RETPI^U = T + \left(\frac{E - 50\%}{50\%} \right) (TH) = 0.72 + \left(\frac{0.65 - 0.5}{0.5} \right) (0.72 * 0.2) = 0.7632$$

✓ Scale to 0–100:

if the maximum RETPIU across all regions is 0.90, then:

$$RETPI = 100 \left(\frac{RETPI_{E,T}^U}{\max(RETPI^U)} \right) = 100 * \frac{0.7632}{0.9} = 84.8$$

Results: Region A's RETPI is 84.8.

Sub-step 6: Interpretation

If RETPI is greater than ETPI, this indicates that Region A performs well on ethical fundamentals and shows above-average public engagement with ethics, which amplifies its resilience potential.

Conversely, if RETPI is lower than ETPI, it reflects weak ethical engagement despite national performance.

Sub-step 7: Replication notes

This procedure can be replicated in R, Python or Excel using exported CSV files.

Researchers should document:

- ✓ keywords/topics used;
- ✓ Time frame;
- ✓ Regional boundaries;
- ✓ Scaling choices (L, H).

Alternative values of L and H can be tested for robustness, but these must be reported.

Step 8. Estimating resilience and recovery potential within the ETPI/RETPI framework

Resilience and recovery are ethical performance dynamics relative to a higher-level benchmark. Below is a complete, implementable guide.

Core definitions and intuition

Resilience (short-term stability under shock): How well a territory maintains its ethical performance during or immediately after a disruption, relative to its parent unit (e.g. a municipality compared to a region, a region compared to a country, or a country compared to the world).

Recovery Potential (Medium-Term Forward Momentum): How quickly and reliably a territory regains or improves its ethical performance after a shock, relative to its parent unit.

These definitions align with the current state of knowledge in these fields (Shemetev, 2025).

Ethical baselines: Use ETPI for national baselines and RETPI for sub-national units. Both are scaled to 0–100 after component normalisation.

Reference horizon: Choose a clearly identified shock date or period and fix comparison windows:

- ✓ Pre-shock: $t_0 - h$ to $t_0 - 1$. t : time; h : start of pre-shock period.
- ✓ Shock/impact: t_0 to $t_0 + s$; s (shock time): short; typically 1–2 years.
- ✓ The recovery window is defined as: $t_0 + y$ to $t_0 + k$, where k is the end of the post-shock time (typically $k \geq 3$) and y is the recovery start time ($y \in [1; s]$). If $y = 1$, recovery is assumed to start instantly after t_0 ; if $y = s$, recovery is assumed to start after the shock time (s) has ended. The selection of y depends on the aims of the analysis.

Measurement setup and data preparation:

- ✓ Territorial levels: $ETPI_{c,t}$ versus global aggregate or peer group average (c denotes for country; t – time).
- ✓ Regional/municipal: $RETPI_{c,t,i}$ for the same country (i denotes for a municipality of a region).

Scaling consistency:

ETPI components:

- ✓ Min–max rescaling to 0–100 is required for the following: CPI, EFI, EI, HDI, HRI and EPI (or their substitutes via formula 1). Then, reverse-scale the initially negatively scaled NRD and rescale it to 0–100 using formula 2. See steps 1–3 of this step-by-step guide for details.
- ✓ The RETPI modifier E involves normalising Google Trends interest to $[0, 1]$ and applying symmetric bounds $L = H = 0.2$ for moderate adjustment. Rescale to 0–100 after $RETPI^U$. See steps 5–7 of this step-by-step guide for details.

Shock delineation:

- ✓ Define shocks explicitly: Policy change, pandemic onset, conflict outbreak and/or financial crisis. Justify the s , k horizon and annotate t_0 .

Resilience and Recovery Metrics: A Coefficient Approach

This study introduces a new approach based on coefficients for estimating resilience and recovery metrics in ethics analysis (RETPI and ETPI).

A. Level-based, territory (U) vs. parent (P)

- ✓ Definitions: U (territory) is a lower-level territorial unit or units. P (parent) is a higher-level territorial unit or units. For example, if U is a country's region, then P could be the entire country. If U is a country within the EU, for example, then P is the EU. If U is a municipality, then P can be the region in which it is located, or even the nation. If U is part of a municipality, then P is the entire municipality. The selection of U and P depends on the aims of the specific study to which the ETPI/RETPI concept is being applied.

- ✓ **Resilience ratio (RR):** Immediate Ethical Resilience.

$$RR_U = \frac{X_{U,t_0+s}}{X_{U,t_0-1}}, X \in \{ETPI, RETPI\} \quad (8)$$

Notes: Own formula.

- ✓ Interpretation: $RR \approx 1$ holds level; $RR < 1$ declines; $RR > 1$ improves under shock.
- ✓ **General Relative Resilience (RRel):** Territory performance relative to parent.

$$RRel_U = \frac{X_{U,t_0+s}/X_{U,t_0-1}}{X_{P,t_0+s}/X_{P,t_0-1}} = \frac{\left(\frac{X_{U,t_0+s}}{X_{U,t_0-1}}\right)}{\left(\frac{X_{P,t_0+s}}{X_{P,t_0-1}}\right)} = \frac{RR_U}{RR_P} \quad (9)$$

Notes: Own formula.

- ✓ Interpretation: $RRel \approx 1$ holds level; $RRel < 1$ less resilient than parent; $RRel > 1$ more resilient than parent. Note: '/' means 'divide by'.
- ✓ **Additive Relative resilience (ARRel):** The size of the territory performance bonus relative to the parent (10).

$$ARRel_U = \frac{\left(\frac{X_{U,t_0+s} - X_{U,t_0-1}}{X_{U,t_0-1}} - \frac{X_{P,t_0+s} - X_{P,t_0-1}}{X_{P,t_0-1}}\right)}{\left(\frac{X_{P,t_0+s} - X_{P,t_0-1}}{X_{P,t_0-1}}\right)}$$

Notes: Own formula.

- ✓ Interpretation: $ARRel \approx 0$ indicates that the level is held; $ARRel < 0$ indicates that the U level is less resilient than the parent by $100\% - ARRel_U$ (where 100% represents the level of P); and $ARRel > 0$ indicates that the U level is more resilient than the parent by $100\% - ARRel_U$ (where 100% represents the level of P). ARRel is

an analytical tool used to analyse the size of the resilience gap or surplus compared to the parent.

What it measures:

- ✓ The numerator is the difference between the unit's relative change and the parent's relative change. The denominator is the parent's relative change.
- ✓ The result is how much stronger or weaker the unit's resilience is compared to that of its parent, expressed as a proportion of the parent's own change.

B. Trajectory-based, average yearly momentum

- ✓ **Recovery Potential Index (RPI):** The average annual recovery rate following a shock (11).

$$RPI_U(k) = \frac{X_{U,t_0+k} - X_{U,t_0+s}}{k - s}$$

Notes: Own formula.

- ✓ Interpretation: Positive values indicate net recovery pace per year; compare across territories.
- ✓ **Relative recovery (RRecRel):** Territory's (U) recovery pace vs. parent (P) (12).

$$RRecRel_U(k) = \frac{X_{U,t_0+k} - X_{U,t_0+s}}{X_{P,t_0+k} - X_{P,t_0+s}}$$

Notes: Own formula.

- ✓ Interpretation: $RRecRel_U(k) > 1$ indicates faster recovery than the parent, while $RRecRel_U(k) < 1$ indicates slower recovery.
- ✓ **Additive Relative recovery (ARRecRel):** the size of the Territory's (U) recovery pace vs. parent (P) (13).

$$ARRecRel_U(k) = \frac{\left(\frac{X_{U,t_0+k} - X_{U,t_0+s}}{X_{U,t_0+s}} \right)}{\left(\frac{X_{P,t_0+k} - X_{P,t_0+s}}{X_{P,t_0+s}} \right)}$$

Notes: Own formula.

- ✓ Interpretation: $ARRecRel \approx 0$ indicates that the level is held; $ARRecRel < 0$ indicates that the U has less recovery potential than the parent by $ARRecRel_U(k) - 100\%$ (where 100% represents the level of P); and $ARRecRel > 0$ indicates that the U has more recovery potential than the parent by $ARRecRel_U(k) - 100\%$ (where 100% represents the level of P). ARRecRel is an analytical tool used to analyse the size of the resilience gap or surplus compared to the parent.

C. Slope- and variance-aware robustness

- ✓ **Shock slope (SS):** Direction and steepness at impact (14).

$$SS_U = \frac{X_{U,t_0+s} - X_{U,t_0}}{s}$$

Notes: Own formula.

- ✓ **Post-shock stability (PSS):** Volatility of recovery path (15).

$$PSS_U(k) = sd(X_{U,t}), t \in [t_0 + s, t_0 + k]$$

Notes: Own formula.

- ✓ Interpretation: Lower sd implies steadier recovery; use alongside RPI.
- ✓ **Composite ethical resilience score (ERS):** Combines RRel (9), SS (14), and PSS (15) with clear weights (default equal unless justified) (16):

$$ERS_U = w_1 * RRel_U + w_2 * (1 - norm(|SS_U|)) + w_3 * (1 - norm(PSS_U))$$

Notes: apply min–max normalisation to "norm(.)" per cohort. Own formula.

Due to the limitations of this paper and the fact that the current global crisis has been ongoing since 2020 and consists of two significant crises at once: The first is the ongoing global pandemic of the SARS-CoV-2 virus (since 2020), and the second is the ongoing global military conflict and its consequences (since 2022). At the time of writing, the crisis period is still ongoing. Therefore, this could be a subject for future studies.

However, the current resilience and recovery potential within the crisis can be estimated using the following toolbox. Within-crisis resilience (17):

$$ME_{resilience} = \frac{\left(\frac{X_t^U - X_{t-1}^U}{X_{t-1}^M} - \frac{X_t^P - X_{t-1}^P}{X_{t-1}^P} \right)}{\left(\left| \frac{X_t^P - X_{t-1}^P}{X_{t-1}^P} \right| \right)}$$

Notes: Own formula.

Notes: own work. U: local territory unit; P: parent territory unit; t: current time; t-1: previous time period; X ∈ {ETPI, RETPI}.

Within-crisis recovery potential (18):

$$ME_{recovery} = \frac{\left(\frac{X_t^U - X_{t-1}^U}{X_{t-1}^U} \right)}{\left(\frac{X_t^P - X_{t-1}^P}{X_{t-1}^P} \right)}$$

Notes: Own formula.

Notes: own work. U: local territory unit; P: parent territory unit; t: current time; t-1: previous time period; X ∈ {ETPI, RETPI}.

Worked example: regional vs. national.

Assume that Country C has an ETPI baseline and Region R has a RETPI baseline. Shock $t_0=2020$; impact $s=1$; recovery window $k=5$.

1) Inputs:

✓ **ETPI:** $t_0 - 1 = 2019: 84.5; 2021: 83.0; 2025: 86.0$.

✓ **RETPI_{CR}:** 2019: 82.0; 2021: 81.5; 2025: 85.5.

2) Resilience:

✓ $RR_R = \frac{81.5}{82.0} = 0.994$

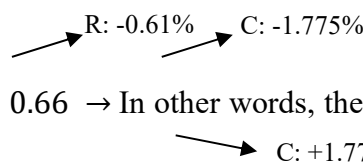
✓ $RR_C = \frac{83.0}{84.5} = 0.982$

✓ $RRel_R = \frac{0.994}{0.982} = 1.012 \rightarrow$ Region R is slightly more resilient than the parent country

C.

✓ $RRel_R = \frac{\left(\frac{81.5-82.0}{81.5} - \frac{83.0-84.5}{84.5}\right)}{\left(\frac{83.0-84.5}{84.5}\right)} = 0.66 \rightarrow$ In other words, the region R absorbed the shock

more effectively than the parent benchmark (C) did, suffering 33% [100% – 66%] of the shock compared to 66%. In simple terms, since both R and C declined, region R suffered 33% [100% – 66%] of the shock that its parent country C suffered at 100% in relative terms.



If there were a region N within country C that suffered no decline (0%), then using the same approach, we would find that: $(0\% - [-1.775\%]) / 1.775\% = 100\%$. In this case, country C suffered 100% more than region N, which suffered 0% [100%-100%] of the shock of its own country C.

Imagine another region, G, within country C that suffered a 3.55% decline. Using the same approach, we would get: $(-3.55\% - [-1.775\%]) / 1.775\% = -100\%$. In this case, region G would have suffered $100\% - (-100\%) = 200\%$ of the shock that its parent country C suffered in relative terms. Consequently, the result of $(-3.55\% - [-1.775\%]) / 1.775\% = -100\%$ would mean that country C suffered -100% (in other words, the shock for C was twice as easy as for G).

3) Recovery potential:

✓ $RPI_R(5) = \frac{85.5-81.5}{5-1} = \frac{4}{4} = 1 \rightarrow$ The recovery speed is 1.0 points per year.

✓ $RPI_C(5) = \frac{86.0-83.0}{5-1} = \frac{3}{4} = 0.75 \rightarrow$ The recovery speed is 0.75 points per year.

✓ $RRecRel_R(5) = \frac{85.5-81.5}{86.0-83.0} = \frac{4}{3} = 1.33 \rightarrow$ The region recovers roughly 33% faster than the country in absolute terms.

$$\checkmark \text{ARRecRel}_R(5) = \frac{\left(\frac{85.5-81.5}{81.5}\right)}{\left(\frac{86.0-83.0}{83.0}\right)} = 1.36 \rightarrow \text{The region recovers roughly 36\% faster than}$$

the country in relative terms.

4) Stability checks:

$$\checkmark \text{SS}_R = \frac{81.5-82}{1} = -0.5 \rightarrow \text{During the crisis, the region lost 0.5 points per period.}$$

\checkmark $\text{PSS}_R(5)$: Calculate the standard deviation (SD) across the 2021–2025 RETPI. A positive trend occurs when it is lower than that of the peers.

5) Direct verdict:

\checkmark Region R demonstrates slightly higher immediate resilience and a notably faster recovery pace than its national baseline.

To facilitate immediate cross-disciplinary application and ensure total procedural transparency, Annex C provides a finalised Standardised Implementation Protocol. This annex serves as a 'quick-start' guide, consolidating all data sources, scaling rules and modular calculation steps into a single, replicable workflow.

LEGO-style principle is one that can be applied in a variety of ways

Although the ETPI and RETPI are designed to be transparent and replicable, we acknowledge that, as with any composite index, their implementation depends on the availability of reliable base data.

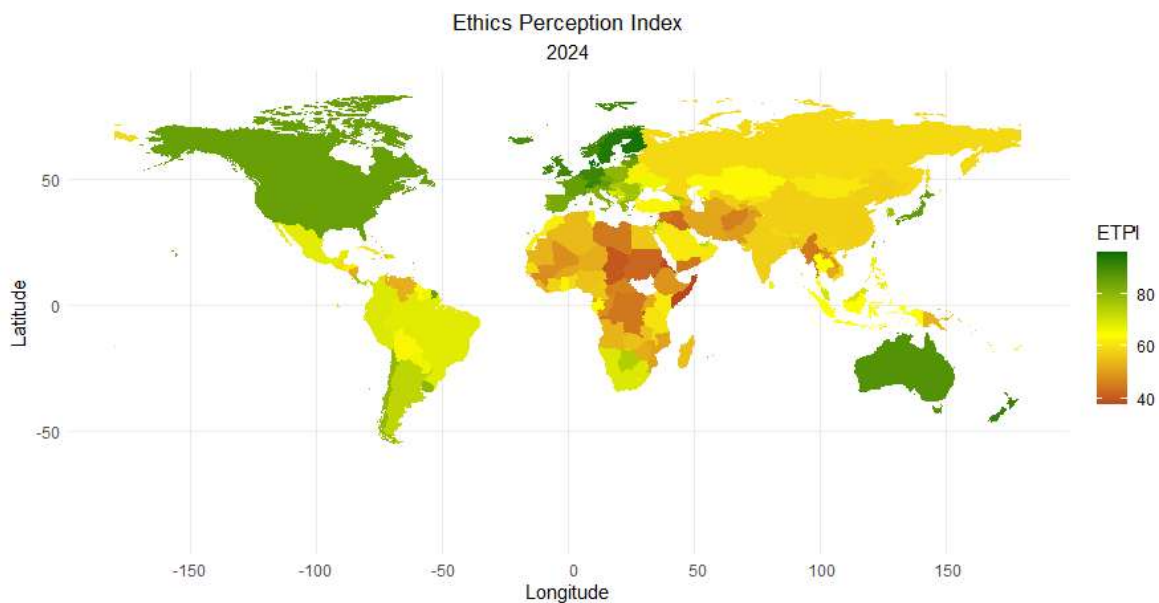
However, compared to many existing indices, such as the Social Progress Index (SPI (Social Progress Imperative, 2025b)), which relies on survey-based indicators (e.g. respondents reporting experiences of theft), the ETPI and the RETPI are constructed from internationally standardised, publicly available numerical datasets. This makes them less vulnerable to data gaps and cultural biases.

Furthermore, the indices are designed in a 'LEGO-style': if one component is unavailable, it can be substituted with a comparable indicator (e.g. replacing the 'Our World in Data' human rights index with the Fariss et al. (2020) human rights index (Fariss et al., 2020) [or a similar index], rescaled to 0–100). Similarly, the Education Index can be proxied through the Human Development Index and the regional engagement component of RETPI can be derived from alternative digital sources (e.g. social media data) if Google Trends are unavailable. This modularity, combined with the ME-Matrix approach to missing data, ensures that the ETPI and the RETPI remain computable and adaptable, even when some inputs are incomplete or discontinued. While data limitations cannot be eliminated entirely, they are significantly less restrictive within the ETPI/RETPI framework than within many existing indices, which are rigidly tied to fixed indicator sets.

RESULTS

The Ethics Perception Index (ETPI) provides a quantitative measure of ethical perceptions across countries, assessing moral-ethical growth on a global scale. Fig. 8 shows the ETPI for 174 countries. The index identifies countries with the highest ethical perceptions, such as Denmark (95.9), Finland (94.8) and Sweden (93.7). Countries are ranked on the basis of aggregated perception data, providing insight into regional differences and the global ethical landscape. The standardised ETPI scores serve as a tool for comparative analysis, reflecting each nation's ethical perception based on specific indicators.

Figure 8 Ethics Perception Index (ETPI), 2024



Source: Own processing in R.

Countries such as Germany (90.6), the United Kingdom (90.6) and Ireland (90.5) demonstrate consistently high ethical practices, with only minor fluctuations. These nations perform well in most areas covered by the ETPI Index, particularly in terms of economic freedom and human development. A broader group of ethically strong nations includes Australia (88.1), Austria (86.2), Belgium (87.6), Canada (85.2), Switzerland (92.3), the Czech Republic (83.2), Cyprus (82.8), Denmark (95.9), Finland (94.8), Greece (80.3), Iceland (89.2), Japan (85.8), Latvia (84.8), Norway (89.9), Singapore (85.4), Sweden (93.7) and several others. Annex A provides a comprehensive list of ETPI values for all countries from 1995 to 2024.

The United States presents an interesting case as a large, developed nation (ETPI: 85.14) with moderate challenges in economic freedom (77.5), corruption (Corruption Perception Index: 75) and environmental sustainability (Environmental Performance Index: 65.53). However, the country's exceptionally high levels of human development (96 on the Human

Development Index) and education (88.5 on the Education Index) significantly bolster its overall ethical standing.

Several other countries, while performing moderately well, have lower scores, suggesting areas for potential improvement. For example, Hungary (75.5), Botswana (74.7) and Brazil (68.4) have room for improvement in the areas of control of corruption, environmental sustainability and management of natural resources. While these countries maintain commendable ethical standards, addressing these specific weaknesses could improve their future scores.

