ethos

ETHOS COUNTRY RATING METHODOLOGY

2023

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1. Introduction

1.1 OVERVIEW

Like equities or bonds issued by listed companies, sovereign bonds require in-depth environmental, social and governance (ESG) analysis. ESG analysis provides investors with a detailed understanding of the challenges a country is facing, including its ability to manage its environmental and social capital.

The Ethos Country Rating enables investors to identify and select countries that are best managing current environmental and social issues, as well as to identify the medium and long-term risks that countries face, potentially resulting in a downgrade of their debt, and subsequently affecting investments. This covers a country's management of its environmental risks and footprint, social challenges, such as inequality, human rights and decent livelihoods, and structural governance risks. It aims to provide a comprehensive and comparable assessment of the risks and opportunities associated with a sovereign bond.

This methodology defines the framework for analysing sovereign issuers by considering their performance on the three core sustainability pillars (E/S/G), while ensuring that minimum international law and human rights requirements are met. Failure to meet these minimum requirements is grounds for exclusion regardless of sustainability performance.

This methodology allows for individual ratings for each E/S/G pillar in addition to an overall score. As a result, individual scores are provided for environmental, social and governance performance.

1.2 REGULATORY OUTLOOK

Transparency requirements for ESG reporting are constantly evolving. This methodology incorporates the requirements and recommendations expected from different regulatory frameworks. Considering the activities of Ethos and its members, the methodology focuses on the recommendations set by the Association of Swiss Pension Funds (ASIP) and the Sustainable Finance Disclosure Regulation (SFDR), as of November 2023. For the time being, the requirements for sovereign bonds are less extensive than for companies. Nevertheless, the Ethos Country Rating methodology provides the indicators required by these frameworks for each country covered. The requirements and recommendations are detailed in the following sections.

1.2.1 ASSOCIATION OF SWISS PENSION FUNDS

The ASIP recommendations for ESG reporting currently only cover the "E" (environmental) pillar. The main reason for this, according to the institution, is that there are no widely accepted indicators for key material issues, and there is great uncertainty about the measurability of social and governance dimensions. However, it is likely that the ASIP, like the SFDR, will use the Principal Adverse Impacts (PAIs) indicators as a potential basis for its recommendations in the future.

The ASIP recommends only one indicator for sovereign bonds [1]:

- Greenhouse gas (GHG) emissions[1], in tCO2e[2] per million of GDP[3], in million CHF, for scope 1 and 2.

The ASIP suggests using the Worldwide Governance Indicators (WGI) to assess a country's governance risk.

[1] GHG emissions: GreenHouse Gases emissions
[2] tCO_2e: tonnes of carbon dioxide equivalent
[3] GDP: Gross Domestic Product

1.2.2 SUSTAINABLE FINANCE DISCLOSURE REGULATION

The SFDR imposes mandatory ESG disclosure requirements, including for sovereign bonds. The regulatory technical standards are based on the principle of measuring PAIs, which have «the most significant negative impacts of investments on the environment and people» [2]. It divides the indicators into a core set of universal mandatory indicators or optional indicators. It is admitted that mandatory indicators will always result in principle adverse impacts, while additional optional indicators help identify, assess and prioritise the consideration of additional principal adverse impacts.

For sovereign bonds, the SFDR makes the following recommendations [3]:

- GHG intensity of investee country (mandatory);
- Investee countries subject to social violations (mandatory);
- Share of bonds not certified as green under a future EU act setting up an EU Green Bond Standard;
- Average income inequality score;
- Average freedom of expression score;
- Average human rights performance;
- Average corruption score;
- Non-cooperative tax jurisdictions;
- Average political stability score;
- Average rule of law score.

1.3 CONSIDERATION OF REGULATIONS IN ETHOS COUNTRY RATINGS

These regulatory frameworks call for greater transparency and set new standards for financial institutions. However, there is little guidance on the definition of these indicators, what exactly should be taken into account, the reliability of the data sources and the comparability of the indicators used across the sector. Ethos provides its own interpretation of these recommendations, which may evolve in the light of regulatory clarifications.

Furthermore, although the required indicators are provided for reporting purposes, they are not necessarily included in the country rating. In fact, Ethos believes that some of the required indicators do not capture what is most relevant for comparing countries. Therefore, not all required indicators are included in the final ESG score and rating, even if they are made available for reporting purposes.