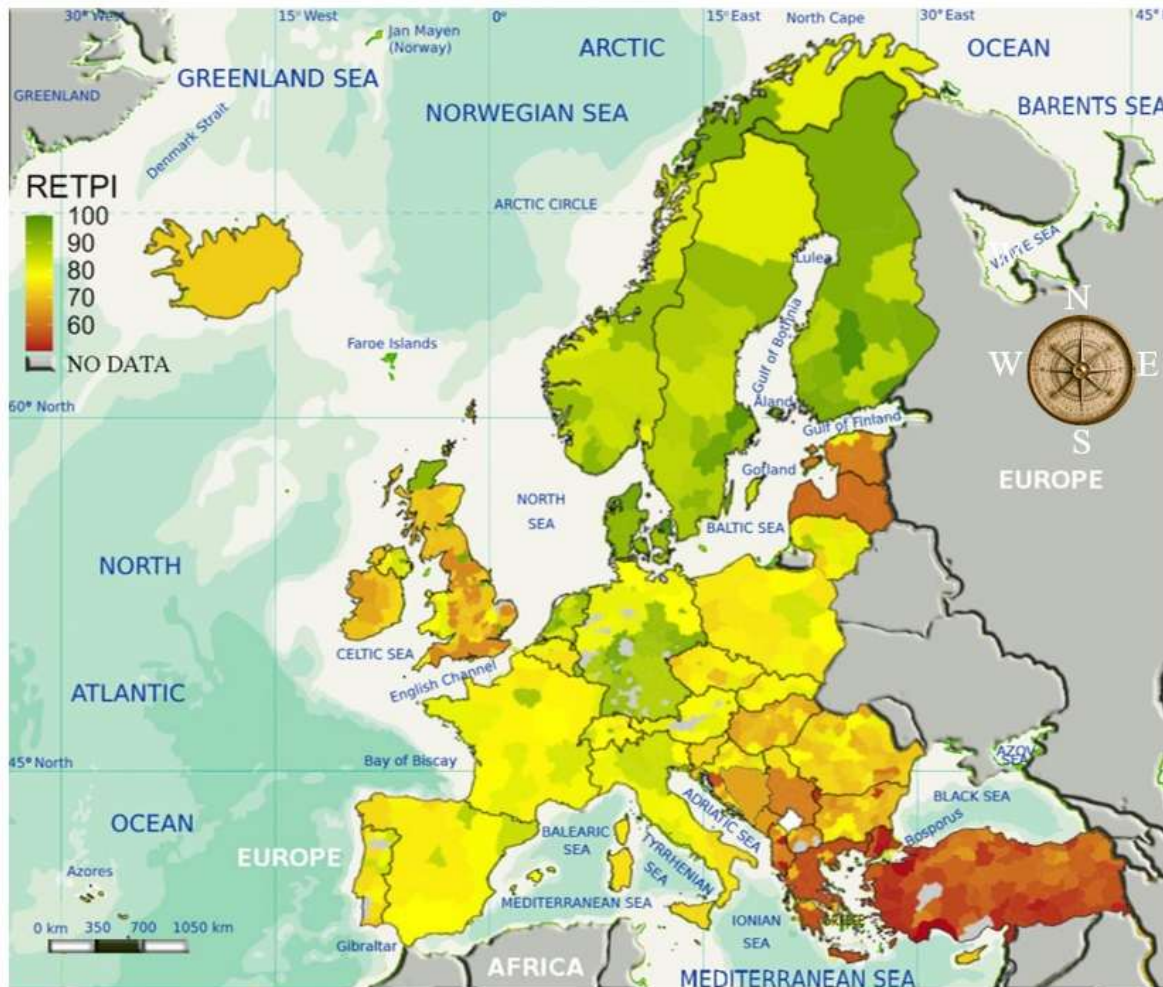
Brazil (ETPI: 68.4), an example of a large developing country in this ethical sector, faces serious challenges in the areas of justice, economic freedom, corruption and environmental issues such as deforestation, all of which have a negative impact on its ETPI. However, Brazil performs relatively well in certain areas of the Economic Freedom Index, including business freedom (67), monetary freedom (71.6) and trade freedom (66.8). In addition, its strong scores in human development (78.6), education (67.3), human rights (86.2) and natural resource management (91) help to partially offset the negative impact of its environmental struggles, reflected in a lower Environmental Performance Index (55.5), as well as other struggles.

At a lower end of the spectrum (but far from the bottom), countries such as Kazakhstan (63.2), Turkey (62.9), Belarus (61.8), Honduras (61.9) and Morocco (61.8) face significant ethical challenges. These countries struggle with corruption, underdeveloped human capital and inadequate sustainable practices. Efforts to strengthen governance and ethical frameworks could lead to significant improvements in their ethical scores.

China is a prime example of this ethical sector, with an ETPI score of 57.5. However, the country faces significant challenges in terms of economic freedom (53.6), corruption (49) and environmental performance (36.5). This reflects major issues relating to clean water, soil and air, as well as human rights (17.6). Conversely, China benefits from strong human capital, with a score of 81.5 on the Human Development Index, and a very low level of natural resource depletion — just below 2% of GDP. As the NRD component is negatively scaled (where lower depletion is better), this low raw value translates into a high positive score of 98.1 after rescaling with formula (2). In other words, China's minimal depletion of natural resources has a positive impact on its overall ETPI. Although China's Education Index is relatively low at 66, this reflects a significant discrepancy between the general level of education and the substantial proportion of highly educated individuals. For instance, its average IQ ranking places it among the top five globally (World Population Review, 2024). This provides a strong foundation for a potential rise in its ethical standards.

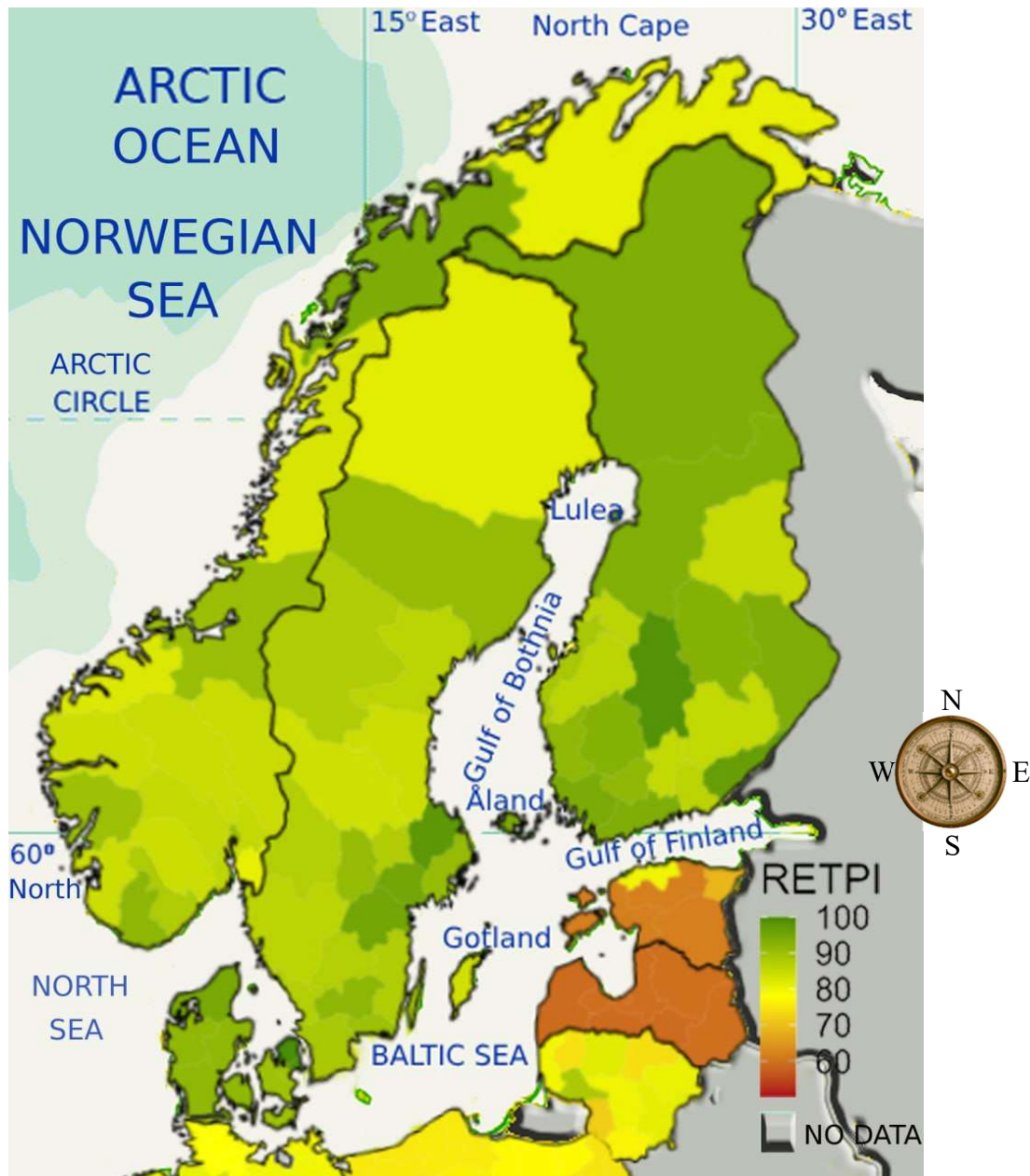
It is crucial to recognise that ethical standards are not necessarily uniform across a country, especially in large nations with multiple regions. The Regional Ethical Perception Index (RETPI) adds depth to this understanding by capturing regional differences in ethical practices. Fig. 9 illustrates the RETPI, rescaled to match the global ETPI scores for 2024.

Figure 9 Regional Ethics Perception Index (RETPI) for Europe, rescaled to global ETPI (2024)



Source: Own processing in R. Moldova, Belarus, the Caucasus states, Russia and Ukraine are omitted because, although these countries are located in geographical Europe, they are affected by military conflicts, which has an impact on ethics. These countries therefore deserve a separate study. There is no data for the Kosovo region. Map scale factor = $\sec(\varphi)$, where φ is the latitude in radians, and $\sec(\varphi) = 1/\cos(\varphi)$ (Snyder, 1987).

Fig. 9 illustrates the significant regional disparities in ethical standards within large countries. By contrast, ethical considerations in Latvia are relatively consistent and homogeneous across the country. This uniformity is due to the comparatively low level of public interest in ethical issues, as evidenced by per capita internet search data. Nevertheless, Latvia's ethical development is relatively advanced on a global scale, particularly compared with non-European countries (see Annex A for more details).

Figure 10 Regional Ethics Perception Index (RETPI) for the Scandinavian region

Source: Own processing in R.

Map scale factor = $\sec(\varphi)$, where φ is the latitude in radians, and $\sec(\varphi) = 1/\cos(\varphi)$ (Snyder, 1987).

Another notable feature is that Scandinavian countries consistently rank highly in international assessments of ethics, governance, and social trust (alongside some other regions). Fig. 10 shows that Sweden, Norway, Denmark and Finland have some of the highest ETPI values, reflecting their strong performance in areas such as corruption control, human rights, education and environmental stewardship. This naturally raises the question of whether such countries should be used as fixed reference benchmarks, with their scores set as the maximum against which all others are scaled. While this approach has the advantage of

intuitive interpretability — anchoring the index to a widely recognised ethical leader — it also introduces several methodological drawbacks. Firstly, it imposes the normative standards of one region on all others, which could bias comparisons across diverse cultural and institutional contexts. Secondly, ceiling effects may be encountered: if another country or region surpasses the Scandinavian benchmark in a specific area (e.g. environmental performance), the framework would be unable to reflect this improvement. Thirdly, neutrality is reduced as the benchmark becomes dependent on the trajectory of a single country rather than the empirical distribution of all observations. For these reasons, we use empirical min–max scaling across all countries and years (see the methodology section), which preserves comparability, avoids normative bias and enables the index to recognise new leaders as they emerge. Nevertheless, the consistently high Scandinavian scores confirm the validity of our approach, demonstrating that the ETPI/RETPI framework aligns with established perceptions of these countries as global ethical frontrunners.

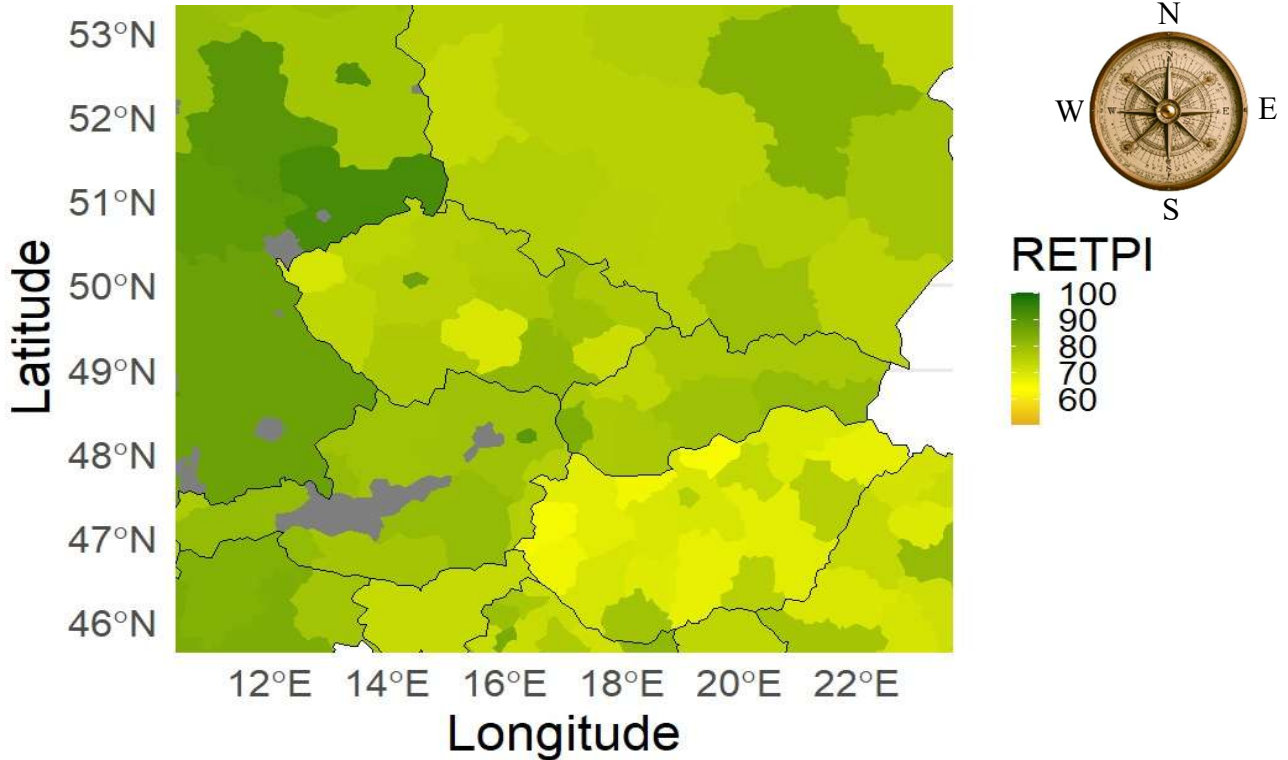
Other exceptions include Serbia and Greece, where ethical standards remain relatively high compared to global benchmarks, but are relatively homogeneous within the country. In Greece, certain regions such as Epirus, the Thessaloniki area within Macedonia and parts of the Peloponnese have significantly higher ethical standards than the rest of the country (in particular Βόρειος Τομέας Αθηνών, Κεντρικός Νότιος, Πειραιάς, Νήσοι, and Ανατολική Αττική micro-regions). It should be noted that Mount Athos is excluded from the analysis due to insufficient data.

It is also interesting that capital regions often demonstrate the highest ethical standards in terms of their interest in ethical issues. Examples of this pattern can be seen in the Prague region in the Czech Republic, the Bratislava region in Slovakia, the Madrid region in Spain (which is competing with the regions of Navarra and Catalonia), the Paris region in France (which includes the departments of Essonne, Hauts-de-Seine, Seine-et-Marne and Seine-Saint-Denis, as well as other micro-regions close to Paris), and the Tallinn region in Estonia. Fig. 11 illustrates these trends in Central Europe, where Prague and Vienna demonstrate the highest ethical performance within their respective countries. However, this is not the case everywhere.

For example, the regions of Central Finland (Keski-Suomi) and South Karelia (Etelä-Karjala) outperform the region of Uusimaa, which includes the capital Helsinki, albeit by a small margin of around 5% per capita. A similar situation can be observed in Turkey, where regions such as Bayburt, Çankırı, Sinop, Gümüşhane and Burdur have higher RETPI scores than Istanbul, the de facto capital region (although Ankara, the de jure capital, has significantly higher RETPI scores). In Germany, regions such as Bergstraße, Darmstadt,

Kreisfreie, Frankfurt am Main, Gießen, Landkreis and Groß-Gerau have higher ethical standards per capita than Berlin and its environs.

Figure 11 Regional Ethics Perception Index (RETPI) for the Central Europe



Source: Own processing in R. Grey colour indicates the absence of data. White indicates that the regions are outside the scope of this study.

Map scale factor = $\sec(\varphi)$, where φ is the latitude in radians, and $\sec(\varphi) = 1/\cos(\varphi)$ (Snyder, 1987).

In some cases, a capital region has strong ethical indicators but faces competition from other micro-regions with comparable ethical development. This is the case in the UK, where Camden and the City of London compete with micro-regions such as Antrim and Newtownabbey, Barking & Dagenham, Belfast and Bradford. Similarly, in Poland, the capital Warsaw competes with micro-regions such as Ciechanowski, Ostrołęcki, Płocki and Radomski.

DISCUSSION

Existing Ethical Indices: Limitations and the Need for a Unified Framework

The majority of existing studies on ethics (see Tab. 3) focus narrowly on micro-dimensions of the field, often exploring issues that are not measurable or too specific (see Tab. 4). A notable example is the extensive research devoted to subfields of medical ethics, such as euthanasia (Ebrahimi, 2012; Fernandes, 2001; Narbekovas & Meilius, 2004) or abortion (Cantens, 2019;

Dubner & Levitt, 2006; Kaczor, 2023). These studies typically suffer from two major limitations: they narrow the broader concept of ethics, and they lack quantifiable metrics for evaluating ethical standards. The introduction of the Ethics Perception Index (ETPI) and the Regional Ethics Perception Index (RETPI) is the first attempt to comprehensively and quantitatively assess ethics within societies.

Table 3 Competing indices to ETPI and RETPI

| Indicator | Brief Description | Source Citation |
|--|---|--|
| Dow Jones Sustainability Indices (DJSI) | Focuses primarily on the financial sector and lists firms with high ethical standards, often excluding unethical firms from financial lists. | (Carlos & Lewis, 2018; Johnson, 2013; Lee & Faff, 2009; Standard Ethics, 2021) |
| Global Business Ethics Survey (GBES) | A longitudinal study conducted by the Ethics & Compliance Initiative (ECI) that covers ethical practices by analysing responses from employees across 42 countries. | (ECI, 2024) |
| French Ethics Index | An index that assesses corporate ethics based on 43 large companies, each assigned a rating corresponding to its ISIN. | (Standard Ethics, 2024a) |
| Ethics Index (Australia) | Based on a national survey conducted by Ipsos in Australia, assessing the perceived ethical behaviour of various professions and sectors. | (Governance of Australia & Ipsos, 2024) |
| World Index of Moral Freedom (WIOMF) | A freedom-based approach, proposed by the Fundación para el Avance de la Libertad, that measures ethics by assessing five categories: religion, bioethics, drugs, sex, and family/gender. | (Fundación para el Avance de la Libertad, 2019) |

Source: Own work.

There have been earlier attempts to construct general ethical frameworks, such as Benjamin Franklin's dissertation on "Liberty and Necessity, Pleasure and Pain" (Franklin, 1725). In this work, Franklin explores moral-ethical issues by suggesting that humans, unlike animals, derive ethical behaviour from the interplay of pain (or "uneasiness" or discomfort) and pleasure that occurs when desires are satisfied in order to avoid discomfort. While such theoretical frameworks offer deep philosophical insights (Aumann & Hart, 1992; Coeckelbergh, 2012; Hauptman, 2019), they do not provide a mechanism for quantifying ethics, leaving a gap in current knowledge. In contrast, the ETPI and RETPI indices address this gap by providing a reliable and replicable method for measuring ethics.

Moreover, it was clear from the earliest studies of morality and ethics that not all individuals are morally equal, since the factors that shape personal ethics – such as education – vary widely. Franklin himself noted this in 1735, recognising that ethics is influenced by local, regional phenomena (Franklin, 1735). This underlines the need for ethical indices that can account for regional and micro-regional variations. The ETPI and RETPI indices are

uniquely suited to meet this need by providing quantifiable measures that can be applied at both national and regional levels.

In contrast, there are several quantitative studies on ethics (see Tab. 4), the most prominent of which is the Global Business Ethics Survey (GBES) conducted by the Ethics & Compliance Initiative (ECI). This longitudinal study covers ethical practices in 42 countries (ECI, 2024) and includes responses from over 18,000 employees (ECI, 2020). It focuses on key areas such as pressure to compromise ethical standards, observations of misconduct, reporting of misconduct and perceived retaliation against whistleblowers (ECI, 2024). While the GBES provides valuable insights into ethics in the workplace, recent findings highlight serious challenges, including rising workplace pressures, increased misconduct and weak ethical cultures. Companies use the GBES data to benchmark their ethics programmes, but its scope remains limited to employee ethics in corporate settings.

Table 4 Comparison with Specialized Ethical/Social Indices

| Existing Index | Primary Focus and Limitations | Key Benefit of ETPI/RETPI in Comparison |
|--|---|---|
| Dow Jones Sustainability Indices (DJSI) | Focuses almost entirely on the financial/corporate sector and excludes broader societal dimensions of ethics. | Holistic Societal Scope: Captures the <i>full range of ethical standards</i> that govern society, integrating cultural, social, economic, and political factors, moving beyond mere corporate ethics. |
| Global Business Ethics Survey (GBES) | Focuses solely on employee ethics ; results suffer from <i>subjectivity bias</i> and the sample size is insufficient for detailed national, regional or micro-regional analysis. | Multi-level & Objective: Provides a transparent, replicable, and quantifiable framework. RETPI is uniquely capable of assessing ethics at the regional, local, and sub-national levels , accounting for variations often missed by large national surveys. ETPI captures national level. |
| French Ethics Index (Standard Ethics) | Measures corporate ethics using a small number of large companies; suffers from subjectivity and analysis is difficult to reproduce; provides no regional insights . | Transparent and Reproducible: Offers a quantifiable measure with a transparent methodology and explicitly fills the gap in providing insights at the national (ETPI) and sub-national levels (RETPI) . |
| World Index of Moral Freedom (WIOMF) | Narrow freedom-based approach (e.g., drugs, sex, bioethics); methodology is subjective and complicates creation of a universal index. | Comprehensive, Quantitative, and Objective: Assesses the ethical background using a quantitative basis . Incorporates macro-dimensions often omitted by freedom indices, such as corruption, education, human development, and environmental issues . |
| Ethics Index (Australia, Ipsos) | Limited to a single national focus (Australia) ; relies on public <i>perception</i> rather than the quantifiable conditions that influence ethical development. | Global Applicability & Condition-Focused: Provides a global perspective , assessing countries, regions, and localities worldwide. Focuses on quantifying the underlying conditions and factors that promote or inhibit ethical behavior. |

Source: Own work.

There are striking patterns in the GBES Index. For example, in 2023 Russia is the country with the lowest pressure to compromise ethical standards (ECI, 2024, Section 1), followed by Indonesia and Colombia. Meanwhile, Egypt, Colombia and Brazil have the highest percentages of employees working in strong ethical cultures (ECI, 2024, Section 5). However, the replicability of these results has been debated, and potential biases related to subjective assessment have emerged.

Despite its broad reach, the GBES survey has obvious limitations. It focuses solely on employee ethics, neglecting broader corporate and societal ethical dimensions. In addition, while the sample size is large, it is insufficient to allow for detailed regional or micro-regional analysis, which contradicts the understanding of Franklin (1735) and subsequent scholars that ethics is shaped by multiple local factors, including education. As such, the GBES provides only a narrow lens through which to view ethics.

The Standard Ethics Index (Standard Ethics, 2024b) offers a different perspective by analysing the ethical practices of large companies. For example, the French Ethics Index of September 2024 is based on 43 large companies, each of which is assigned a rating corresponding to its ISIN (International Securities Identification Number (Standard Ethics, 2024a)). While the scale of this index is impressive, it also has several shortcomings:

- ✓ Subjectivity bias: Analysis is not easily reproducible.
- ✓ Limited scope: The ethics of a large country like France are represented by a small number of large companies.
- ✓ Narrow ethical focus: The Index assesses corporate ethics, leaving out other important aspects of societal ethics.
- ✓ Lack of regional analysis: The Index does not provide insights at the sub-national level.
- ✓ Bias towards global companies: When assessing transnational companies, it is difficult to attribute ethical practices to a specific country due to global supply chains.

These limitations leave a significant gap in the field, which the ETPI and RETPI indices aim to fill.

Another recent attempt to assess ethics is the measurement of freedoms carried out by the Fundación para el Avance de la Libertad (2019). This approach measures five categories: religion, bioethics, drugs, sex and family/gender (Fundación para el Avance de la Libertad, 2019). The idea is that an ideal country would have broad freedoms in these areas.

However, the methodology is subjective and the lack of a reproducible, transparent and quantitative basis undermines its validity (Shemetev, 2022). For instance, Afghanistan was

ranked the lowest overall in 2020, followed by the United Arab Emirates and Saudi Arabia (Fundación para el Avance de la Libertad, 2019)). Nevertheless, according to Varlamov (2021a, 2021b), for example, Afghanistan should have received a higher score that year for having the easiest and cheapest access to drugs. This is one of the five components used by Fundación para el Avance de la Libertad (2019) to measure ethics in this index. Furthermore, despite being known for their strict drug control practices (Koç, 2023), the UAE and Saudi Arabia were ranked two and three positions ahead of Afghanistan respectively in this index. This raises concerns about the accuracy and usefulness of the Fundación para el Avance de la Libertad's index.

The Governance Institute of Australia has taken a different approach with its Ethics Index, based on a national survey conducted by Ipsos. This survey assesses the ethical behaviour of various professions and sectors across Australia and calculates an 'Ethics Index Score' that reflects the perceived level of ethical behaviour (Governance of Australia & Ipsos, 2024).

While this is a valuable tool for assessing public perception, its limitations include a narrow focus on Australia, potential bias in survey responses and an emphasis on ethical perceptions rather than the broader conditions that influence ethical development.

In contrast, the ETPI and RETPI indices provide a global perspective, covering countries, regions and localities. They are fully replicable and focus on the conditions that promote or inhibit ethical behaviour, providing a unique and comprehensive tool for assessing ethics globally. Unlike other indices that are limited in scope and focus, the ETPI and RETPI indices provide a robust, transparent and quantifiable framework for the study of ethics.

Having outlined the fragmented landscape of existing ethical indices and demonstrated the absence of a unified, multidimensional framework, it is important to consider the ETPI and RETPI in the context of their own developmental trajectories. These indices did not emerge fully formed, but rather evolved through successive iterations, with each iteration addressing specific methodological shortcomings and expanding the indices' analytical scope. By tracing this generational development, we can highlight both the continuity with earlier work and the novel contributions of the present study.

The results of this study support the view that institutions define the capability frontier (the ETPI layer), while public perception and engagement (the RETPI layer) determine the extent to which these capabilities are realised by the population. This can explain why a country may have strong national ethical institutions yet have regions where the ethical environment is neither perceived nor engaged with locally, thereby limiting the effectiveness of educational or economic investment.

From Concept to Maturity: Three Generations of the Ethics Perception Indices

The development of the Ethics Perception Index (ETPI) and the Regional Ethics Perception Index (RETPI) should be understood as a cumulative, generational process rather than a single, static innovation. Each stage has addressed specific shortcomings of the previous version, while simultaneously expanding the analytical and policy relevance of the indices (see Tab. 5).

- 1) **Generation I (2022)** marked the *conceptual breakthrough*: for the first time, ethics was operationalised as a measurable, reproducible index at both national and regional levels (Shemetev, 2022). However, this first version remained essentially static and did not adequately incorporate negative factors such as natural resource depletion, which introduced a small but important bias.
- 2) **Generation II (2023)** corrected this limitation by introducing negative scaling, thereby eliminating the bias and allowing the indices to reflect sustainability more accurately. In addition, this version linked ethical development to *resilience and recovery potential*, demonstrating that moral-ethical growth is not only a normative concern but also a predictor of socio-economic stability (Shemetev & Pěluča, 2023). Nevertheless, the indices remained limited in their ability to capture time-series dynamics or to analyse groups of countries simultaneously.
- 3) **Generation III (this article, 2025)** represents the *mature stage* of development. It introduces a suite of methodological novelties:
 - ✓ dynamic **time-series analysis**, supported by interpolation and the ME-Matrix for handling missing or low-frequency data;
 - ✓ **regional adaptability** through modifiers reflecting public interest in ethics (e.g. online activity);
 - ✓ the ability to estimate **groups of countries and their regions**, rather than single nations;
 - ✓ integration of **seven established components** into a unified, transparent framework;
 - ✓ **3D modelling** of RETPI values under varying parameters, enabling scenario analysis;
 - ✓ explicit treatment of **low-frequency data** with iterative updating;
 - ✓ and, crucially, the coefficient approach for advanced measuring **ethical resilience** alongside recovery potential.

Table 5 Evolution of ETPI/RETPI

| Generation | Reference | Key Features | Limitations | Novelty/Contribution |
|------------|--------------------------|--|---|---|
| I | Shemetev (2022) | First ETPI/RETPI concept; national & regional scope | Limited negative scaling; static only | Introduced ethics as measurable index |
| II | Shemetev & Pěluha (2023) | Negative scaling (NRD); resilience & recovery estimation | Lack time-series; lack group-country analysis | Corrected bias; linked ethics to resilience |
| III | This article (2025) | Time-series analysis; ME-Matrix; RETPI modifiers; group-country estimation; 3D modelling; integration of 7 components; coefficients of ethical resilience and recovery potential | — | First comprehensive, dynamic, regionally adaptable, multi-country ethical index |

Source: Own work.

Taken together, these advances transform ETPI and RETPI from pioneering but preliminary tools into comprehensive, dynamic, and policy-relevant instruments. Tab. 5 summarises this generational evolution, making clear how each stage has built upon the last and how the present version offers a genuinely novel contribution to the measurement of ethical progress.

Comparison of the Global Social Progress Index (SPI) and ETPI/RETPI Framework

It is important to acknowledge the existence of the Global Social Progress Index (SPI (Krylova et al., 2025; Social Progress Imperative, 2025b)), which has offered a thorough assessment of non-economic aspects of societal well-being since 2011. The SPI evaluates 57 indicators across three dimensions — Basic Human Needs, Foundations of Wellbeing and Opportunity — and has played a key role in shifting the focus of debate beyond GDP (Social Progress Imperative, 2025a). However, the ETPI and RETPI differ in both their conceptual focus and their methodological design (see Tab. 6).

- 1) Firstly, while the SPI aggregates a wide range of social outcomes, the ETPI and RETPI are explicitly designed to capture the ethical and moral dimensions of development. They operationalise ethics as a measurable construct rather than a by-product of social outcomes.
- 2) Secondly, the ETPI and RETPI integrate seven transparent and replicable components — corruption, economic freedom, human development,

- education, human rights, environmental performance and natural resource depletion — with clear scaling rules and reproducibility protocols.
- 3) Thirdly, unlike the SPI, the ETPI and RETPI incorporate a dynamic time-series framework and an explicit treatment of missing or low-frequency data (via interpolation and the ME-Matrix), enhancing replicability and longitudinal analysis.
 - 4) Fourthly, the RETPI introduces regional modifiers based on public engagement with ethics (e.g. Google Trends), enabling subnational differentiation and estimation of resilience and recovery potential — features absent from the SPI.

Therefore, the ETPI and RETPI complement the SPI by offering a more targeted lens on the ethical underpinnings of resilience, sustainability, and inclusive development.

Table 6 Global Social Progress Index (SPI) vs. ETPI/RETPI Framework

| Dimension | Global Social Progress Index (SPI) | ETPI / RETPI |
|--|--|--|
| Level of analysis | National level only; no sub-national differentiation. | National (ETPI) and regional/local/ sub-local (RETPI), enabling intra-country comparisons. |
| Conceptual focus | Broad social outcomes (basic needs, wellbeing, opportunity). | Explicitly measures ethical and moral dimensions (corruption, rights, freedoms, sustainability). |
| Components | 57 indicators across 12 components and 3 dimensions. | 7 transparent, replicable components: corruption, economic freedom, human development, education, human rights, environmental performance, natural resource depletion. |
| Methodological transparency | Complex aggregation; weighting not always easily replicable. | Fully transparent formulas; equal weighting; clear scaling rules; replicable in R/Python/Excel/Calculator. |
| Time-series capacity | Primarily cross-sectional snapshots; limited longitudinal analysis. | Designed for dynamic time-series analysis , with interpolation and ME-Matrix for missing/low-frequency data. |
| Regional adaptability | Not designed for sub-national or regional modifiers. | RETPI introduces regional modifiers (e.g. Google Trends on ethics) to capture public engagement and local variation. |
| Resilience and recovery potential | Not explicitly measured. | Explicitly integrates resilience and recovery potential as part of ethical development assessment. |
| Policy relevance | Useful for broad benchmarking across countries. | Useful for targeted policy interventions at both national, regional and local levels; highlights lagging regions/ municipalities within countries. |
| Comparability | Strong for cross-country benchmarking, but less sensitive to internal diversity. | Strong for both cross-country and within-country comparisons, especially in large, diverse states. |

Table 6 (continued)

| | | |
|-------------------------------|--|---|
| Subjectivism in inputs | Relies heavily on survey-based indicators (e.g. “Have you had money stolen?”), which are perception-driven and culturally biased. | Based on numerical, internationally standardised indicators ; any subjectivity exists only at the level of methodological construction, not in the raw inputs. |
| Best suited for | Small or homogeneous countries where national averages reflect reality (for example, Nauru, San Marino, Malta). | Large, diverse countries and regions where national averages mask internal variation. |

Source: Own work.

While the Global Social Progress Index (SPI) has made a valuable contribution by broadening the scope of measurement beyond GDP, substantial differences remain between it and the ETPI/RETPI framework. Tab. 6 provides a structured comparison. Another distinction lies in the degree of subjectivity: The SPI partially relies on survey-based indicators (e.g. the proportion of respondents reporting theft), which are inherently perception-driven. In contrast, the ETPI and RETPI are constructed from numerical, internationally standardised indicators. While no index is entirely free from methodological subjectivity — even GDP involves conventions and imputations (Shemetev & Pelucha, 2022) — the ETPI and RETPI frameworks minimise subjectivity at the input level. This makes their basic components transparent and replicable and reduces their dependence on cultural or survey biases.

National Culture and Ethical Perceptions: Hofstede’s Dimensions

Perceptions and practices of ethics are not formed in isolation, but are deeply embedded in cultural contexts. Hofstede's cultural dimensions theory offers a systematic approach to understanding how national culture influences values, behaviours and ethical judgements (Hofstede, 2001; Hofstede et al., 2010, 2017). The six dimensions (Hofstede, 2001; Hofstede et al., 2010) — power distance, individualism versus collectivism, masculinity versus femininity, uncertainty avoidance, long-term versus short-term orientation, and indulgence versus restraint — offer valuable insights into cross-national differences in ethical standards (see Tab. 7).

Table 7 The potential influence of Hofstede's cultural dimensions on ETPI/RETPI scores

| Hofstede Dimension | If the dimension rises (higher value) | If the dimension falls (lower value) | Explanation of influence on ETPI/RETPI |
|---|---|---|--|
| Power Distance (PDI) | Greater acceptance of hierarchy; tolerance of nepotism and patronage → likely lower ETPI/RETPI (weaker corruption control, weaker rights). | More egalitarian relations; stronger accountability → likely higher ETPI/RETPI . | High PDI societies normalize unequal power, undermining transparency and fairness. Low PDI fosters ethical governance and trust. |
| Individualism vs. Collectivism (IDV) | Stronger individual rights, personal responsibility → higher ETPI/RETPI (better human rights, education). | Group loyalty, in-group favoritism → lower ETPI/RETPI (higher corruption, weaker fairness). | Individualism aligns with universal rights and accountability; collectivism can justify favoritism or informal networks. |
| Masculinity¹ vs. Femininity² (MAS) | Competitive, achievement-oriented culture → may raise economic freedom but tolerate aggressive/unethical practices → mixed effect . | Cooperative, equity-oriented culture → higher ETPI/RETPI (better environment, social ethics). | Masculine cultures prioritize competition; feminine cultures emphasize care, sustainability, and fairness. |
| Uncertainty Avoidance (UAI) | Strong reliance on rules; may reduce corruption but also create rigid bureaucracies → ambiguous effect³ . | Flexible, trust-based norms; may encourage innovation but also informal practices → ambiguous effect⁴ . | High UAI ³ can strengthen legal frameworks but risk inefficiency; low UAI ⁴ can foster trust or, conversely, tolerance of informality. |
| Long-Term Orientation (LTO) | Focus on sustainability, education, intergenerational responsibility → higher ETPI/RETPI (better environment, human development). | Short-term focus, immediate gains → lower ETPI/RETPI (resource depletion, weaker sustainability). | Long-term orientation aligns with sustainability and ethical foresight; short-termism undermines them. |
| Indulgence vs. Restraint (IVR) | Greater freedom of expression, openness → higher ETPI/RETPI (human rights, education). | Restrained, conformist culture → lower ETPI/RETPI (less pluralism, weaker rights). | Indulgence supports rights and freedoms; restraint emphasizes control and conformity, limiting ethical pluralism. |

Source: Own work based on RETPI/ETPI theories and Hofstede's works (Hofstede, 2001; Hofstede et al., 2010).

Interpretations:

- ✓ Power Distance (PDI): In societies with a high PDI, hierarchical authority is widely accepted, which can lead to the normalisation of practices such as nepotism and patronage. This can undermine anti-corruption norms and lower ETPI scores. Conversely, low power-distance cultures tend to emphasise accountability and transparency, thereby reinforcing ethical standards.

- ✓ Individualism vs. collectivism (IDV): Individualistic cultures prioritise personal responsibility and rights, often aligning with stronger human rights protections and higher ETPI values. Collectivist cultures, however, may emphasise loyalty to in-groups, which can sometimes justify practices such as favouritism or informal networks, thereby affecting corruption and fairness indicators.
- ✓ Masculinity vs. femininity (MAS): Masculine cultures emphasise competition and achievement, which may correlate with higher economic freedom, but also with tolerance of aggressive business practices. In contrast, feminine cultures emphasise care, equity and quality of life, aligning with stronger environmental and social ethics.
- ✓ Uncertainty avoidance (UAI): High uncertainty-avoidance societies rely heavily on formal rules and regulations. While this can strengthen legal frameworks, it may also lead to rigid bureaucracies that tolerate inefficiency or corruption. Conversely, low uncertainty-avoidance cultures may rely more on trust and informal norms, which can either strengthen or weaken ethical practices depending on the context.
- ✓ Long-Term vs. Short-Term Orientation (LTO): Long-term oriented cultures prioritise sustainability, education and intergenerational responsibility, which directly supports higher scores in ETPI components such as human development and environmental performance. Short-term oriented cultures may prioritise immediate gains, often at the expense of sustainability.
- ✓ Indulgence vs. Restraint (IVR): Indulgent cultures emphasise freedom of expression and personal choice, which can promote human rights and education. In contrast, restrained cultures may emphasise conformity and control, which can limit ethical pluralism, but also reduce excesses.

Notes on the nuances of Hofstede's original models, and on how these can be interpreted within the ETPI/RETPI framework.

- 1) The original Hofstede's works consider Masculinity to be not related to a country's wealth or economic development. In masculine cultures, the focus is on achievement, performance and ego, with work playing a central role in life (Hofstede, 2001). A preference for advancement and earnings often defines this culture (Hofstede, 2001). While the ETPI concept suggests that MAS may 'raise economic freedom', implying a link to one of its input components, the Hofstede's works highlight that MAS is generally unrelated to wealth (Hofstede, 2001). Interpreting the effect as mixed is a simplification, as the core issue is prioritising performance over relationships (Hofstede, 2001).
- 2) The original Hofstede's works consider Feminine cultures favour welfare societies and cooperation, focusing on quality of life and relationships (Hofstede et al., 2010).

Feminine cultures are associated with supporting those in need (welfare and development cooperation) and preserving the environment (Hofstede, 2001). This generally aligns with the ETPI's sustainability and social ethics components.

- 3) At the core of high UAI, according to the original Hofstede's works, is emotional anxiety in the face of the unknown (Hofstede, 2001). This anxiety gives rise to a desire for formal rules and structures (Hofstede, 2001). This manifests as xenophobia, nationalism, and a belief in absolute truth and expertise (Hofstede, 2001). The preference for precision and formalised management stems from an emotional need for certainty, rather than mere bureaucratic convenience (Hofstede et al., 2010).
- 4) The original Hofstede works suggest that a low UAI indicates tolerance of ambiguity, chaos and novelty (Hofstede, 2001). Such cultures tend to be less expressive of emotions, exhibit lower levels of anxiety and rely more on generalists and common sense (Hofstede, 2001). This attitude fosters a greater willingness to take risks with an unknown outcome (Hofstede et al., 2010).

This UAI ambiguity (see Tab. 7) noted in the ETPI description arises because a high UAI score emphasises strict rules, which are beneficial for governance and anti-corruption efforts (Hofstede, 2001). However, it also fosters a perception of low political competence and low trust in the legal system (Hofstede, 2001). It is also associated with more political violence (Hofstede, 2001), which undermines ethical governance. By focusing predominantly on 'rules' (legal frameworks and bureaucracy), the ETPI framework overlooks the fundamental psychological root of UAI (anxiety) and its broad cultural impact on trust, political competence, and tolerance.