2. ESG indicators and data sources

Existing recommendations provide a framework that establishes a common basis for ESG reporting solutions. Building on this foundation, additional indicators are considered to address Key Material Issues (KMIs) relevant to countries that are not included in the regulatory requirements and recommendations. To identify KMIs, the Sustainable Development Goals (SDGs) framework [4] was used as a reference to identify the most appropriate indicators.

The selected indicators are summarised in the figure below.

2.1 ENVIRONMENTAL INDICATORS

Efficient and sustainable management of natural resources is essential for a country's medium- to long-term economic and environmental development. At the same time, every country also has an environmental impact on its own territory and on the planet. Both aspects must therefore be taken into account when assessing a country's environmental risks and impacts.

The criteria used in this analysis include a country's GHG emissions, ecological footprint, level of water stress, access to clean and affordable energy, and vulnerability to climate change.

FIGURE 1: QUANTITATIVE ESG SCORE INPUTS

2.1.1 GHG EMISSIONS PER CAPITA

Accounting for a country's emissions is essential. However, there are several ways of doing this that lead to very different results and allocations of emissions between countries. Regulatory recommendations focus on an intensity measure of GHG emissions: per million of GDP.

In the Ethos Country Rating methodology, we use emissions per capita rather than emissions per million of GDP. This is to better capture the impact of a country's way of life, which is broader than the impact of its economy. Emissions per million of GDP give an indication of how GHG-intensive a country's economy is, and therefore automatically favour higher income countries. Higher-income countries will, on average, have higher absolute emissions but more importantly, higher GDP. By definition, the higher the GDP, the lower the intensity. In addition, higher-income countries tend to have a shift in their economy towards the tertiary sector, which is less carbon-intensive than the primary and secondary sectors. By looking at emissions per capita instead, the size of the economy is not directly taken into account. However, the emissions measure indirectly accounts for the size of the economy, as larger economies tend to have higher absolute emissions. This change in unit also allows for better comparability between countries as the size of GDP and what one million of GDP represents varies considerably between countries, which is not the case with the unit of capita.

Therefore, the following data points are used to construct GHG emissions per capita, together with the data source:

- Absolute emissions data: PRIMAP database [5], National total GHG emissions excluding LULUCF[4] for all Kyoto greenhouse gases[5] as defined in AR6[6], as per UNFCCC[7] guidelines for national inventory reports, expressed in CO_2e[8];
- Population data: from the World Bank database, for the year of emissions under consideration [6].

The per capita emissions of country *i* in a year *t* are then obtained by the following division:

$$Emissions\ per\ capita_{i,t} = \frac{Absolute\ emissions_{i,t}}{Population_{i,t}}$$

Emissions per capita range from 0.37 tCO_2e to 77 tCO_2e per capita, highlighting the very important differences between economies. The median is approximatively 5 tCO_2e per capita. Major fossil fuel producing countries appear at the upper end of the scale, as all emissions related to the fossil fuel production and consumption are accounted for on their territory. In addition, the smaller the population, the higher the emissions per capita, which also explains why some countries have very high figures.

2.1.2 ECOLOGICAL FOOTPRINT PER CAPITA

Emissions, as considered above, are generally defined as production-based emissions, i.e. emissions are accounted for a country if they are emitted on its territory. This approach is recommended by the UNFCCC guidelines for national inventories and is widely accepted [7]. However, this approach fails to take into account how globalisation has affected GHG emissions and the difference between where a product is produced and where it is consumed. As a result, high-income countries do not have to account for the emissions caused by their lifestyles. In this sense, a growing body of research now favours a "common but differentiated responsibility" (CBDR)[9] approach to accounting for emissions. Instead of a production approach, this principle leads to the consideration of a consumption approach to GHG emissions accounting: emissions are accounted in the territory where the product is used/consumed, regardless of where it has been produced. However, this accounting principle is still developing, so emissions data under a consumption approach are not yet available on a global scale.

To overcome the lack of data on consumption-based emissions and to incorporate the CBDR approach, we rely on the ecological footprint constructed by the Global Footprint Network (GFN) [8]. Unlike emissions, the ecological footprint is a measure of the demand that human consumption places on the biosphere and is measured in global hectares. The larger a country's footprint, the more demand it places on the biosphere. Conversely, the smaller a country's footprint is, the less demand through human consumption it places on natural resources.

We also look at this indicator on a per capita basis so that it can be compared with emissions intensities.