Nevertheless, models are designed to simplify reality without compromising their quantitative or analytical capabilities. In modern physics, for instance, quantum mechanics refined the initial atomic model by introducing concepts such as wave-particle duality and probabilistic electron distributions (Heisenberg, 1927; Schrödinger, 1926). However, despite these advances, simpler binary atomic models remain indispensable in chemistry, providing clear, actionable predictions without the complexity of quantum mathematics (Atkins et al., 2018; Atkins & de Paula, 2006). Similarly, simplified models of ethical measurement, such as ETPI and RETPI, although abstractions of a more complex reality, remain valid and valuable tools. By balancing methodological rigour with accessibility, they enable systematic comparisons to be made across countries and regions, offering insights that are both analytically robust and practically interpretable.

Hofstede's framework can also confirm the need for advanced methodological approaches for the regional/local RETPI and national ETPI indices, which already exist in their third generation. For instance, the ETPI comprises seven components, such as the Corruption

Perceptions Index (CPI) and the Human Development Index (HDI). Hofstede's work shows that although cultural dimensions correlate strongly with these kinds of aggregate societal statistics, individual attitudes or behaviours within those countries are often uncorrelated or even inversely correlated with national aggregate scores (Hofstede, 2001). Therefore, while it is appropriate to use culturally derived dimensions to interpret the ETPI at the national level, applying these abstract relationships to regional or local performance measures should be based on local data to a significant extent, in order to avoid the risk of misinterpreting regional differences by using correlations established only at the national level. Since the RETPI already uses local data, which can differ from the national average, it is a useful tool for academia and policymakers that meets Hofstede's methodological critique. Moreover, RETPI is the only ethics measurement index known to work on three levels simultaneously: national, regional and local. This increases the value of the tool.

By integrating Hofstede's framework, ETPI and RETPI can be interpreted as reflections of both institutional and socio-economic conditions, as well as outcomes shaped by deep-seated cultural orientations. For example, the consistently high ETPI scores of Scandinavian countries can be linked to their low power distance, strong individualism balanced with social equity and long-term orientation — cultural traits that reinforce ethical governance and sustainability. Conversely, regions with high power distance and collectivist orientations may struggle to reduce corruption or strengthen human rights, even when economically developed. Closer integration of the ETPI/RETPI framework with Hofstede's works could pave the way for future studies in this area.

CONCLUSION

Achieving the core objective:

This research aims to develop the third generation of the Ethics Perception Index (ETPI) and the Regional Ethics Perception Index (RETPI), based on previous versions (Shemetev, 2022; Shemetev & Pělucha, 2023). While the first generation established the conceptual framework and the second generation introduced negative scaling and resilience estimation, this study incorporates dynamic time-series analysis, robust missing-data treatment and a methodology for analysing enhanced resilience and recovery potential, as well as regional modifiers. This embeds ethical and moral growth into broader development assessments. We believe that this goal has been achieved, since the third-generation indices introduced provide a transparent and replicable framework for assessing ethical standards at national and regional levels. The innovative dynamic component enables time-series analysis, allowing ethical progress to be

tracked over time and overcoming the limitations of previous static, single-point-in-time analyses.

Key outputs:

This paper's key outputs are the third-generation ETPI and RETPI. These retain the seven established measurable components — economic freedom, corruption, education, human development, human rights, environmental sustainability and natural resource depletion — but extend them with methodological innovations. These innovations include a dynamic framework for time-series analysis, the ME-Matrix for handling missing and low-frequency data, a coefficient approach for estimating resilience and recovery potential, and the ability to estimate groups of countries and their regions. Together, these advances provide a comprehensive and replicable perspective on societal progress that transcends traditional economic indicators.

These indices provide a holistic view of societal progress by going beyond traditional economic measures to include ethical dimensions that are critical to understanding the sustainability and fairness of development processes. In addition, the research presents a dynamic methodology capable of dealing with missing data, thereby enhancing the utility of these indices in longitudinal studies.

Benefits for academia:

The third-generation ETPI and RETPI make a distinct contribution to interdisciplinary research in ethics, economics and development studies. Unlike earlier, primarily static versions, the present indices enable scholars to trace ethical trajectories over time, evaluate resilience and recovery potential following shocks, and conduct comparative analyses across multiple regions and countries. This methodological transparency opens up new avenues for empirical research and strengthens the connection between moral philosophy and socio-economic development.

By bridging ethical considerations with quantitative metrics, this research opens new avenues for exploring the intersection of moral philosophy and socio-economic development. It also provides a robust tool for comparative regional studies, enhancing the ability of scholars to examine ethical differences in different socio-economic contexts. Furthermore, the indices lay the groundwork for future empirical studies that aim to explore the causal relationships between ethical development and economic growth.

Benefits for policy makers:

The practical implications of this third-generation framework can be significant for policymakers. As well as offering a snapshot of ethical conditions, ETPI and RETPI now

enable the monitoring of ethical resilience and recovery potential. This provides valuable insights into how societies withstand and adapt to crises. This dynamic capacity allows for more targeted, context-sensitive interventions in areas such as inequality, corruption and environmental sustainability, which are often overlooked by traditional economic indicators. The ability to assess ethical development at both national and regional levels allows for targeted and contextually relevant interventions, thereby improving the effectiveness of policies aimed at promoting inclusive and sustainable growth.

Limitations of the research:

Despite these advances, limitations remain. Some ethical indicators remain subjective to a certain extent and vary across cultural contexts. Furthermore, data availability continues to limit coverage in certain regions. Although the introduction of imputation techniques (e.g. linear interpolation and ME-Matrix) has improved robustness compared to earlier versions, the accuracy of the indices may still be affected by incomplete or biased data.

Avenues for future studies:

Future studies should refine the components of the ETPI and the RETPI in order to ensure cultural adaptability and test alternative weighting schemes. The set of regional modifiers should also be expanded. There is also potential to conduct a more in-depth analysis of the causal links between ethical development, resilience, and socio-economic outcomes. As more data becomes available, particularly from under-represented regions, longitudinal studies can validate the indices further. Finally, extending the framework to encompass global ethical challenges, such as climate change and digital governance, would establish ETPI and RETPI as benchmarks for integrating ethics into sustainable development.

This research is an important step towards integrating ethical considerations into the broader discourse on social progress, providing tools that are both theoretically sound and practically applicable.

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Annex A. The Ethics Perception Index, 1995-2024

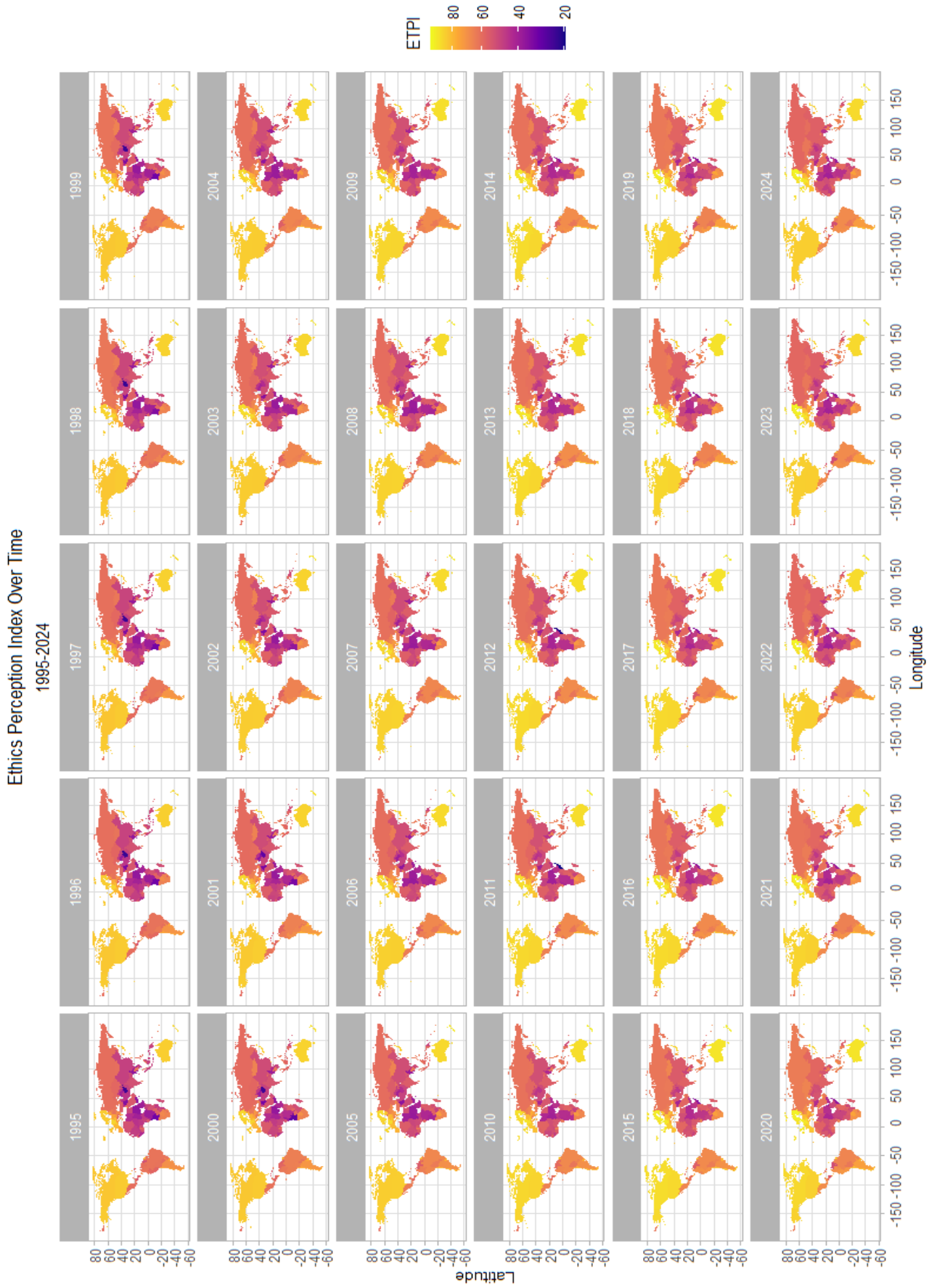


Table A1: Ethics Perception Index (ETPI) for Countries (1995-2024)

| ISO3 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 |
|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| AFG | 23,8 | 23,3 | 23,4 | 23,5 | 23,7 | 23,8 | 28,5 | 42,8 | 43,6 | 44,0 | 44,3 | 44,5 | 44,9 | 45,0 | 45,4 | 45,7 | 45,8 | 46,0 | 46,1 | 46,3 | 46,3 | 47,0 | 49,2 | 51,4 | 51,3 | 52,9 | 46,4 | 46,4 | 45,6 | 45,6 |
| AGO | 31,0 | 31,0 | 31,3 | 33,9 | 31,0 | 28,6 | 32,3 | 36,6 | 39,8 | 40,7 | 40,6 | 41,7 | 41,6 | 41,1 | 44,7 | 43,8 | 43,5 | 44,4 | 45,5 | 46,7 | 48,9 | 48,8 | 49,3 | 49,8 | 52,3 | 54,1 | 53,0 | 53,4 | 53,4 | 53,6 |
| ALB | 64,1 | 65,0 | 65,4 | 66,1 | 66,7 | 65,8 | 65,1 | 64,8 | 64,8 | 65,3 | 65,8 | 66,7 | 67,8 | 69,4 | 70,5 | 71,7 | 72,0 | 72,7 | 73,0 | 73,2 | 73,6 | 74,1 | 73,6 | 73,3 | 74,0 | 73,8 | 73,3 | 73,6 | 73,4 | 73,3 |
| ARE | 62,4 | 62,2 | 62,9 | 64,2 | 64,0 | 63,4 | 64,3 | 65,3 | 64,8 | 63,3 | 62,7 | 62,1 | 62,9 | 62,5 | 64,4 | 64,4 | 63,1 | 63,9 | 64,9 | 65,9 | 68,6 | 68,7 | 72,0 | 73,6 | 75,0 | 75,6 | 73,9 | 72,7 | 72,8 | 72,8 |
| ARG | 69,7 | 71,0 | 71,0 | 70,9 | 71,4 | 71,6 | 72,0 | 71,3 | 70,3 | 70,0 | 69,6 | 69,7 | 69,9 | 69,9 | 70,1 | 70,0 | 70,3 | 70,2 | 70,5 | 70,4 | 70,2 | 71,1 | 72,5 | 73,1 | 74,1 | 74,1 | 73,2 | 72,8 | 73,3 | 73,1 |
| ARM | 64,4 | 64,6 | 65,4 | 66,3 | 67,4 | 67,9 | 68,5 | 68,1 | 68,0 | 68,3 | 68,5 | 68,9 | 68,2 | 67,4 | 69,5 | 70,0 | 70,3 | 70,6 | 71,1 | 71,8 | 71,5 | 71,6 | 73,0 | 73,1 | 74,5 | 75,7 | 75,1 | 73,8 | 73,0 | 73,0 |
| AUS | 85,2 | 85,4 | 86,0 | 86,1 | 86,4 | 86,4 | 86,4 | 86,5 | 87,1 | 87,3 | 87,8 | 88,0 | 88,3 | 88,6 | 89,4 | 89,2 | 89,0 | 89,7 | 90,2 | 90,5 | 91,0 | 90,9 | 90,3 | 90,1 | 90,3 | 90,5 | 88,7 | 88,3 | 87,8 | 88,1 |
| AUT | 82,6 | 82,8 | 82,4 | 82,7 | 82,7 | 83,7 | 83,7 | 83,8 | 83,7 | 84,0 | 84,3 | 84,6 | 84,8 | 84,8 | 85,2 | 85,5 | 85,9 | 86,1 | 86,4 | 86,9 | 87,3 | 87,2 | 87,1 | 87,2 | 87,4 | 87,5 | 87,4 | 86,9 | 86,6 | 86,2 |
| AZE | 51,2 | 51,4 | 53,4 | 57,3 | 56,1 | 55,3 | 57,3 | 58,5 | 56,2 | 55,4 | 53,6 | 53,0 | 54,0 | 53,4 | 56,4 | 57,1 | 56,7 | 57,3 | 58,7 | 59,2 | 60,4 | 59,7 | 59,5 | 57,0 | 59,0 | 60,6 | 58,3 | 55,4 | 55,3 | 55,4 |
| BDI | 39,7 | 38,9 | 39,8 | 39,3 | 40,7 | 41,1 | 40,9 | 40,7 | 39,1 | 41,6 | 42,8 | 44,1 | 42,3 | 41,8 | 42,6 | 42,0 | 41,7 | 42,4 | 41,8 | 41,9 | 41,5 | 40,4 | 40,7 | 40,6 | 41,0 | 41,4 | 42,0 | 41,0 | 41,0 | 40,4 |
| BEL | 82,0 | 82,3 | 82,2 | 82,3 | 82,2 | 82,6 | 83,1 | 83,9 | 84,2 | 84,7 | 85,2 | 86,5 | 86,9 | 86,8 | 87,2 | 86,7 | 86,8 | 87,1 | 87,3 | 87,7 | 88,0 | 88,0 | 88,3 | 88,0 | 88,1 | 88,4 | 88,2 | 88,2 | 87,8 | 87,5 |
| BEN | 54,3 | 54,6 | 55,9 | 56,2 | 56,9 | 57,4 | 57,8 | 57,6 | 57,4 | 57,8 | 57,7 | 58,0 | 58,0 | 58,1 | 58,1 | 58,3 | 58,5 | 58,6 | 59,2 | 59,5 | 59,7 | 59,8 | 60,2 | 59,5 | 59,1 | 58,6 | 59,2 | 59,7 | 59,5 | 59,1 |
| BFA | 46,6 | 46,8 | 47,5 | 48,2 | 49,9 | 50,9 | 51,2 | 51,5 | 51,3 | 51,4 | 51,3 | 51,2 | 50,5 | 50,7 | 51,3 | 51,6 | 51,8 | 52,4 | 53,3 | 53,6 | 54,2 | 55,0 | 55,8 | 56,2 | 56,3 | 55,8 | 54,3 | 54,0 | 51,8 | 51,2 |
| BGD | 49,1 | 51,0 | 51,1 | 51,8 | 51,8 | 51,8 | 52,4 | 52,3 | 52,3 | 52,0 | 51,8 | 52,6 | 51,3 | 51,1 | 51,8 | 52,5 | 52,8 | 52,9 | 52,5 | 52,7 | 53,5 | 53,7 | 54,2 | 54,1 | 54,0 | 54,9 | 55,0 | 54,8 | 55,0 | 55,0 |
| BGR | 67,7 | 67,9 | 67,9 | 68,0 | 68,4 | 68,9 | 69,8 | 72,0 | 72,5 | 73,2 | 73,7 | 73,7 | 73,5 | 74,0 | 74,8 | 74,9 | 75,2 | 75,5 | 76,1 | 76,6 | 76,2 | 76,0 | 76,0 | 75,8 | 76,5 | 76,6 | 76,4 | 77,1 | 76,8 | 76,7 |
| BHR | 58,0 | 57,7 | 58,1 | 59,4 | 59,0 | 60,9 | 63,1 | 64,9 | 65,3 | 64,0 | 62,3 | 62,2 | 61,7 | 61,0 | 62,3 | 62,0 | 57,8 | 58,8 | 59,5 | 60,4 | 63,5 | 63,1 | 60,9 | 61,2 | 63,4 | 64,0 | 63,7 | 62,7 | 62,9 | 63,0 |
| BHS | 75,1 | 75,7 | 75,9 | 76,5 | 76,7 | 76,6 | 76,8 | 76,7 | 76,9 | 76,8 | 77,2 | 77,4 | 78,0 | 77,3 | 77,5 | 76,3 | 76,9 | 77,0 | 77,5 | 77,4 | 76,9 | 78,0 | 76,6 | 77,2 | 77,5 | 77,6 | 77,8 | 78,9 | 77,8 | 77,8 |
| BIH | 55,4 | 55,8 | 55,5 | 55,8 | 56,1 | 60,2 | 59,0 | 59,3 | 60,2 | 60,7 | 61,4 | 63,0 | 63,6 | 63,9 | 64,6 | 64,9 | 65,1 | 66,1 | 67,0 | 68,1 | 68,7 | 69,2 | 69,6 | 69,3 | 69,6 | 69,5 | 69,6 | 69,5 | 69,4 | 69,3 |
| BLR | 65,1 | 63,2 | 63,9 | 63,9 | 61,2 | 63,1 | 64,8 | 64,2 | 63,5 | 63,8 | 64,4 | 64,2 | 64,3 | 64,1 | 64,2 | 64,5 | 64,6 | 65,2 | 65,7 | 66,3 | 66,6 | 68,3 | 70,7 | 70,5 | 70,6 | 65,3 | 63,8 | 62,2 | 62,0 | 61,6 |
| BOL | 62,2 | 64,1 | 64,6 | 66,2 | 65,7 | 65,5 | 66,6 | 66,1 | 65,8 | 65,6 | 64,1 | 63,1 | 62,6 | 62,6 | 63,8 | 62,7 | 62,3 | 62,8 | 62,9 | 63,2 | 64,4 | 64,5 | 64,7 | 63,8 | 62,6 | 63,2 | 62,8 | 63,0 | 62,9 | 62,9 |
| BRA | 62,4 | 62,1 | 63,2 | 63,4 | 65,0 | 65,3 | 65,7 | 66,1 | 66,8 | 66,9 | 67,5 | 67,7 | 67,2 | 67,4 | 68,1 | 67,8 | 68,0 | 68,4 | 69,0 | 68,8 | 68,2 | 68,3 | 67,2 | 66,4 | 66,3 | 66,8 | 65,9 | 65,9 | 68,4 | 68,4 |
| BRB | 76,9 | 77,0 | 77,5 | 78,1 | 78,0 | 78,2 | 78,0 | 78,1 | 77,4 | 77,6 | 78,1 | 78,8 | 79,1 | 79,3 | 79,3 | 78,6 | 78,6 | 78,7 | 78,9 | 79,3 | 78,6 | 78,1 | 78,0 | 79,0 | 79,4 | 79,3 | 80,0 | 81,1 | 80,9 | 80,4 |
| BRN | | | | | | | | | | | | | | | | | | | | 69,7 | 71,6 | 72,8 | 73,7 | 71,2 | 70,4 | 72,0 | 70,0 | 69,6 | 69,8 | 69,9 |
| BTN | 59,6 | 59,7 | 60,0 | 60,3 | 60,4 | 60,9 | 61,1 | 61,4 | 61,9 | 63,0 | 63,2 | 63,3 | 63,4 | 64,7 | 64,4 | 63,6 | 63,5 | 63,4 | 63,7 | 64,5 | 65,1 | 65,7 | 66,5 | 68,0 | 69,0 | 69,4 | 68,1 | 68,3 | 68,3 | 67,8 |
| BWA | 68,0 | 69,1 | 68,9 | 69,7 | 69,9 | 70,2 | 70,5 | 70,4 | 71,5 | 72,9 | 73,2 | 72,3 | 73,2 | 72,2 | 73,3 | 72,7 | 72,4 | 72,4 | 72,7 | 73,5 | 74,2 | 75,3 | 75,3 | 75,1 | 75,7 | 75,5 | 73,5 | 74,2 | 74,3 | 74,7 |
| CAF | 46,5 | 46,6 | 46,5 | 46,5 | 47,2 | 47,1 | 47,5 | 47,9 | 48,1 | 47,8 | 47,9 | 47,4 | 46,9 | 46,2 | 46,9 | 47,1 | 47,1 | 46,4 | 44,4 | 45,4 | 46,0 | 45,8 | 47,7 | 48,3 | 48,3 | 49,0 | 49,1 | 47,9 | 46,7 | 46,4 |
| CAN | 83,3 | 83,5 | 83,1 | 83,3 | 83,6 | 83,6 | 84,0 | 84,8 | 84,7 | 85,0 | 85,0 | 85,6 | 85,8 | 86,2 | 87,1 | 87,3 | 87,6 | 88,2 | 88,4 | 88,5 | 88,8 | 88,1 | 87,9 | 87,5 | 86,9 | 87,5 | 86,5 | 86,0 | 85,4 | 85,2 |

| ISO3 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 |
|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| CHE | 86,4 | 86,5 | 87,0 | 87,3 | 87,5 | 87,4 | 87,1 | 87,8 | 87,9 | 88,1 | 88,1 | 88,4 | 88,8 | 89,3 | 89,6 | 90,3 | 90,7 | 90,9 | 91,1 | 91,6 | 91,7 | 91,8 | 92,0 | 92,3 | 92,4 | 92,3 | 92,4 | 92,5 | 92,4 | 92,2 |
| CHL | 74,5 | 75,3 | 76,1 | 76,5 | 76,5 | 76,7 | 77,3 | 78,5 | 78,7 | 78,7 | 79,4 | 78,3 | 78,2 | 79,1 | 79,7 | 79,0 | 79,2 | 80,1 | 81,3 | 81,8 | 82,1 | 81,8 | 81,9 | 81,4 | 81,7 | 81,4 | 79,7 | 80,0 | 79,5 | 79,6 |
| CHN | 48,6 | 49,1 | 49,6 | 50,3 | 50,9 | 51,6 | 51,6 | 52,3 | 52,5 | 52,1 | 52,2 | 52,0 | 51,8 | 51,7 | 53,0 | 52,6 | 52,9 | 53,9 | 54,4 | 54,9 | 56,0 | 56,7 | 58,1 | 57,9 | 58,7 | 59,1 | 59,3 | 57,4 | 57,4 | 57,4 |
| CIV | 53,4 | 53,7 | 54,2 | 54,6 | 54,7 | 54,6 | 55,3 | 55,9 | 56,4 | 57,0 | 56,7 | 56,4 | 56,3 | 56,2 | 57,3 | 57,1 | 56,7 | 56,3 | 56,8 | 57,7 | 57,6 | 57,7 | 58,6 | 58,3 | 58,7 | 57,8 | 57,8 | 58,2 | 58,1 | 57,8 |
| CMR | 49,5 | 48,6 | 48,2 | 49,6 | 50,1 | 49,9 | 52,6 | 52,7 | 52,9 | 53,0 | 53,1 | 53,3 | 53,7 | 53,8 | 55,1 | 54,9 | 55,2 | 55,6 | 56,0 | 56,1 | 56,3 | 56,0 | 55,0 | 55,2 | 55,9 | 56,4 | 56,6 | 56,5 | 56,0 | 56,3 |
| COD | 38,5 | 38,4 | 38,5 | 39,9 | 39,8 | 43,8 | 42,4 | 42,5 | 41,0 | 42,5 | 42,7 | 42,9 | 42,7 | 42,5 | 43,3 | 44,2 | 44,0 | 44,6 | 44,4 | 44,4 | 46,2 | 46,5 | 47,4 | 48,2 | 50,6 | 49,7 | 46,1 | 46,1 | 44,6 | 44,5 |
| COG | 45,6 | 45,5 | 40,8 | 42,0 | 41,9 | 38,4 | 40,9 | 42,1 | 43,9 | 44,1 | 43,1 | 41,7 | 42,9 | 42,6 | 45,3 | 43,2 | 41,8 | 44,4 | 46,0 | 47,4 | 49,3 | 48,6 | 46,6 | 44,6 | 45,3 | 48,2 | 48,2 | 47,8 | 47,9 | 47,8 |
| COL | 62,3 | 62,8 | 63,5 | 63,7 | 63,4 | 63,5 | 64,4 | 64,0 | 65,2 | 64,6 | 64,9 | 64,9 | 65,4 | 65,3 | 66,2 | 67,1 | 67,8 | 68,0 | 68,8 | 69,2 | 70,0 | 70,3 | 70,4 | 69,5 | 68,8 | 69,4 | 68,5 | 69,9 | 69,6 | 69,0 |
| COM | 50,3 | 50,4 | 50,3 | 50,4 | 50,7 | 50,7 | 51,0 | 51,4 | 51,6 | 51,7 | 52,1 | 52,2 | 53,7 | 54,3 | 54,7 | 55,3 | 56,0 | 56,7 | 57,4 | 58,1 | 58,3 | 57,6 | 58,8 | 58,9 | 57,7 | 56,9 | 56,7 | 55,7 | 56,1 | 55,9 |
| CPV | 60,2 | 60,4 | 60,2 | 61,3 | 63,0 | 62,5 | 62,2 | 63,3 | 64,0 | 62,5 | 61,4 | 62,2 | 63,4 | 59,5 | 64,6 | 63,1 | 62,5 | 65,0 | 67,2 | 68,8 | 69,1 | 69,7 | 67,1 | 67,3 | 67,9 | 67,9 | 66,9 | 67,9 | 67,7 | 67,3 |
| CRI | 71,8 | 71,7 | 71,9 | 72,2 | 72,7 | 73,4 | 73,8 | 74,0 | 74,1 | 73,8 | 74,0 | 74,1 | 74,0 | 74,3 | 74,9 | 75,0 | 75,8 | 76,5 | 76,6 | 77,1 | 77,8 | 78,3 | 78,0 | 76,9 | 77,3 | 77,7 | 77,5 | 77,0 | 77,1 | 77,3 |
| CUB | 54,0 | 54,4 | 54,6 | 55,0 | 55,4 | 55,6 | 55,9 | 57,0 | 58,2 | 59,0 | 59,7 | 59,3 | 59,3 | 59,9 | 60,3 | 59,4 | 59,5 | 59,5 | 59,7 | 60,3 | 60,6 | 60,1 | 61,8 | 61,5 | 61,1 | 60,7 | 59,9 | 60,3 | 59,8 | 60,1 |
| CYP | 74,4 | 74,6 | 74,9 | 75,3 | 75,5 | 76,0 | 77,1 | 78,0 | 78,3 | 79,2 | 79,3 | 79,7 | 80,0 | 80,6 | 81,2 | 81,4 | 82,0 | 82,3 | 82,4 | 82,5 | 82,7 | 82,1 | 82,3 | 82,9 | 83,0 | 83,2 | 82,8 | 82,9 | 82,8 | 82,8 |
| CZE | 78,9 | 79,4 | 79,8 | 79,9 | 80,4 | 78,9 | 79,1 | 78,7 | 78,9 | 79,0 | 79,1 | 79,6 | 79,8 | 80,0 | 80,8 | 81,1 | 81,4 | 81,7 | 82,4 | 83,1 | 83,9 | 83,7 | 83,7 | 84,0 | 83,5 | 82,9 | 82,8 | 83,8 | 83,5 | 83,2 |
| DEU | 86,7 | 86,9 | 87,0 | 86,8 | 87,2 | 87,2 | 88,0 | 88,3 | 88,4 | 88,9 | 88,7 | 89,1 | 89,2 | 89,3 | 89,7 | 89,9 | 90,2 | 90,2 | 90,5 | 90,7 | 91,0 | 90,9 | 90,8 | 90,8 | 91,1 | 91,0 | 90,8 | 91,3 | 90,9 | 90,6 |
| DJI | 46,7 | 46,8 | 47,0 | 47,2 | 47,6 | 47,5 | 48,2 | 48,1 | 47,5 | 47,8 | 48,0 | 48,0 | 48,2 | 48,1 | 48,5 | 48,7 | 49,7 | 50,0 | 50,3 | 51,5 | 52,2 | 52,1 | 50,8 | 51,1 | 51,7 | 52,4 | 53,4 | 53,3 | 53,4 | 53,3 |
| DMA | 70,3 | 70,3 | 70,4 | 70,4 | 70,4 | 70,4 | 70,4 | 71,0 | 71,0 | 70,9 | 70,8 | 70,7 | 70,2 | 70,9 | 71,2 | 71,4 | 71,7 | 71,9 | 72,5 | 73,0 | 73,7 | 74,3 | 72,4 | 73,2 | 72,8 | 72,1 | 70,7 | 71,0 | 72,0 | 70,9 |
| DNK | 86,9 | 87,2 | 87,5 | 87,9 | 88,4 | 88,9 | 89,4 | 90,3 | 90,9 | 91,5 | 93,8 | 91,7 | 91,9 | 92,2 | 92,3 | 92,3 | 93,4 | 95,0 | 94,0 | 95,1 | 95,8 | 95,8 | 95,3 | 95,4 | 95,2 | 95,4 | 95,5 | 96,0 | 95,9 | 95,9 |
| DOM | 59,5 | 60,4 | 60,8 | 61,8 | 62,0 | 62,5 | 62,8 | 63,0 | 63,2 | 63,4 | 65,5 | 66,1 | 66,3 | 67,1 | 67,6 | 68,1 | 68,1 | 68,1 | 67,9 | 68,5 | 69,0 | 69,5 | 69,5 | 69,6 | 68,9 | 69,6 | 69,6 | 70,2 | 70,1 | 70,2 |
| DZA | 53,1 | 52,8 | 53,3 | 54,7 | 56,6 | 55,7 | 56,9 | 58,0 | 57,5 | 58,0 | 56,3 | 56,6 | 57,1 | 57,3 | 58,7 | 58,6 | 57,6 | 57,8 | 58,0 | 58,5 | 59,3 | 59,3 | 57,8 | 56,9 | 57,8 | 58,1 | 55,8 | 54,4 | 54,1 | 54,2 |
| ECU | 62,9 | 63,3 | 64,1 | 65,1 | 65,4 | 64,3 | 65,3 | 65,3 | 65,3 | 65,3 | 64,5 | 64,2 | 64,7 | 64,1 | 65,2 | 64,2 | 63,3 | 64,2 | 64,1 | 64,6 | 66,3 | 66,4 | 67,5 | 68,5 | 68,9 | 70,2 | 69,5 | 70,0 | 69,1 | 69,1 |
| EGY | 50,4 | 51,8 | 52,9 | 53,5 | 53,8 | 52,5 | 52,9 | 53,4 | 53,4 | 53,4 | 52,9 | 52,6 | 53,2 | 53,8 | 54,9 | 55,2 | 56,4 | 57,3 | 54,5 | 54,4 | 55,5 | 56,0 | 55,0 | 55,8 | 56,6 | 57,4 | 57,3 | 56,3 | 56,4 | 56,4 |
| ERI | 43,8 | 43,9 | 44,0 | 43,5 | 43,7 | 43,3 | 42,6 | 42,4 | 42,3 | 42,4 | 42,1 | 42,1 | 41,6 | 41,7 | 42,1 | 41,7 | 38,2 | 38,0 | 37,9 | 38,2 | 37,3 | 38,1 | 38,0 | 39,0 | 38,6 | 38,2 | 39,1 | 38,7 | 38,6 | 38,6 |
| ESP | 75,9 | 75,8 | 76,1 | 76,8 | 77,4 | 77,7 | 78,6 | 78,9 | 79,1 | 79,3 | 79,3 | 79,8 | 80,1 | 80,5 | 81,1 | 81,8 | 82,6 | 82,9 | 83,4 | 83,0 | 82,7 | 82,9 | 81,9 | 82,3 | 83,4 | 83,4 | 83,9 | 83,8 | 83,2 | 82,9 |
| EST | 77,3 | 78,1 | 79,2 | 80,6 | 81,1 | 81,2 | 82,7 | 83,5 | 83,9 | 84,3 | 85,6 | 85,7 | 86,2 | 86,0 | 86,3 | 86,2 | 86,1 | 86,0 | 86,3 | 86,1 | 86,6 | 86,8 | 87,3 | 87,8 | 88,5 | 88,8 | 88,8 | 89,2 | 88,9 | 88,8 |
| ETH | 39,1 | 40,2 | 40,8 | 40,3 | 41,8 | 42,2 | 41,9 | 40,9 | 38,6 | 41,0 | 41,9 | 42,7 | 43,3 | 43,9 | 44,7 | 45,0 | 44,9 | 45,7 | 45,4 | 45,6 | 46,2 | 46,6 | 47,4 | 48,5 | 49,8 | 50,6 | 50,8 | 49,9 | 48,8 | 48,8 |
| FIN | 84,8 | 85,2 | 85,8 | 85,9 | 86,8 | 87,4 | 88,5 | 89,4 | 89,4 | 88,6 | 88,8 | 89,0 | 89,4 | 89,8 | 90,0 | 90,1 | 90,6 | 90,9 | 92,2 | 91,8 | 92,7 | 92,3 | 92,5 | 92,9 | 94,4 | 94,4 | 94,9 | 95,2 | 95,0 | 94,8 |
| FJI | 66,6 | 67,1 | 67,1 | 67,0 | 67,0 | 66,7 | 66,7 | 66,5 | 66,2 | 66,2 | 65,8 | 65,4 | 65,7 | 66,3 | 67,3 | 67,5 | 67,8 | 67,9 | 68,5 | 68,9 | 69,1 | 68,8 | 69,8 | 69,4 | 69,2 | 69,0 | 68,5 | 67,4 | 68,8 | 68,8 |

| ISO3 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 |
|------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| FRA | 80,0 | 80,2 | 79,8 | 79,9 | 80,3 | 79,7 | 79,8 | 79,9 | 80,2 | 80,8 | 81,2 | 81,5 | 82,5 | 83,1 | 83,1 | 83,7 | 84,1 | 84,1 | 84,5 | 84,8 | 84,9 | 84,8 | 85,2 | 85,6 | 85,2 | 85,2 | 85,5 | 85,7 | 85,4 | 85,2 |
| GAB | 56,1 | 55,8 | 56,3 | 58,8 | 58,2 | 54,2 | 56,4 | 57,6 | 59,6 | 59,5 | 57,9 | 58,5 | 60,4 | 60,2 | 63,0 | 62,6 | 62,4 | 62,1 | 63,9 | 64,4 | 65,6 | 66,0 | 65,3 | 65,2 | 65,9 | 66,3 | 65,6 | 65,1 | 64,9 | 65,0 |
| GBR | 83,8 | 83,8 | 84,1 | 84,7 | 85,3 | 85,8 | 86,0 | 86,4 | 86,4 | 86,9 | 87,4 | 87,5 | 87,6 | 87,8 | 88,5 | 88,4 | 88,0 | 88,1 | 89,5 | 90,1 | 92,2 | 92,6 | 93,1 | 93,0 | 92,8 | 92,5 | 92,7 | 91,2 | 90,8 | 90,6 |
| GEO | 68,5 | 68,6 | 69,1 | 69,3 | 70,1 | 70,6 | 71,9 | 71,4 | 70,0 | 71,5 | 71,9 | 72,5 | 73,0 | 72,5 | 72,5 | 72,6 | 73,3 | 75,4 | 75,6 | 77,1 | 78,0 | 78,4 | 79,8 | 79,3 | 79,4 | 79,0 | 78,5 | 77,9 | 77,8 | |
| GHA | 58,9 | 59,3 | 59,6 | 59,9 | 61,0 | 60,8 | 61,1 | 61,5 | 61,6 | 62,8 | 63,3 | 64,0 | 64,4 | 64,7 | 65,0 | 65,8 | 64,5 | 64,0 | 64,3 | 64,3 | 64,2 | 63,7 | 61,5 | 61,8 | 62,7 | 63,7 | 62,6 | 62,9 | 62,5 | 62,2 |
| GIN | 43,7 | 43,8 | 43,3 | 45,1 | 45,2 | 44,9 | 45,1 | 44,4 | 45,0 | 45,4 | 44,5 | 44,5 | 45,3 | 44,7 | 44,2 | 47,0 | 46,4 | 46,6 | 47,3 | 47,9 | 48,5 | 49,3 | 47,7 | 49,1 | 50,7 | 49,0 | 48,5 | 47,7 | 47,4 | 47,4 |
| GMB | 45,7 | 46,3 | 46,9 | 47,3 | 47,1 | 46,9 | 47,5 | 47,7 | 47,2 | 47,7 | 47,9 | 48,2 | 48,5 | 48,6 | 48,6 | 48,5 | 48,7 | 48,9 | 48,8 | 49,1 | 49,5 | 49,4 | 57,0 | 59,2 | 59,3 | 60,0 | 60,7 | 60,4 | 60,4 | 60,5 |
| GNB | 42,2 | 42,5 | 42,7 | 41,3 | 43,4 | 45,4 | 47,4 | 48,0 | 47,2 | 47,6 | 48,1 | 48,3 | 47,6 | 48,1 | 47,8 | 48,4 | 49,8 | 50,6 | 51,5 | 51,5 | 51,9 | 52,1 | 53,4 | 54,4 | 55,3 | 55,1 | 55,8 | 53,5 | 53,2 | 52,9 |
| GNQ | 36,3 | 33,3 | 32,8 | 34,3 | 33,2 | 30,1 | 32,0 | 32,2 | 33,5 | 33,9 | 39,5 | 40,1 | 41,4 | 42,0 | 45,4 | 44,2 | 44,7 | 44,7 | 46,2 | 48,1 | 49,6 | 50,7 | 50,2 | 48,4 | 48,6 | 51,2 | 50,3 | 49,9 | 50,6 | 50,5 |
| GRC | 73,1 | 73,1 | 73,3 | 74,0 | 74,2 | 74,6 | 75,4 | 75,5 | 75,8 | 76,3 | 76,9 | 77,7 | 77,2 | 77,7 | 78,2 | 78,8 | 78,5 | 77,9 | 77,8 | 78,3 | 78,6 | 77,9 | 79,1 | 79,4 | 80,4 | 81,0 | 80,7 | 81,5 | 80,5 | 80,3 |
| GTM | 50,2 | 51,7 | 52,7 | 53,4 | 54,2 | 57,0 | 57,3 | 57,1 | 57,4 | 57,3 | 57,4 | 57,7 | 58,5 | 59,1 | 59,5 | 60,1 | 60,5 | 60,5 | 60,5 | 61,3 | 59,7 | 59,7 | 60,0 | 60,2 | 60,1 | 59,9 | 59,7 | 58,9 | 58,8 | 58,7 |
| GUY | 50,9 | 52,5 | 54,0 | 55,8 | 56,0 | 55,8 | 57,0 | 58,0 | 57,5 | 58,0 | 59,4 | 61,9 | 61,3 | 60,9 | 60,6 | 60,4 | 60,8 | 61,4 | 62,1 | 62,8 | 64,4 | 64,4 | 66,4 | 67,5 | 67,6 | 67,2 | 63,5 | 63,8 | 63,4 | 63,5 |
| HKG | 79,2 | 79,9 | 79,7 | 79,9 | 80,3 | 80,8 | 81,4 | 81,6 | 81,8 | 82,1 | 82,4 | 82,8 | 83,9 | 84,5 | 84,6 | 84,7 | 85,0 | 85,1 | 85,0 | 84,9 | 84,9 | 84,9 | 85,2 | 85,0 | 84,4 | 83,5 | | | | |
| HND | 56,6 | 56,6 | 56,7 | 56,7 | 57,3 | 57,7 | 58,0 | 58,5 | 59,0 | 58,4 | 58,2 | 58,9 | 59,2 | 59,4 | 57,8 | 59,1 | 59,9 | 60,3 | 61,1 | 60,9 | 61,2 | 61,2 | 60,9 | 62,0 | 62,0 | 62,0 | 61,3 | 61,9 | 61,9 | 61,9 |
| HRV | 64,2 | 66,2 | 66,4 | 67,8 | 69,0 | 71,9 | 72,1 | 72,5 | 73,0 | 73,4 | 73,4 | 73,9 | 73,9 | 74,1 | 74,7 | 76,1 | 76,9 | 77,5 | 78,0 | 78,5 | 79,6 | 79,0 | 79,2 | 79,6 | 79,3 | 79,5 | 80,1 | 81,5 | 81,3 | 81,4 |
| HTI | 50,0 | 49,9 | 51,3 | 51,6 | 51,8 | 51,7 | 51,7 | 51,5 | 52,1 | 52,2 | 52,1 | 52,8 | 54,0 | 53,7 | 54,2 | 53,7 | 54,9 | 55,0 | 54,8 | 55,1 | 55,3 | 55,7 | 54,8 | 55,4 | 54,8 | 54,4 | 54,3 | 53,6 | 53,4 | 53,2 |
| HUN | 73,1 | 73,6 | 73,8 | 74,5 | 75,2 | 76,3 | 76,6 | 76,8 | 76,8 | 76,9 | 77,9 | 78,0 | 78,2 | 79,0 | 79,3 | 79,4 | 79,6 | 80,0 | 81,3 | 81,2 | 79,5 | 78,3 | 77,4 | 77,1 | 76,5 | 76,6 | 76,5 | 76,5 | 75,9 | 75,5 |
| IDN | 48,8 | 50,1 | 50,8 | 52,7 | 56,1 | 58,3 | 58,5 | 59,6 | 60,1 | 59,2 | 59,2 | 59,6 | 59,6 | 59,4 | 60,7 | 61,5 | 61,4 | 62,0 | 62,5 | 63,2 | 64,3 | 64,8 | 65,2 | 65,4 | 66,2 | 65,4 | 65,2 | 64,8 | 64,4 | 64,4 |
| IND | 52,7 | 53,3 | 54,0 | 54,2 | 54,4 | 54,1 | 54,6 | 55,2 | 55,7 | 55,8 | 56,4 | 56,3 | 56,7 | 56,4 | 56,9 | 56,8 | 57,1 | 57,6 | 58,1 | 58,1 | 57,8 | 58,3 | 57,6 | 58,1 | 57,6 | 57,6 | 58,1 | 57,6 | 57,2 | 57,2 |
| IRL | 79,3 | 79,7 | 80,7 | 82,3 | 82,6 | 83,1 | 84,2 | 84,5 | 85,1 | 85,7 | 86,2 | 86,9 | 87,4 | 88,0 | 88,2 | 88,7 | 88,3 | 88,3 | 88,4 | 88,7 | 89,0 | 88,7 | 88,7 | 89,2 | 89,4 | 89,2 | 89,7 | 90,4 | 90,4 | 90,5 |
| IRN | 45,8 | 46,2 | 47,6 | 49,7 | 49,3 | 48,1 | 49,8 | 50,4 | 51,6 | 50,6 | 49,5 | 48,6 | 49,6 | 49,2 | 51,2 | 50,6 | 50,8 | 52,6 | 52,6 | 52,5 | 54,7 | 55,9 | 56,5 | 53,5 | 54,1 | 54,0 | 52,3 | 51,5 | 51,5 | 51,3 |
| IRQ | 34,4 | 32,7 | 33,7 | 33,2 | 33,6 | 32,0 | 32,5 | 33,1 | 34,9 | 36,3 | 35,7 | 36,2 | 39,0 | 39,2 | 42,1 | 41,6 | 39,9 | 39,6 | 39,5 | 38,7 | 40,5 | 42,0 | 41,5 | 41,0 | 41,9 | 43,7 | 42,1 | 42,8 | 42,7 | 42,7 |
| ISL | 83,9 | 84,1 | 84,5 | 85,0 | 85,1 | 85,9 | 86,0 | 86,4 | 86,9 | 86,8 | 87,9 | 87,9 | 88,0 | 87,8 | 87,8 | 88,4 | 88,0 | 88,7 | 89,3 | 89,6 | 89,6 | 89,8 | 90,1 | 90,3 | 90,5 | 90,0 | 90,3 | 90,2 | 89,4 | 89,2 |
| ISR | 74,9 | 75,2 | 75,7 | 76,8 | 77,2 | 76,7 | 76,8 | 77,3 | 76,6 | 76,5 | 77,4 | 78,1 | 78,8 | 79,0 | 79,7 | 79,8 | 79,6 | 79,3 | 79,4 | 79,9 | 80,4 | 81,1 | 80,8 | 81,0 | 81,2 | 81,7 | 81,7 | 81,5 | 81,1 | 81,3 |
| ITA | 73,3 | 73,5 | 73,4 | 73,9 | 74,5 | 74,9 | 75,3 | 75,7 | 76,0 | 76,4 | 76,9 | 76,9 | 77,3 | 77,5 | 77,5 | 78,0 | 78,0 | 77,7 | 77,7 | 77,6 | 77,9 | 78,5 | 79,7 | 80,5 | 81,0 | 80,9 | 81,9 | 82,2 | 81,7 | 81,3 |
| JAM | 66,0 | 66,3 | 66,6 | 66,8 | 66,6 | 67,0 | 67,4 | 67,5 | 68,0 | 68,8 | 69,2 | 69,4 | 69,7 | 70,6 | 71,4 | 72,1 | 72,1 | 72,4 | 72,1 | 71,9 | 72,4 | 72,0 | 73,2 | 72,8 | 72,8 | 72,9 | 72,9 | 72,7 | 72,4 | 72,4 |
| JOR | 62,9 | 62,8 | 63,5 | 64,2 | 64,5 | 65,4 | 65,9 | 65,6 | 65,9 | 66,3 | 66,4 | 66,3 | 66,0 | 65,7 | 66,6 | 67,5 | 68,5 | 69,0 | 69,6 | 68,7 | 69,3 | 68,4 | 68,4 | 68,8 | 69,9 | 69,9 | 69,6 | 68,8 | 68,7 | 68,6 |
| JPN | 85,2 | 85,0 | 84,8 | 84,8 | 84,7 | 85,2 | 85,4 | 84,8 | 85,0 | 84,6 | 85,1 | 86,1 | 86,0 | 86,2 | 86,3 | 86,4 | 86,4 | 86,1 | 86,1 | 86,2 | 86,3 | 85,8 | 85,5 | 86,1 | 86,4 | 86,3 | 86,5 | 86,1 | 86,1 | 85,8 |