According to the GFN, biocapacity per person globally was 1.51 global hectares (gha) in 2022 [8]. Ecological footprints per person range from 0.55 gha per capita for the countries with the least intensive demand to 13.13 gha per capita for the countries with the most intensive demand.

[4] LULUCF: data for land use, land use change, and forestry.

[5] Carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), F-gases (hydrofluorocarbons and perfluorocarbons) and sulphur hexafluoride (SF_6), https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Glossary:Kyoto_basket

[6] AR6: Assessment Report 6 of the Intergovernmental Panel on Climate Change

[7] UNFCCC: United Nations Framework Convention on Climate Change.

[8] CO_2e: carbon dioxide equivalent, i.e. the number of metric tons of CO_2 emissions with the same global warming potential as one metric ton of another greenhouse gas.

[9] CBDR: principle formalised in 1992 as part of the UNFCCC that acknowledges the different capabilities and differing responsibilities of individual countries in addressing climate change.

2.1.3 LEVEL OF WATER STRESS

A country's level of water stress and dependence on freshwater resources is also important in the context of global warming. Within the Sustainable Development Report [9], SDG 6.4.2[10] is an indicator of the level of water stress, i.e. it tracks freshwater withdrawals as a percentage of a country's available freshwater resources [4]. The higher the rate of water withdrawal, the more intensive the country's water use.

In most cases, the indicator ranges between 0 and 100 % (the higher the percentage, the more freshwater withdrawal the country requires). Some countries score higher than 100 %, indicating that they are depleting their own freshwater resources and are dependent on freshwater imports. This is most common in arid countries. On the other hand, the lower the score, the less dependent the country is on water resources. However, this should be treated with caution as it could mean that basic drinking and sanitation needs are not being met. This aspect of water use is not included in the 1.5 version of the Country Rating.

2.1.4 ACCESS TO CLEAN AND AFFORDABLE ENERGY

A country's energy consumption and energy mix are critical to climate change mitigation. A country's dependence on fossil fuels is a strong determinant of its climate change mitigation and adaptation strategy.

SDG 7 is used to address this dimension. It aims to ensure access to affordable, reliable, sustainable, and modern energy for all [10] and consists of several indicators:

- The proportion of the population with access to electricity;
- The proportion of the population with access to clean fuels and technologies for cooking;
- The CO_2 emissions from fuel combustion per unit of total electricity generation;
- The share of renewable energy in total final energy consumption.

The SDG 7 score ranges from 0 to 100, with 100 representing full achievement of the target.

2.1.5 CLIMATE CHANGE VULNERABILITY INDEX

In addition to the impact of a country on the climate, we also consider the impact of the climate on countries by taking into account their vulnerability to climate change. This is done by using the Notre-Dame Global Adaptation Initiative (ND-GAIN) [11]. The index consists of two dimensions: vulnerability and readiness. There is an inverse correlation between the two dimensions: the less vulnerable countries tend to be the more prepared, while the most vulnerable countries tend to be the least prepared. The preparedness dimension is highly correlated with income.

In this methodology, we consider only the vulnerability dimension as part of the environmental pillar. Vulnerability is constructed by taking into account a country' exposure, sensitivity, and adaptive capacity. It gives a score comprised between 0 and 100, with 100 being the most vulnerable a country can be.

2.2 SOCIAL INDICATORS

Beyond fundamental rights, the well-being of the population plays an important role in a country's development and stability. This analysis therefore takes into account a number of social criteria, including human rights performance, freedom of expression, life expectancy, education levels, income inequality and gender inequality.

2.2.1 HUMAN RIGHTS PERFORMANCE

An indicator of human rights performance should be available as part of the SFDR recommendations. Measuring human rights performance is complex and can take on many forms. There are currently no precise regulatory guidelines to ensure consistency in the parameters considered for this measure. Therefore, this indicator relies on the ESG data provider's own interpretation.

The Ethos Country Rating uses the Human Rights and Rule of Law indicator of the Fragile States Index (FSI)[11], developed by the Fund for Peace (FFP). The Human Rights and Rule of Law Indicator takes into account "the relationship between the state and its population insofar as fundamental human rights are protected and freedoms are observed and respected" [12]. The indicator rates the human rights situation on a scale from 0 to 10, with higher scores indicating more alarming situations.