| ISO3 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 |
|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| KAZ | 59,2 | 58,9 | 59,5 | 60,5 | 60,3 | 59,0 | 60,8 | 61,0 | 59,3 | 57,0 | 56,4 | 57,7 | 58,2 | 57,3 | 59,1 | 59,3 | 59,1 | 60,5 | 61,3 | 62,0 | 63,6 | 64,0 | 64,4 | 63,1 | 64,2 | 66,5 | 64,4 | 63,4 | 63,2 | 63,2 |
| KEN | 49,6 | 50,3 | 51,1 | 51,1 | 51,4 | 52,7 | 52,6 | 54,0 | 55,6 | 56,4 | 56,9 | 57,4 | 56,8 | 56,7 | 56,4 | 56,0 | 55,8 | 56,2 | 56,9 | 57,6 | 57,9 | 58,8 | 58,2 | 59,1 | 59,4 | 60,1 | 60,5 | 60,7 | 61,2 | 61,3 |
| KGZ | 60,2 | 60,2 | 60,2 | 60,9 | 61,3 | 62,3 | 62,9 | 62,6 | 61,6 | 61,2 | 61,6 | 62,5 | 61,7 | 60,4 | 60,3 | 60,5 | 61,9 | 62,3 | 62,0 | 62,4 | 62,6 | 62,6 | 63,0 | 65,1 | 64,4 | 64,1 | 63,1 | 61,4 | 60,4 | 60,3 |
| KHM | 46,8 | 47,0 | 46,8 | 49,1 | 49,8 | 50,3 | 50,9 | 51,6 | 52,4 | 52,8 | 52,9 | 52,6 | 52,5 | 52,3 | 52,1 | 52,0 | 52,0 | 52,0 | 51,7 | 51,4 | 51,8 | 51,3 | 51,7 | 52,1 | 52,4 | 52,2 | 52,2 | 52,6 | 51,8 | 51,7 |
| KOR | 69,8 | 70,3 | 70,5 | 71,1 | 71,4 | 72,0 | 72,6 | 73,2 | 73,6 | 73,9 | 74,5 | 74,4 | 74,4 | 74,2 | 74,4 | 75,0 | 75,0 | 74,9 | 75,0 | 75,0 | 74,9 | 74,9 | 76,2 | 76,8 | 77,3 | 77,8 | 78,1 | 78,1 | 77,6 | 77,5 |
| KWT | 56,7 | 56,4 | 56,3 | 58,5 | 58,3 | 55,7 | 56,7 | 58,2 | 58,1 | 56,4 | 55,0 | 55,6 | 56,0 | 55,7 | 57,8 | 56,9 | 55,7 | 56,7 | 56,9 | 57,6 | 61,7 | 61,5 | 61,1 | 59,7 | 60,5 | 62,9 | 63,5 | 62,4 | 62,5 | 62,8 |
| LAO | 40,2 | 40,8 | 40,7 | 40,8 | 41,6 | 42,3 | 41,8 | 42,7 | 43,4 | 43,8 | 44,3 | 43,5 | 44,1 | 44,4 | 44,9 | 44,6 | 44,9 | 45,4 | 45,9 | 47,0 | 47,6 | 48,2 | 48,6 | 48,6 | 49,5 | 49,3 | 48,8 | 48,3 | 48,6 | 48,7 |
| LBN | 58,8 | 58,8 | 59,0 | 58,3 | 58,3 | 57,9 | 59,2 | 59,0 | 59,1 | 60,1 | 61,1 | 62,4 | 63,7 | 63,7 | 63,3 | 63,7 | 64,0 | 63,6 | 63,1 | 62,9 | 62,4 | 63,0 | 62,1 | 62,6 | 62,3 | 62,0 | 61,2 | 60,1 | 60,2 | 60,6 |
| LBR | 42,1 | 41,4 | 39,1 | 39,1 | 39,1 | 46,0 | 46,2 | 45,1 | 46,5 | 52,8 | 53,6 | 54,7 | 54,2 | 54,3 | 54,2 | 54,5 | 53,7 | 53,4 | 53,2 | 53,8 | 54,8 | 54,7 | 53,7 | 55,2 | 54,3 | 54,1 | 53,5 | 52,9 | 53,2 | 53,2 |
| LBY | 43,8 | 43,4 | 43,9 | 45,9 | 45,8 | 44,1 | 44,6 | 41,9 | 42,1 | 40,5 | 39,8 | 40,1 | 41,1 | 40,7 | 43,9 | 42,7 | 48,7 | 48,1 | 48,4 | 50,3 | 52,3 | 52,7 | 51,0 | 49,6 | 49,3 | 52,7 | 44,9 | 45,1 | 44,8 | 44,8 |
| LCA | 69,8 | 70,0 | 70,1 | 70,3 | 70,5 | 70,8 | 71,1 | 72,5 | 73,0 | 73,5 | 73,9 | 74,3 | 74,7 | 75,7 | 75,8 | 75,6 | 75,8 | 75,9 | 75,3 | 75,2 | 74,5 | 73,7 | 72,0 | 72,7 | 72,4 | 72,3 | 72,1 | 71,4 | 70,8 | 71,0 |
| LKA | 63,3 | 63,8 | 64,5 | 64,4 | 64,5 | 64,3 | 65,0 | 64,7 | 64,6 | 64,3 | 64,1 | 63,3 | 63,1 | 63,2 | 62,9 | 64,7 | 65,0 | 65,5 | 66,6 | 66,2 | 67,7 | 68,3 | 68,4 | 69,3 | 67,9 | 67,0 | 66,5 | 66,7 | 67,0 | 66,5 |
| LSO | 57,8 | 57,8 | 57,9 | 57,7 | 58,2 | 58,2 | 58,7 | 58,5 | 59,2 | 59,2 | 59,6 | 59,8 | 59,3 | 59,2 | 58,8 | 59,1 | 59,2 | 59,3 | 59,5 | 60,2 | 58,6 | 57,7 | 59,2 | 60,4 | 60,5 | 61,1 | 60,6 | 59,9 | 59,8 | 59,9 |
| LTU | 74,1 | 74,7 | 76,5 | 77,4 | 78,2 | 79,0 | 80,0 | 80,7 | 81,7 | 82,6 | 82,6 | 82,7 | 82,3 | 82,2 | 82,3 | 82,5 | 83,0 | 83,1 | 83,3 | 83,8 | 84,4 | 84,7 | 84,7 | 84,5 | 84,8 | 85,0 | 85,1 | 85,1 | 84,4 | 84,5 |
| LUX | 85,9 | 86,3 | 86,6 | 87,0 | 87,6 | 88,4 | 88,8 | 87,4 | 86,9 | 86,2 | 85,5 | 85,2 | 85,2 | 86,0 | 87,1 | 87,5 | 87,9 | 88,2 | 88,9 | 89,4 | 89,4 | 89,4 | 89,8 | 89,7 | 89,4 | 89,0 | 89,3 | 89,7 | 89,4 | 89,5 |
| LVA | 73,6 | 74,1 | 75,8 | 77,2 | 77,8 | 78,3 | 79,3 | 79,6 | 80,4 | 81,2 | 80,9 | 80,4 | 80,3 | 80,5 | 80,7 | 80,6 | 81,0 | 81,2 | 82,0 | 82,7 | 83,3 | 83,6 | 84,8 | 85,1 | 84,4 | 84,8 | 85,1 | 85,6 | 85,0 | 84,8 |
| MAR | 52,0 | 52,6 | 53,0 | 52,8 | 53,6 | 56,2 | 56,7 | 56,3 | 56,5 | 56,3 | 55,7 | 55,7 | 56,5 | 55,8 | 56,9 | 57,4 | 57,7 | 58,4 | 59,3 | 59,6 | 60,1 | 60,7 | 61,3 | 62,4 | 62,5 | 62,5 | 62,6 | 62,1 | 62,0 | 61,8 |
| MDA | 64,5 | 67,6 | 67,4 | 68,2 | 68,7 | 69,3 | 68,3 | 68,9 | 69,6 | 69,6 | 69,7 | 69,0 | 68,1 | 68,0 | 68,2 | 68,9 | 69,6 | 69,4 | 69,5 | 70,9 | 70,4 | 69,6 | 70,1 | 70,2 | 70,4 | 70,9 | 72,0 | 72,9 | 72,4 | 72,1 |
| MDG | 51,9 | 52,3 | 52,1 | 51,9 | 52,5 | 53,1 | 53,4 | 53,1 | 55,9 | 56,3 | 57,0 | 56,9 | 56,9 | 57,4 | 56,1 | 55,0 | 54,3 | 55,3 | 55,7 | 56,2 | 56,1 | 55,8 | 55,1 | 55,6 | 55,2 | 55,4 | 55,0 | 55,2 | 55,2 | 55,0 |
| MDV | 51,2 | 51,4 | 51,5 | 51,7 | 52,0 | 52,1 | 52,1 | 51,9 | 53,0 | 53,8 | 54,6 | 55,3 | 55,3 | 58,5 | 59,2 | 59,7 | 60,0 | 58,7 | 58,2 | 58,7 | 59,2 | 59,2 | 58,1 | 58,9 | 62,9 | 65,7 | 65,1 | 64,0 | 64,1 | 64,3 |
| MEX | 60,8 | 60,7 | 60,4 | 61,1 | 61,4 | 61,9 | 62,7 | 63,5 | 64,3 | 64,6 | 64,5 | 64,5 | 64,9 | 64,8 | 65,3 | 65,7 | 65,7 | 66,0 | 66,4 | 67,0 | 67,2 | 67,3 | 68,1 | 68,5 | 68,8 | 68,9 | 68,1 | 68,0 | 68,0 | 67,9 |
| MKD | 64,3 | 64,5 | 64,8 | 65,2 | 65,6 | 65,4 | 65,1 | 66,7 | 68,2 | 68,1 | 68,3 | 68,8 | 69,3 | 70,6 | 71,5 | 72,5 | 72,1 | 72,7 | 73,6 | 73,9 | 73,5 | 72,4 | 73,5 | 74,4 | 73,8 | 72,6 | 73,3 | 72,6 | 72,5 | 72,1 |
| MLI | 47,4 | 48,4 | 48,4 | 49,0 | 49,9 | 50,3 | 50,6 | 50,9 | 51,2 | 51,3 | 52,4 | 51,6 | 52,0 | 52,2 | 52,0 | 52,5 | 52,6 | 51,8 | 52,0 | 52,2 | 52,6 | 51,6 | 51,4 | 51,7 | 52,2 | 50,7 | 49,1 | 48,6 | 48,2 | 47,9 |
| MLT | 72,3 | 72,3 | 73,7 | 74,6 | 74,4 | 74,9 | 76,2 | 76,8 | 76,7 | 77,6 | 78,7 | 78,3 | 78,0 | 78,1 | 78,5 | 79,5 | 79,2 | 80,0 | 80,9 | 81,4 | 83,6 | 84,4 | 84,7 | 84,8 | 84,1 | 84,6 | 85,2 | 85,0 | 84,5 | 84,0 |
| MMR | 36,2 | 36,7 | 37,2 | 37,5 | 38,7 | 38,8 | 38,0 | 38,2 | 38,1 | 38,2 | 38,1 | 38,5 | 39,2 | 39,6 | 41,0 | 42,7 | 45,2 | 46,9 | 47,8 | 48,7 | 49,7 | 50,7 | 51,7 | 52,6 | 53,3 | 53,8 | 47,7 | 46,2 | 45,5 | 44,8 |
| MNE | 61,4 | 61,4 | 61,4 | 61,4 | 61,6 | 67,1 | 67,1 | 67,4 | 67,1 | 67,8 | 68,4 | 69,2 | 69,9 | 70,3 | 72,1 | 73,3 | 73,1 | 73,2 | 73,6 | 74,3 | 75,1 | 75,6 | 75,5 | 75,5 | 75,4 | 75,1 | 76,3 | 75,9 | 76,6 | 76,4 |
| MNG | 61,2 | 62,4 | 63,6 | 64,9 | 66,2 | 66,3 | 66,0 | 66,1 | 66,7 | 65,8 | 66,4 | 64,8 | 64,3 | 64,0 | 64,9 | 62,4 | 61,4 | 65,0 | 65,7 | 65,8 | 67,2 | 67,1 | 65,0 | 65,1 | 65,2 | 64,4 | 61,9 | 61,9 | 61,2 | 61,0 |
| MOZ | 47,2 | 48,7 | 48,8 | 49,1 | 51,0 | 52,1 | 53,0 | 52,5 | 52,2 | 52,6 | 52,4 | 51,9 | 52,4 | 52,6 | 52,9 | 53,9 | 54,1 | 54,4 | 54,1 | 53,6 | 53,4 | 51,6 | 49,7 | 48,8 | 50,7 | 51,3 | 50,9 | 50,8 | 50,9 | 50,6 |

| ISO3 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 |
|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| MRT | 47,9 | 48,2 | 48,6 | 48,0 | 48,4 | 49,2 | 49,2 | 49,8 | 51,5 | 52,3 | 51,2 | 50,6 | 49,3 | 49,4 | 52,1 | 50,0 | 50,6 | 52,3 | 51,7 | 52,5 | 53,8 | 52,9 | 51,6 | 53,0 | 55,1 | 54,6 | 52,6 | 53,0 | 53,2 | 53,2 |
| MUS | 69,3 | 69,4 | 69,6 | 69,9 | 70,2 | 70,1 | 70,3 | 70,6 | 70,3 | 70,7 | 71,4 | 71,5 | 72,2 | 73,2 | 74,0 | 74,5 | 74,9 | 75,6 | 75,8 | 76,1 | 76,4 | 76,4 | 75,5 | 76,0 | 76,8 | 76,3 | 76,1 | 73,9 | 73,8 | 74,0 |
| MWI | 50,4 | 52,3 | 52,6 | 52,1 | 52,9 | 53,7 | 54,5 | 55,4 | 54,4 | 55,3 | 56,0 | 56,5 | 56,0 | 55,9 | 56,6 | 57,2 | 57,7 | 57,7 | 58,1 | 58,5 | 59,0 | 57,6 | 58,6 | 59,2 | 59,1 | 59,8 | 60,5 | 59,5 | 59,1 | 58,9 |
| MYS | 61,5 | 61,7 | 62,0 | 62,8 | 63,2 | 63,2 | 62,9 | 63,1 | 63,0 | 63,2 | 62,7 | 62,9 | 63,6 | 64,0 | 65,5 | 66,1 | 66,6 | 67,1 | 67,2 | 68,0 | 68,6 | 69,0 | 69,6 | 70,8 | 72,1 | 71,8 | 71,1 | 70,2 | 70,3 | 70,0 |
| NAM | 66,0 | 65,9 | 65,6 | 66,2 | 66,0 | 66,4 | 66,3 | 66,8 | 67,3 | 66,6 | 66,2 | 65,6 | 65,6 | 65,7 | 65,9 | 66,2 | 66,1 | 66,4 | 67,3 | 67,7 | 69,1 | 69,5 | 69,6 | 70,5 | 70,6 | 70,7 | 70,1 | 69,3 | 69,0 | 69,0 |
| NER | 45,1 | 44,9 | 44,9 | 45,4 | 45,7 | 47,1 | 48,0 | 48,2 | 48,8 | 49,4 | 49,9 | 49,9 | 49,9 | 50,2 | 50,1 | 52,0 | 51,9 | 50,3 | 50,1 | 50,4 | 50,2 | 50,6 | 50,8 | 51,0 | 51,6 | 52,5 | 52,8 | 52,9 | 52,4 | 52,2 |
| NGA | 46,5 | 46,5 | 47,9 | 49,8 | 51,8 | 49,5 | 50,0 | 51,2 | 50,6 | 51,2 | 51,0 | 51,7 | 53,3 | 53,5 | 55,7 | 54,7 | 53,4 | 53,7 | 53,9 | 54,2 | 54,9 | 56,0 | 55,3 | 55,3 | 55,9 | 56,5 | 56,2 | 55,7 | 55,6 | 55,5 |
| NIC | 56,2 | 58,4 | 58,5 | 58,9 | 59,3 | 60,0 | 60,7 | 61,4 | 61,6 | 61,6 | 62,0 | 62,2 | 61,8 | 61,5 | 61,5 | 61,0 | 60,9 | 61,1 | 61,0 | 61,4 | 61,5 | 61,2 | 60,2 | 55,2 | 54,4 | 54,2 | 52,9 | 52,3 | 52,3 | 52,1 |
| NLD | 85,1 | 85,3 | 85,4 | 85,3 | 85,6 | 85,9 | 87,4 | 87,7 | 87,8 | 87,8 | 87,8 | 88,3 | 88,6 | 88,9 | 89,1 | 88,8 | 89,3 | 89,2 | 89,5 | 89,9 | 90,2 | 90,2 | 90,4 | 90,7 | 91,0 | 91,0 | 91,0 | 91,2 | 90,8 | 90,7 |
| NOR | 84,1 | 84,0 | 84,4 | 86,1 | 85,8 | 85,2 | 85,0 | 85,6 | 85,8 | 85,9 | 85,7 | 86,4 | 86,9 | 86,2 | 87,2 | 87,8 | 87,9 | 88,2 | 88,8 | 89,3 | 90,4 | 90,6 | 91,1 | 90,2 | 89,9 | 89,8 | 89,2 | 89,8 | 89,8 | 89,9 |
| NPL | 51,1 | 50,8 | 51,5 | 51,6 | 51,8 | 51,3 | 51,1 | 50,7 | 51,3 | 52,1 | 52,8 | 54,9 | 57,5 | 58,0 | 58,2 | 57,9 | 57,3 | 57,6 | 56,9 | 57,0 | 57,1 | 57,5 | 59,1 | 58,7 | 59,0 | 58,7 | 58,1 | 58,3 | 58,7 | 58,8 |
| NZL | 87,7 | 88,0 | 88,5 | 88,9 | 89,6 | 89,7 | 90,1 | 90,5 | 90,8 | 91,1 | 91,4 | 91,6 | 91,6 | 92,2 | 92,8 | 93,1 | 93,3 | 93,4 | 93,3 | 93,0 | 93,0 | 92,5 | 92,7 | 92,3 | 92,7 | 92,5 | 92,6 | 92,1 | 91,9 | 91,7 |
| OMN | 54,2 | 52,7 | 53,4 | 55,1 | 53,8 | 51,5 | 53,3 | 53,5 | 53,7 | 53,8 | 52,9 | 53,1 | 54,4 | 55,3 | 57,0 | 57,6 | 57,1 | 57,4 | 57,7 | 58,7 | 61,2 | 62,2 | 60,9 | 61,7 | 62,7 | 64,0 | 61,9 | 59,6 | 59,9 | 60,6 |
| PAK | 48,8 | 49,0 | 48,5 | 48,4 | 48,3 | 48,8 | 49,0 | 49,2 | 49,6 | 49,9 | 50,1 | 50,7 | 50,4 | 50,4 | 51,3 | 51,4 | 51,5 | 51,8 | 52,3 | 52,8 | 53,3 | 53,5 | 52,7 | 52,3 | 52,0 | 52,3 | 51,5 | 50,1 | 49,9 | 49,9 |
| PAN | 68,7 | 68,9 | 69,2 | 69,4 | 69,6 | 70,2 | 70,2 | 70,2 | 70,5 | 70,6 | 70,8 | 70,9 | 71,3 | 71,3 | 71,2 | 71,2 | 70,9 | 71,1 | 70,9 | 71,5 | 72,2 | 73,3 | 73,8 | 74,3 | 74,4 | 74,1 | 73,8 | 73,9 | 73,6 | 73,6 |
| PER | 58,5 | 59,6 | 59,7 | 60,6 | 61,6 | 64,9 | 69,2 | 68,8 | 68,9 | 68,8 | 67,6 | 66,8 | 67,2 | 67,7 | 67,9 | 68,4 | 68,3 | 69,2 | 69,8 | 70,2 | 70,4 | 70,6 | 71,1 | 71,4 | 72,3 | 71,8 | 70,0 | 69,9 | 69,6 | 69,3 |
| PHL | 61,0 | 62,1 | 62,5 | 62,5 | 62,4 | 62,8 | 63,1 | 63,7 | 64,2 | 64,3 | 63,5 | 63,9 | 63,6 | 64,1 | 64,1 | 64,8 | 64,9 | 65,3 | 65,5 | 65,4 | 65,0 | 63,5 | 62,9 | 62,6 | 62,2 | 61,9 | 61,0 | 61,4 | 61,4 | 61,3 |
| PNG | 50,3 | 51,4 | 52,5 | 52,2 | 52,1 | 50,5 | 51,8 | 51,3 | 50,9 | 49,7 | 49,2 | 49,9 | 50,6 | 50,6 | 52,1 | 51,6 | 52,7 | 55,5 | 56,9 | 56,4 | 55,9 | 55,6 | 54,9 | 55,6 | 56,4 | 56,9 | 54,9 | 54,2 | 53,5 | 53,2 |
| POL | 75,3 | 76,9 | 77,1 | 77,9 | 78,3 | 79,0 | 79,8 | 80,7 | 80,3 | 79,6 | 80,7 | 80,0 | 79,7 | 80,0 | 80,3 | 80,4 | 80,5 | 81,1 | 82,0 | 82,4 | 83,4 | 82,3 | 81,0 | 80,9 | 80,8 | 80,5 | 80,4 | 80,0 | 80,2 | 79,9 |
| PRT | 74,3 | 75,2 | 75,3 | 75,8 | 75,9 | 76,4 | 76,7 | 76,7 | 77,1 | 77,8 | 77,6 | 78,2 | 78,8 | 79,5 | 80,0 | 80,3 | 80,8 | 80,5 | 80,5 | 80,5 | 80,8 | 80,3 | 80,2 | 80,7 | 80,8 | 80,6 | 80,8 | 81,4 | 81,3 | 81,1 |
| PRY | 60,3 | 60,9 | 61,3 | 61,3 | 61,4 | 62,2 | 62,6 | 64,3 | 64,1 | 64,5 | 64,1 | 64,3 | 64,8 | 65,5 | 65,4 | 65,6 | 65,9 | 65,8 | 65,7 | 65,8 | 66,5 | 66,8 | 66,7 | 67,0 | 67,3 | 66,8 | 66,9 | 66,5 | 66,2 | 66,0 |
| QAT | 59,0 | 57,6 | 58,4 | 59,5 | 58,4 | 57,3 | 58,1 | 59,1 | 59,8 | 59,9 | 59,2 | 60,0 | 61,3 | 62,1 | 63,8 | 63,4 | 62,7 | 63,4 | 64,1 | 64,7 | 66,3 | 65,4 | 66,0 | 65,9 | 66,8 | 67,1 | 65,1 | 63,7 | 63,6 | 63,7 |
| ROU | 68,3 | 69,2 | 70,3 | 71,4 | 71,1 | 71,5 | 71,4 | 71,4 | 71,6 | 70,3 | 70,7 | 71,8 | 72,4 | 74,1 | 75,8 | 77,0 | 77,2 | 77,2 | 79,4 | 79,8 | 80,7 | 80,8 | 79,0 | 78,4 | 78,2 | 78,2 | 78,3 | 77,9 | 77,4 | 77,4 |
| RUS | 61,0 | 61,3 | 61,5 | 63,2 | 62,4 | 60,1 | 60,3 | 60,8 | 61,1 | 61,5 | 60,8 | 60,9 | 61,4 | 60,6 | 61,6 | 61,9 | 61,8 | 61,7 | 62,1 | 62,0 | 62,9 | 62,8 | 63,5 | 63,1 | 63,7 | 64,4 | 62,5 | 59,8 | 59,2 | 59,0 |
| RWA | 43,6 | 44,0 | 44,5 | 44,9 | 46,1 | 47,4 | 48,6 | 49,6 | 49,2 | 50,8 | 51,3 | 52,3 | 52,5 | 52,8 | 53,4 | 54,3 | 55,0 | 55,6 | 55,6 | 55,9 | 56,5 | 55,0 | 55,2 | 56,3 | 57,0 | 56,6 | 55,6 | 53,6 | 52,9 | 52,8 |
| SAU | 55,3 | 54,7 | 55,6 | 57,2 | 55,8 | 54,0 | 54,3 | 54,9 | 53,4 | 51,7 | 51,2 | 51,2 | 51,3 | 50,9 | 54,9 | 54,7 | 53,6 | 53,6 | 54,4 | 55,5 | 58,7 | 58,8 | 59,4 | 58,4 | 60,8 | 62,3 | 61,7 | 60,0 | 60,5 | 61,1 |
| SDN | 36,6 | 36,8 | 37,2 | 36,8 | 37,4 | 37,2 | 37,8 | 37,6 | 37,8 | 38,2 | 38,4 | 38,8 | 38,9 | 38,5 | 40,2 | 40,6 | 39,8 | 41,2 | 41,8 | 42,7 | 43,6 | 44,2 | 45,1 | 44,0 | 45,7 | 44,6 | 43,1 | 42,4 | 41,8 | 42,0 |
| SEN | 56,3 | 56,3 | 56,7 | 57,0 | 57,4 | 57,2 | 57,6 | 57,6 | 57,5 | 57,5 | 57,3 | 57,5 | 58,4 | 58,9 | 58,9 | 58,7 | 58,9 | 58,7 | 59,3 | 59,0 | 59,7 | 59,9 | 59,7 | 60,1 | 60,2 | 60,9 | 60,5 | 60,8 | 59,7 | 59,3 |

| ISO3 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 |
|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| SGP | 79,8 | 80,2 | 80,8 | 81,0 | 81,4 | 82,0 | 82,3 | 82,6 | 83,0 | 83,3 | 84,3 | 84,5 | 84,2 | 84,1 | 83,2 | 83,5 | 84,5 | 84,6 | 84,7 | 84,8 | 85,1 | 85,7 | 86,7 | 88,5 | 86,4 | 86,6 | 86,4 | 85,3 | 85,5 | 85,4 |
| SLB | 57,0 | 56,9 | 57,4 | 56,2 | 55,1 | 54,4 | 54,5 | 56,2 | 57,0 | 57,7 | 57,6 | 57,6 | 56,8 | 56,9 | 58,4 | 57,9 | 57,7 | 57,5 | 57,9 | 57,6 | 58,6 | 59,3 | 59,0 | 60,6 | 59,9 | 59,3 | 60,2 | 60,1 | 60,2 | 59,9 |
| SLE | 42,8 | 45,2 | 43,7 | 43,5 | 45,5 | 47,0 | 49,8 | 51,2 | 49,9 | 49,8 | 50,2 | 50,4 | 50,6 | 51,4 | 52,3 | 53,6 | 54,0 | 53,8 | 54,6 | 54,6 | 54,0 | 53,6 | 53,5 | 54,8 | 54,8 | 54,9 | 56,0 | 55,7 | 55,5 | 54,6 |
| SLV | 60,2 | 60,9 | 61,4 | 61,9 | 62,9 | 63,8 | 63,8 | 64,4 | 64,6 | 65,1 | 65,5 | 65,8 | 65,8 | 66,0 | 66,6 | 67,3 | 67,4 | 68,0 | 68,0 | 68,1 | 68,0 | 67,4 | 66,6 | 66,5 | 65,6 | 64,4 | 62,8 | 61,3 | 60,9 | 60,7 |
| SOM | | | | | | | | | | | | | | | | | 19,7 | 20,7 | 35,2 | 35,1 | 35,0 | 36,0 | 35,6 | 37,5 | 36,4 | 36,8 | 37,9 | 36,0 | 37,7 | 37,7 |
| SRB | 59,8 | 60,4 | 60,6 | 60,5 | 60,3 | 62,5 | 65,5 | 65,8 | 65,5 | 66,3 | 67,6 | 68,2 | 68,6 | 69,0 | 70,2 | 70,5 | 70,7 | 71,3 | 71,2 | 71,8 | 72,3 | 72,8 | 71,4 | 71,2 | 71,9 | 72,1 | 72,1 | 71,5 | 71,3 | 71,1 |
| STP | 50,5 | 50,7 | 50,8 | 50,9 | 51,1 | 51,4 | 58,0 | 58,1 | 58,2 | 58,5 | 59,0 | 59,2 | 60,6 | 60,7 | 61,0 | 61,8 | 62,3 | 62,7 | 63,0 | 63,6 | 64,8 | 66,1 | 66,1 | 66,3 | 66,8 | 67,4 | 67,1 | 67,5 | 67,9 | 67,8 |
| SUR | 62,6 | 62,5 | 62,7 | 64,1 | 64,1 | 64,3 | 63,8 | 65,9 | 66,5 | 66,7 | 66,6 | 67,6 | 67,5 | 66,3 | 66,7 | 64,1 | 61,9 | 61,9 | 63,0 | 64,4 | 65,9 | 66,0 | 64,2 | 66,5 | 66,8 | 66,7 | 65,6 | 66,1 | 65,9 | 66,0 |
| SVK | 71,9 | 71,7 | 71,9 | 73,3 | 73,8 | 74,2 | 75,2 | 75,7 | 75,8 | 77,3 | 78,0 | 78,6 | 78,8 | 79,3 | 79,5 | 80,3 | 80,6 | 80,4 | 80,8 | 80,8 | 81,1 | 80,7 | 79,9 | 79,3 | 79,5 | 79,6 | 80,0 | 81,1 | 80,9 | 80,7 |
| SVN | 73,4 | 73,8 | 75,1 | 76,5 | 77,3 | 77,3 | 78,5 | 78,6 | 79,1 | 79,7 | 80,5 | 81,1 | 80,8 | 80,9 | 81,6 | 82,3 | 82,5 | 82,5 | 83,1 | 83,7 | 83,8 | 84,0 | 84,1 | 84,6 | 84,3 | 84,1 | 83,7 | 85,1 | 84,3 | 83,9 |
| SWE | 84,4 | 85,0 | 86,0 | 86,8 | 87,2 | 87,7 | 88,1 | 88,8 | 89,0 | 88,0 | 88,0 | 88,3 | 88,2 | 88,3 | 89,0 | 89,3 | 89,3 | 89,6 | 91,3 | 91,5 | 92,8 | 92,2 | 92,6 | 93,1 | 93,6 | 93,6 | 93,6 | 93,8 | 93,7 | 93,7 |
| SWZ | 53,4 | 52,6 | 52,6 | 52,8 | 52,8 | 52,6 | 52,6 | 51,9 | 52,6 | 52,5 | 52,7 | 54,2 | 53,8 | 53,8 | 54,0 | 54,3 | 55,3 | 55,1 | 55,4 | 57,1 | 57,5 | 57,3 | 57,8 | 57,4 | 56,9 | 56,9 | 55,0 | 53,5 | 54,1 | 54,2 |
| SYC | 68,2 | 68,2 | 68,3 | 68,3 | 68,3 | 68,2 | 67,7 | 67,9 | 68,1 | 68,2 | 68,7 | 68,1 | 69,6 | 70,2 | 71,0 | 72,2 | 73,6 | 74,6 | 75,1 | 76,0 | 76,5 | 77,2 | 76,7 | 77,5 | 77,5 | 78,1 | 79,9 | 79,8 | 79,4 | 79,6 |
| SYR | 43,4 | 43,6 | 43,9 | 44,3 | 43,6 | 44,0 | 44,8 | 45,8 | 47,1 | 47,7 | 49,2 | 50,3 | 49,6 | 48,5 | 49,8 | 49,2 | 46,4 | 46,2 | 44,0 | 44,4 | 44,4 | 43,6 | 44,0 | 43,9 | 43,8 | 43,5 | 43,4 | 43,5 | 44,2 | 44,2 |
| TCD | 40,0 | 40,3 | 40,4 | 40,7 | 41,1 | 40,8 | 41,4 | 42,1 | 41,3 | 38,1 | 37,7 | 37,8 | 38,1 | 37,7 | 40,3 | 39,9 | 39,6 | 41,0 | 42,2 | 42,7 | 43,2 | 42,5 | 41,5 | 40,6 | 41,1 | 42,3 | 40,4 | 39,4 | 40,1 | 40,0 |
| TGO | 47,9 | 48,6 | 48,9 | 49,0 | 49,5 | 49,3 | 49,5 | 49,7 | 49,6 | 50,3 | 51,5 | 52,2 | 52,8 | 52,5 | 52,0 | 52,4 | 52,2 | 52,1 | 53,3 | 54,3 | 55,6 | 56,9 | 56,9 | 56,7 | 57,0 | 58,8 | 58,8 | 58,8 | 58,5 | 57,8 |
| THA | 61,9 | 62,1 | 61,8 | 62,5 | 62,9 | 63,5 | 64,5 | 64,9 | 64,8 | 64,4 | 63,6 | 63,1 | 63,2 | 63,6 | 64,1 | 64,0 | 65,2 | 65,4 | 64,6 | 62,9 | 62,8 | 62,7 | 63,3 | 63,8 | 65,7 | 65,3 | 64,5 | 63,9 | 64,4 | 64,1 |
| TJK | 52,1 | 51,8 | 52,3 | 53,7 | 54,0 | 57,0 | 58,1 | 58,3 | 58,1 | 57,5 | 57,1 | 57,0 | 56,6 | 56,6 | 56,7 | 55,9 | 56,2 | 56,3 | 56,6 | 55,8 | 55,3 | 53,5 | 54,1 | 54,7 | 54,6 | 53,7 | 53,8 | 52,6 | 52,5 | 52,6 |
| TKM | 40,2 | 38,4 | 41,2 | 46,6 | 44,8 | 38,0 | 35,5 | 38,9 | 40,5 | 40,9 | 40,4 | 38,7 | 39,9 | 39,3 | 45,6 | 45,9 | 44,8 | 45,7 | 46,3 | 47,5 | 48,4 | 50,3 | 50,4 | 49,5 | 51,6 | 51,0 | 51,4 | 51,4 | 51,5 | 51,5 |
| TLS | 36,8 | 36,8 | 36,9 | 37,4 | 38,2 | 56,5 | 57,1 | 57,7 | 57,6 | 58,0 | 58,5 | 59,1 | 59,9 | 60,9 | 61,8 | 61,3 | 61,6 | 61,3 | 61,1 | 60,0 | 47,4 | 54,3 | 55,0 | 52,3 | 55,0 | 57,2 | 56,6 | 57,3 | 57,4 | 57,9 |
| TTO | 65,9 | 65,9 | 66,8 | 68,0 | 67,7 | 67,6 | 67,6 | 67,2 | 67,2 | 68,0 | 67,3 | 67,0 | 67,7 | 67,8 | 67,8 | 68,4 | 68,0 | 68,7 | 69,1 | 70,4 | 72,8 | 72,9 | 73,4 | 72,3 | 72,1 | 73,1 | 73,0 | 73,2 | 73,3 | 73,4 |
| TUN | 55,0 | 55,5 | 55,7 | 56,3 | 56,3 | 56,4 | 56,6 | 56,7 | 56,6 | 56,9 | 56,7 | 57,2 | 57,8 | 57,3 | 57,7 | 58,0 | 65,1 | 65,4 | 65,1 | 65,4 | 66,1 | 67,1 | 67,6 | 68,5 | 68,2 | 68,7 | 68,5 | 67,1 | 66,4 | 65,8 |
| TUR | 57,0 | 57,1 | 58,2 | 58,6 | 58,9 | 60,7 | 60,9 | 62,0 | 62,6 | 63,1 | 62,9 | 64,1 | 63,9 | 63,9 | 64,3 | 65,0 | 65,3 | 65,1 | 65,0 | 66,0 | 65,4 | 62,9 | 63,2 | 64,0 | 64,1 | 64,2 | 63,8 | 62,6 | 63,0 | 62,9 |
| TWN | 67,6 | 67,9 | 67,0 | 67,3 | 67,8 | 70,4 | 71,6 | 71,2 | 71,3 | 70,6 | 71,3 | 71,5 | 71,6 | 72,4 | 72,7 | 73,6 | 74,0 | 74,7 | 75,0 | 75,5 | 76,4 | 76,1 | 76,9 | 76,9 | 77,7 | 77,5 | 78,7 | 79,1 | 79,3 | 79,1 |
| TZA | 53,1 | 53,8 | 54,6 | 55,4 | 56,1 | 55,9 | 55,8 | 56,2 | 55,6 | 56,5 | 55,5 | 56,1 | 56,0 | 56,6 | 57,2 | 57,7 | 57,2 | 57,2 | 57,2 | 57,1 | 56,5 | 56,3 | 57,3 | 58,0 | 58,8 | 59,0 | 58,9 | 59,5 | 60,5 | 60,3 |
| UGA | 48,1 | 49,2 | 49,9 | 49,9 | 50,9 | 50,0 | 50,4 | 50,5 | 49,7 | 52,1 | 52,5 | 53,0 | 52,7 | 52,7 | 54,0 | 53,9 | 53,3 | 52,8 | 53,0 | 53,2 | 53,3 | 52,6 | 52,8 | 53,5 | 53,7 | 53,3 | 53,0 | 52,4 | 52,0 | 51,8 |
| UKR | 62,1 | 62,1 | 62,8 | 62,5 | 62,9 | 63,6 | 64,8 | 67,6 | 66,5 | 67,0 | 68,1 | 68,4 | 67,8 | 67,7 | 68,6 | 66,8 | 67,0 | 67,7 | 67,1 | 66,0 | 64,9 | 65,4 | 65,9 | 67,0 | 68,6 | 69,8 | 68,7 | 65,9 | 66,2 | 66,2 |
| URY | 74,0 | 74,7 | 75,7 | 76,1 | 76,3 | 77,0 | 78,0 | 78,1 | 78,9 | 78,2 | 77,9 | 77,3 | 77,5 | 76,9 | 76,5 | 76,8 | 77,2 | 77,7 | 78,3 | 78,7 | 79,1 | 78,9 | 79,9 | 79,2 | 79,1 | 79,1 | 79,6 | 79,9 | 80,0 | 80,0 |