[10] SDG 6.4.2 is one of the 11 global indicators to track progress towards SDG 6: Sustainable Development Goal on clean water and sanitation aimed to "Ensure availability and sustainable management of water and sanitation for all". [4]

[11] The Fragile State Index is an annual report published and supported primarily by the US think tank Fund for Peace. It is an important tool for highlighting the pressures faced by all states and identifying when these pressures outweigh a state's capacity to cope.

This indicator is also used as a proxy for the identification of social violations required under the SFDR reporting. Indeed, the SFDR provides some additional information on what might constitute social violations [13], mostly by referring to violations of international treaties covering a range of topics, conventions on human rights and fundamental freedoms and internationally recognised goals and prohibitions contained in environmental conventions. Section 5 Exclusion Principles explains how major social violations are assessed in this rating.

2.2.2 VOICE AND ACCOUNTABILITY

Freedom of expression is a pillar of democracy and one of the fundamental freedoms. Creating and maintaining an environment in which citizens feel free to express themselves without fear of reprisal is the foundation of a thriving society.

The Voice and Accountability indicator, part of the Worldwide Governance Indicators [14], is used as a proxy for this principle. Although this indicator is derived from the WGI, this dimension is typically considered within the social requirements. Therefore, this indicator is included under the social pillar.

The Voice and Accountability indicator measures perceptions of the extent to which a country's citizens are able to participate in the election of their government, as well as freedom of expression, freedom of association, and a free media.

The indicator is made up of several data points from different sources, including freedom of speech, political rights, electoral freedom, freedom of the press, freedom of association, and many others. The data points are aggregated into an index ranging from -2.5 to 2.5, with lower values representing significant shortcomings.

2.2.3 INCOME INEQUALITY

There are several measures of income inequality, such as the Gini coefficient, the Palma ratio[12], or any ratio that compares the share of income of the top share of the population with that held by the bottom share (e.g. the income of the top 20 % with the income of the bottom 20 %).

Given the coverage and the existing lag of available data, the indicator chosen to measure income inequality is the ratio of the income of the top 10 % to that of the bottom 50 %. Using data from the World Inequality Database (WID) [15], the ratio shows how much the top 10 % of a country's population earns compared to the bottom 50 % of the country's population. A ratio less than 1 indicates that the bottom 50 % earns more than the top 10 % and is therefore associated with low inequality. A ratio greater than 1 indicates that the top 10% earns more than the bottom 50% and is associated with greater inequality. The higher the ratio, the greater the inequality.

The observed ratios of the countries considered range from 0.9 to 12.6, highlighting the unequal nature of the income distribution within countries, over and above the disparities between countries.

2.2.4 HUMAN DEVELOPMENT INDEX

The Ethos Country Rating also takes into account the Human Development Index (HDI) as one of the social indicators. The HDI [16] is an index designed to measure human development, focusing on the key dimensions of longevity, education, and decent livelihood. It uses measures of life expectancy, education, and per capita income indicators.

The index ranges from 0 to 1, with the lower the value, the more barriers to human development the country faces.

2.2.5 GENDER INEQUALITY INDEX

Gender inequalities affect society as a whole by hindering the achievement of equitable and just development. The Gender Inequality Index (GII) [17] aims to provide insights into gender inequalities between women and men across three dimensions: reproductive health, empowerment, and the labour market.

Reproductive health is measured by the maternal mortality ratio and the adolescent birth rate. Women's empowerment is measured by the share of parliamentary seats and the share of women with secondary education compared to men. Female labour force participation is measured by the proportion of women in the labour force compared to men.

The index ranges from 0 to 1, with the lower the value, the less inequality there are between men and women.

[12] Gini coefficient: compares the cumulative proportions of income received by different segments of the population. Palma ratio: ratio of the share of income received by the top 10% of people with the highest disposable income to the share of income received by the bottom 40% with the lowest disposable income. https://data.oecd.org/inequality/income-inequality.htm#:~:text=The%20Palma%20ratio%20is%20the,More

2.3 GOVERNANCE

Good governance is critical to a country's equitable and sustainable economic and social development. Its measurement includes criteria such as perceived levels of corruption, the quality of the legal framework and its enforcement, crime rates, and the transparency and efficiency of political decision-making. High levels of corruption or political instability clearly jeopardise respect for these principles, and thus the proper functioning of the rule of law. All governance indicators are drawn from the Worldwide Governance Indicators (WGI) dataset [14]. and include the following measures:

- Control of corruption;
- Political stability;
- Rule of Law;
- Government effectiveness;
- Regulatory quality.

The WGI defines each of these dimensions in more details below.

2.3.1 CONTROL OF CORRUPTION

This indicator measures the perceived extent to which public power is used for private gain and interests, and the capture of the state by elites and private interests.

The indicator is made up of several data points from different sources, including corruption among public officials, diversion of public funds, irregular payments in public expenditures, and many others. The data points are aggregated into an index that generally ranges from -2.5 to 2.5, with the lower value representing higher levels of perceived corruption.

2.3.2 POLITICAL STABILITY

This indicator measures the perceived likelihood of political instability and politically motivated violence, including terrorism.

The indicator is made up of several data points from different sources, including armed conflicts, violent demonstrations, security risk ratings, and many others. The data points are aggregated into an index that ranges from -2.5 to 2.5, with lower values representing higher perceptions of instability and politically motivated violence.

2.3.3 RULE OF LAW

This indicator captures perceptions of the extent to which society's rules are trusted and respected, in particular the quality of contract enforcement, property rights, the police, and courts, and the likelihood of crime and violence.

The indicator is made up of several data points from different sources, including the fairness of the judicial process, enforceability of contracts, expropriation, property rights, trust in the police, and many others. The data points are aggregated into an index that ranges from -2.5 to 2.5, with lower values indicating a lower likelihood of compliance with the law.

2.3.4 GOVERNMENT EFFECTIVENESS

This indicator captures perceptions of the quality of public services, the formulation and implementation of policies, and the credibility of the government's commitment to these policies.

The indicator is composed of several data points from different sources, including the quality of bureaucracy, excessive bureaucracy, satisfaction with the public infrastructure, coverage of basic public infrastructure such as drinking water, public schools, electricity grids, and many others. The data points are aggregated into an index that ranges from -2.5 to 2.5, with lower values representing lower perceived government effectiveness.

2.3.5 REGULATORY QUALITY

This indicator captures perceptions of the government's ability to formulate and implement policies and regulations, and how these policies enable and encourage private sector development.

The indicator consists of a number of data points from different sources, including price controls, unfair competitive practices, investment freedom, the burden of government regulations, and many others. The data points are aggregated into an index that ranges from -2.5 to 2.5, with lower values representing lower perceived regulatory quality and the government's ability to design and enforce regulations.

3. Methodology

3.1 MISSING DATA

Countries with more than one indicator for which data is missing have not been included in this version of the Ethos Country Rating. Indeed, the presence of several estimated indicators is not considered to be a representative picture of the country.

For countries, with only one missing indicator, additional research is carried out to estimate the missing data. If an exact value cannot be found or cannot be estimated with sufficient robustness, the information collected is used to determine in which quartile of the indicator's distribution the country would fall. The value of this quartile is then imputed to the missing value.

In the 2023 version of the Ethos Country Rating, only two cases of missing data were treated with this rule. This was for the ecological footprint indicator.

3.2 DATA TRANSFORMATION

The indicators considered are designed and constructed in different ways and cannot always be aggregated as such. In order to aggregate data points, we rely on each indicator being normally distributed. Data manipulation is therefore necessary to transform non-normal distributions into normal ones and to avoid introducing bias into a country's aggregate score. Two types of indicators can be observed: indexes and absolute indicators. Each case results in a different type of data transformation.

3.2.1 INDICES

Indices are made up of several individual indicators and are constructed in such a way that the individual indicators can be aggregated. They are therefore already normally distributed, and we treat them as such. This also means that indices already contain a relative measure of performance. In this case, the only transformation required is to rescale the data between 0 and 1 if this is not already the range of the index. This is done using the following formula: for country i, on indicator j, rescaling means measuring how far the initial value x_(i,j) is from the minimum value observed for indicator j across all countries (i.e. for all i), and comparing this gap with the range of indicator j across all countries:

$$w_{i,j} = \frac{x_{i,j} - \min(x_j)}{\max(x_j) - \min(x_j)} \; \forall \; i$$

Where

$w_{i,j}$ is the rescaled value for country *i* for indicator *j*,

$x_{i,j}$ is the initial value for country *i* for indicator *j*,

$\min(x_j)$ is the minimum value of indicator *j* across all countries considered,

$\max(x_j)$ is the maximum value of indicator *j* across all countries considered.