| ISO3 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 |
|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| USA | 84,4 | 84,4 | 84,3 | 84,3 | 84,2 | 84,3 | 85,0 | 84,9 | 84,5 | 84,7 | 85,2 | 85,5 | 86,3 | 86,5 | 87,0 | 86,7 | 86,8 | 87,0 | 87,3 | 87,3 | 87,8 | 87,5 | 87,4 | 86,6 | 86,5 | 85,9 | 85,6 | 85,7 | 85,2 | 85,1 |
| UZB | 47,3 | 47,3 | 47,4 | 47,9 | 47,9 | 46,8 | 44,6 | 45,6 | 45,6 | 46,4 | 47,3 | 46,6 | 48,3 | 47,3 | 49,6 | 50,5 | 49,7 | 49,7 | 50,3 | 51,2 | 52,0 | 52,6 | 54,8 | 54,4 | 57,4 | 58,3 | 57,1 | 57,3 | 57,4 | 57,3 |
| VCT | 69,5 | 69,5 | 69,5 | 69,6 | 69,6 | 69,8 | 70,3 | 71,0 | 71,5 | 71,6 | 71,9 | 72,4 | 72,8 | 73,3 | 73,1 | 74,3 | 75,2 | 75,3 | 76,2 | 76,2 | 76,9 | 77,2 | 76,4 | 77,4 | 76,7 | 77,1 | 76,9 | 76,9 | 76,5 | 75,8 |
| VEN | 61,0 | 58,9 | 59,8 | 61,2 | 60,3 | 58,8 | 59,4 | 58,8 | 58,1 | 56,9 | 56,2 | 57,1 | 59,7 | 59,3 | 60,5 | 60,0 | 58,4 | 58,8 | 57,5 | 57,9 | 57,1 | 57,5 | 55,1 | 53,9 | 52,7 | 51,9 | 51,8 | 52,0 | 52,2 | 52,5 |
| VNM | 47,3 | 47,5 | 47,8 | 48,8 | 49,4 | 49,4 | 50,2 | 51,0 | 51,4 | 51,2 | 52,1 | 53,0 | 53,3 | 53,3 | 54,5 | 54,5 | 54,8 | 55,3 | 56,1 | 56,3 | 56,6 | 57,3 | 57,2 | 56,7 | 57,3 | 58,0 | 58,2 | 58,9 | 58,9 | 59,0 |
| VUT | 64,1 | 64,1 | 64,1 | 64,2 | 64,1 | 64,2 | 64,2 | 64,5 | 64,7 | 65,5 | 66,1 | 67,0 | 66,0 | 65,7 | 65,2 | 64,5 | 63,9 | 64,0 | 63,9 | 64,5 | 65,0 | 66,0 | 67,3 | 68,4 | 66,1 | 66,2 | 66,7 | 67,6 | 67,6 | 67,6 |
| YEM | 36,2 | 37,2 | 38,4 | 39,7 | 38,3 | 36,4 | 37,7 | 39,0 | 39,4 | 39,3 | 38,8 | 39,0 | 40,8 | 41,0 | 44,0 | 43,6 | 43,7 | 47,5 | 48,0 | 46,1 | 44,8 | 43,9 | 43,6 | 42,8 | 43,2 | 43,1 | 43,4 | 43,8 | 44,5 | 44,5 |
| ZAF | 66,0 | 66,2 | 66,3 | 66,3 | 66,2 | 65,8 | 65,8 | 66,8 | 67,6 | 67,2 | 66,7 | 66,7 | 66,4 | 65,6 | 67,3 | 67,3 | 67,6 | 68,4 | 68,8 | 70,1 | 71,1 | 70,5 | 70,5 | 71,0 | 70,5 | 69,8 | 70,0 | 69,2 | 69,1 | 69,0 |
| ZMB | 57,8 | 58,7 | 59,4 | 59,3 | 60,0 | 59,8 | 60,1 | 59,5 | 58,1 | 57,7 | 57,9 | 57,8 | 57,7 | 58,6 | 58,7 | 58,7 | 59,1 | 59,4 | 58,8 | 59,5 | 59,1 | 57,6 | 56,6 | 57,5 | 58,5 | 55,9 | 52,9 | 54,0 | 55,2 | 55,3 |
| ZWE | 52,1 | 52,1 | 52,7 | 51,9 | 52,1 | 52,1 | 50,5 | 50,0 | 49,4 | 48,6 | 48,5 | 47,7 | 46,8 | 45,8 | 47,5 | 48,4 | 48,9 | 50,5 | 51,0 | 51,7 | 51,9 | 51,6 | 52,5 | 53,1 | 53,1 | 53,9 | 52,5 | 51,5 | 52,4 | 52,3 |

Notes: This table has been prepared by the author and estimates the Ethics Perception Index (ETPI) for countries around the world from 1995 to 2024, based on data known as of 16 July 2024. Country names are represented using ISO3 codes to ensure the table fits on one page.

Included countries are Afghanistan (AFG), Angola (AGO), Albania (ALB), United Arab Emirates (ARE), Argentina (ARG), Armenia (ARM), Australia (AUS), Austria (AUT), Azerbaijan (AZE), Burundi (BDI), Belgium (BEL), Benin (BEN), Burkina Faso (BFA), Bangladesh (BGD), Bulgaria (BGR), Bahrain (BHR), Bahamas (BHS), Bosnia and Herzegovina (BIH), Belarus (BLR), Bolivia (BOL), Brazil (BRA), Barbados (BRB), Brunei (BRN), Bhutan (BTN), Botswana (BWA), Central African Republic (CAF), Canada (CAN), Switzerland (CHE), Chile (CHL), China (CHN), Côte d'Ivoire (CIV), Cameroon (CMR), Congo, Dem. Rep. (COD), Congo, Rep. (COG), Colombia (COL), Comoros (COM), Cabo Verde (CPV), Costa Rica (CRI), Cuba (CUB), Cyprus (CYP), Czech Republic (CZE), Germany (DEU), Djibouti (DJI), Dominica (DMA), Denmark (DNK), Dominican Republic (DOM), Algeria (DZA), Ecuador (ECU), Egypt (EGY), Eritrea (ERI), Spain (ESP), Estonia (EST), Ethiopia (ETH), Finland (FIN), Fiji (FJI), France (FRA), Gabon (GAB), United Kingdom (GBR), Georgia (GEO), Ghana (GHA), Guinea (GIN), Gambia (GMB), Guinea-Bissau (GNB), Equatorial Guinea (GNQ), Greece (GRC), Guatemala (GTM), Guyana (GUY), Hong Kong (HKG), Honduras (HND), Croatia (HRV), Haiti (HTI), Hungary (HUN), Indonesia (IDN), India (IND), Ireland (IRL), Iran (IRN), Iraq (IRQ), Iceland (ISL), Israel (ISR), Italy (ITA), Jamaica (JAM), Jordan (JOR), Japan (JPN), Kazakhstan (KAZ), Kenya (KEN), Kyrgyzstan (KGZ), Cambodia (KHM), Korea, Rep. (KOR), Kuwait (KWT), Lao PDR (LAO), Lebanon (LBN), Liberia (LBR), Libya (LBY), St. Lucia (LCA), Sri Lanka (LKA), Lesotho (LSO), Lithuania (LTU), Luxembourg (LUX), Latvia (LVA), Morocco (MAR), Moldova (MDA), Madagascar (MDG), Maldives (MDV), Mexico (MEX), North Macedonia (MKD), Mali (MLI), Malta (MLT), Myanmar (MMR), Montenegro (MNE), Mongolia (MNG), Mozambique (MOZ), Mauritania (MRT), Mauritius (MUS), Malawi (MWI), Malaysia (MYS), Namibia (NAM), Niger (NER), Nigeria (NGA), Nicaragua (NIC), Netherlands (NLD), Norway (NOR), Nepal (NPL), New Zealand (NZL), Oman (OMN), Pakistan (PAK), Panama (PAN), Peru (PER), Philippines (PHL), Papua New Guinea (PNG), Poland (POL), Portugal (PRT), Paraguay (PRY), Qatar (QAT), Romania (ROU), Russia (RUS), Rwanda (RWA), Saudi Arabia (SAU), Sudan (SDN), Senegal (SEN), Singapore (SGP), Solomon Islands (SLB), Sierra Leone (SLE), El Salvador (SLV), Somalia (SOM), Serbia (SRB), São Tomé and Príncipe (STP), Suriname (SUR), Slovakia (SVK), Slovenia (SVN), Sweden (SWE), Eswatini (SWZ), Seychelles (SYC), Syria (SYR), Chad (TCD), Togo (TGO), Thailand (THA), Tajikistan (TJK), Turkmenistan (TKM), Timor-Leste (TLS), Trinidad and Tobago (TTO), Tunisia (TUN), Turkey (TUR), Taiwan (TWN), Tanzania (TZA), Uganda (UGA), Ukraine (UKR), Uruguay (URY), United States (USA), Uzbekistan (UZB), St. Vincent and the Grenadines (VCT), Venezuela (VEN), Vietnam (VNM), Vanuatu (VUT), Yemen (YEM), South Africa (ZAF), Zambia (ZMB), and Zimbabwe (ZWE).

Annex B: Significant Changes in Ethics Perception Index (ETPI) from 1995 to 2024

Table B1: Significant annual changes in the Ethics Perception Index (ETPI) by country (1995-2024)

| <i>iso</i> | <i>Year_before</i> | <i>ETPI_before</i> | <i>Year_of_leap</i> | <i>ETPI_of_leap</i> | <i>country</i> |
|------------|--------------------|--------------------|---------------------|---------------------|-----------------------|
| <i>AFG</i> | 2001 | 28,5 | 2002 | 42,8 | Afghanistan |
| <i>AFG</i> | 2020 | 42,8 | 2021 | 46,4 | Afghanistan |
| <i>AGO</i> | 2000 | 46,4 | 2001 | 32,3 | Angola |
| <i>AGO</i> | 2001 | 32,3 | 2002 | 36,6 | Angola |
| <i>COD</i> | 1999 | 36,6 | 2000 | 43,8 | Congo, Dem. Rep. |
| <i>COG</i> | 1996 | 43,8 | 1997 | 40,8 | Congo, Rep. |
| <i>GMB</i> | 2016 | 40,8 | 2017 | 57,0 | Gambia |
| <i>GNQ</i> | 2004 | 57,0 | 2005 | 39,5 | Equatorial Guinea |
| <i>LBR</i> | 1999 | 39,5 | 2000 | 46,0 | Liberia |
| <i>LBR</i> | 2003 | 46,0 | 2004 | 52,8 | Liberia |
| <i>LBY</i> | 2010 | 52,8 | 2011 | 48,7 | Libya |
| <i>LBY</i> | 2020 | 48,7 | 2021 | 44,9 | Libya |
| <i>MMR</i> | 2020 | 44,9 | 2021 | 47,7 | Myanmar |
| <i>SOM</i> | 2012 | 47,7 | 2013 | 35,2 | Somalia |
| <i>STP</i> | 2000 | 35,2 | 2001 | 58,0 | São Tomé and Príncipe |
| <i>TKM</i> | 1997 | 58,0 | 1998 | 46,6 | Turkmenistan |
| <i>TKM</i> | 1999 | 46,6 | 2000 | 38,0 | Turkmenistan |
| <i>TKM</i> | 2008 | 38,0 | 2009 | 45,6 | Turkmenistan |
| <i>TLS</i> | 1999 | 45,6 | 2000 | 56,5 | Timor-Leste |
| <i>TLS</i> | 2014 | 56,5 | 2015 | 47,4 | Timor-Leste |
| <i>TLS</i> | 2015 | 47,4 | 2016 | 54,3 | Timor-Leste |
| <i>TUN</i> | 2010 | 54,3 | 2011 | 65,1 | Tunisia |

Notes: This table, prepared by the author, shows significant year-on-year changes in the Ethics Perception Index (ETPI) for various countries from 1995 to 2024, based on data available on 16 July 2024. A significant change is defined as a change of 10% or more in the ETPI from one year to the next.

Explanation of columns:

ISO: ISO3 country code.

Year_before: The year preceding the significant change.

ETPI_before: The ETPI value in the year preceding the significant change.

Year_of_leap: The year in which the significant change took place.

ETPI_of_leap: The ETPI value in the year of the significant change.

Country: The full name of the country.

This Table B1 helps to identify possible historical or socio-political events that may have influenced ethical perceptions in these countries. The ETPI is based on several indices, including the Economic Freedom Index, the Corruption Perception Index, the Human Development Index, the Education Index, the Environmental Performance Index and the Human Rights Index. An increase in these indices typically leads to an increase in the ETPI. Conversely, an increase in natural resource depletion as a percentage of GDP tends to reduce the ETPI.

Possible contextual background for significant changes:

- ✓ Afghanistan (2001-2002): Post-9/11 geopolitical changes and subsequent military conflict (Council on Foreign Relations, 2022) are likely to have influenced ethical conditions.
- ✓ Angola (2000-2001): End of civil war and subsequent reconstruction efforts (Tufts University, 2015).
- ✓ Congo, Dem. Rep. (1999-2000): The Lusaka ceasefire agreement (The Lusaka Ceasefire Agreement, 1999) and efforts to stabilise the region.
- ✓ Gambia (2016-2017): The transition of power from long-time ruler Yahya Jammeh to Adama Barrow (Al Jazeera, 2017).
- ✓ Liberia (1999-2000): The period leading up to the end of Liberia's second civil war (Kieh, 2009).
- ✓ Libya (2010-2011): The Libyan civil war and the fall of Muammar Gaddafi (Bouckaert, 2012).
- ✓ Myanmar (2020-2021): Political upheaval and military coup (Clare, 2021).
- ✓ Somalia (2012-2013): Efforts to establish stable government and reduce piracy (The World Bank, 2013).
- ✓ São Tomé and Príncipe (2000-2001): Political reforms and stabilisation efforts (Nascimento & Presidency of the Federative Republic of Brazil, 2010).
- ✓ Turkmenistan (1997-1998, 1999-2000, 2008-2009): Leadership transition and economic reforms (Bohr, 2005; Jasutis et al., 2020).
- ✓ Timor-Leste (1999-2000, 2014-2015, 2015-2016): Independence from Indonesia [1999-2002] and subsequent nation-building efforts, as evidenced by GDP per capita peaking in 2014-2016 and declining thereafter (diminishing returns from depleting natural resources) (Sakane, 2024).
- ✓ Tunisia (2010-2011): The Tunisian revolution and the start of the Arab Spring (Kuznetsov, 2022).

This information provides a comprehensive understanding of the significant changes in the ETPI and the potential socio-political and economic factors that may have influenced these changes.

Annex C: Technical Protocol for Standardised Implementation and Replication (Quick-Start Guide)

This protocol enables independent researchers to replicate the Ethics Perception Index (ETPI) and the Regional Ethics Perception Index (RETPI) using standard statistical software or spreadsheet applications.

Phase 1: Data Acquisition (The Seven "LEGO Bricks")

Collect the latest available data (LD) for the following seven components, which are internationally standardised:

1. CPI: Corruption Perceptions Index (Transparency International)
2. EFI: Index of Economic Freedom (Heritage Foundation/Fraser Institute)
3. HDI: Human Development Index (UNDP)
4. EI: Education Index (UNDP)
5. HRI: Human Rights Index (Our World in Data)
6. EPI: Environmental Performance Index (Yale University)
7. NRD: Natural Resource Depletion (% of GDP) (World Bank).

Phase 2: Preprocessing and Scaling (Harmonisation)

To ensure comparability, rescale all raw values (X) to the 0–100 range by applying the following rules:

For positive indicators (CPI, EFI, HDI, EI, HRI and EPI):

$$C_{it} = \left(\frac{X_{it}}{\max(X)} \right) \times 100 \quad (1)$$

For the Negative Indicator (NRD):

$$NRD_{it}^R = 100 - \left(\frac{NRD_{it} - \min(NRD)}{\max(NRD) - \min(NRD)} \right) \times 100 \quad (2)$$

Please note that outliers are not trimmed, but rather absorbed by the scaling process in order to preserve ethical extremes.

Phase 3: Aggregation (the ETPI Calculation)

Calculate the national baseline (ETPI) by taking the arithmetic mean of the seven rescaled components:

$$ETPI_{it} = \frac{1}{7} \sum_{j=1}^7 R_{jit}$$

Note: equal weighting (1/7) has been applied to ensure transparency and prevent subjective prioritisation.

Phase 4: Regional Modulation (The RETPI Calculation)

- Obtain Ethical Engagement (E): Extract the Google Trends search volume (or equivalent data from a different source, such as social network data — all alternatives must be well-grounded and documented) for ethics-related topics in the target region. Normalise to a 0-1 scale.
- Set bounds: Set L and H to 0.2 (the 20% threshold for balancing sensitivity and robustness). Any deviation from 20% for L and H must be well-grounded and documented.
- Use the piecewise function (T = ETPI) to calculate the unscaled $RETPI^U$:

$$RETPI^U = \begin{cases} T & \text{if } E = 50\% \\ (1-L)T & \text{if } E = 0\% \\ (1-L)T + \left(\frac{E}{50\%}\right)(TL) & \text{if } E \in (0\%; 50\%) \\ (1+H)T & \text{if } E = 100\% \\ T + \left(\frac{E-50\%}{50\%}\right)(TH) & \text{if } E \in (50\%; 100\%) \end{cases}$$

Final scaling: Rescale the RETPIU values to the range of 0–100 to enable global comparability.

Phase 5: Resilience Assessment (The "Stress Test")

To measure how well a region maintained its ethical standards during a crisis (e.g. the 2020 pandemic), calculate the Resilience Ratio (RR):

$$RR_U = \frac{X_{U,t_0+s}}{X_{U,t_0-1}}, X \in \{ETPI, RETPI\} \quad (8)$$

Notes: Own formula.

Verdict: $RR \approx 1$ (held level); $RR < 1$ (declined); $RR > 1$ (improved/resilient).

Replicator's checklist:

- ✓ All seven components are scaled from 0 to 100.
- ✓ Missing data between periods is filled via linear interpolation.
- ✓ Missing recent data is used for Last-Value Carry-Forward (LVCF) until the next ME-Matrix update.
- ✓ Symmetrical bounds ($L=H=0.2$) are used unless otherwise justified.