3.2.2 ABSOLUTE INDICATORS

On the other hand, some indicators are absolute and quantitative, such as emission intensities or ecological footprints. In this case, the distribution across the countries considered is usually non-normal and requires transformation. Since all indicators in this case have a positive skewness, the necessary transformation is through the natural logarithm. In this case, a logarithmic transformation is applied by taking the natural logarithm of the absolute value:

$$y_{i,j} = \ln(x_{i,j}) \; \forall \; i$$

Where

$x_{i,j}$ is the absolute value of country *i* for indicator *j*,

$y_{i,j}$ is the transformed value of country *i* for indicator *j*,

The newly obtained value *y* for indicator *j* then needs to be standardised to put the data on a similar scale and ensure comparability. This is done by comparing *y* with the sample mean and standard deviation:

$$z_{i,j} = \frac{y_{i,j} - \bar{y}_j}{\sigma_j}$$

Where

$z_{i,j}$ is the *z*-score, i.e. the standardised value of country *i* for indicator *j*,

$\bar{y}_j$ is the mean of indicator *j* across all countries considered,

σ_j is the standard deviation of indicator *j* across all countries considered.

Lastly, once the value is standardised, we need to re-scale it between 0 and 1, just as it was done for indices:

$$w_{i,j} = \frac{z_{i,j} - \min(z_j)}{\max(z_j) - \min(z_j)}$$

3.3 AGGREGATION

The data transformation allows all indicators to be expressed in a similar format: each indicator ranges between 0 and 1, with values closer to 1 indicating better performance on the indicator than values closer to 0.

To aggregate indicators within the E/S/G pillars and across the three pillars, an equally weighted average is chosen. For each country *i*, a performance score is calculated for each pillar as follows:

$$E\_score_i = \frac{1}{n}\sum_{j=1}^{n} w_{i,j} \;\; \forall\, j \in E$$

$$S\_score_i = \frac{1}{n}\sum_{j=1}^{n} w_{i,j} \;\; \forall\, j \in S$$

$$G\_score_i = \frac{1}{n}\sum_{j=1}^{n} w_{i,j} \;\; \forall\, j \in G$$

Where

E_score_i, S_score_i and G_score_i are the environmental, social and governance score of country *i*, respectively

The overall ESG score is also calculated using an equally weighted average:

$$ESG_{score_i} = \frac{E\_score_i + S\_score_i + G\_score_i}{3}$$

As each pillar contains 5 indicators (n=5), each indicator receives a weight of 1/5 in the pillar score, and of 1/15 in the overall ESG score. The weight of each pillar in the total ESG score is therefore 33.3 %.

4. Final ESG Score and Rating

4.1 FROM SCORE TO RATING

A simple z-score based methodology is used to convert the ESG score into a rating. The z-score is still obtained as follows:

$$z_i = \frac{x_i - \bar{x}}{\sigma}$$

Where x_i is the ESG score of country *i*, $\bar{x}$ is the average ESG score across the countries considered and σ is the standard deviation across the countries considered.

Given the normalised construction of the rating, the z-score is evenly distributed around 0. Therefore, the rules detailed in Table 2 are applied to obtain the automatic rating.

TABLE 2: SUMMARY OF THE RULES FOR DETERMINING THE AUTOMATIC RATING.

Z-SCORE	RATING
$z_i > 1$	A+
$0 < z_i \leq 1$	A-
$-1 < z_i \leq 0$	B+
$z_i \leq -1$	B-

The automatic rating is then refined by identifying the 10 % worst performers in each pillar (E/S/G) and downgrading them to a rating lower than their automatic rating. Indeed, the construction of the ESG score allows a country to have very different scores in each pillar, and still perform relatively well overall. By identifying and downgrading the worst performers in each pillar, we ensure that these countries are not rewarded for their extremely poor performance in one of the pillars. It also incorporates an absolute measure into the relative scores, as these countries are the worst performers in both relative and absolute terms. Table 3 illustrates this process.

As a result, 34 countries were flagged for downgrade. However, only 20 countries were downgraded, as the other 14 countries had already been excluded (see section 5 Exclusion principles below).

SUBNATIONAL GOVERNMENTS

Subnational governments (such as but not limited to municipalities, cantons, provinces, or states) are ranked one level below its country level. The main reason for this is the lack of information and data availability, which leads to a cautious approach.

TABLE 3: ADJUSTMENT OF AUTOMATIC RATING TO FINAL RATING

	ESG SCORE (difference to the mean)			
	Below -1 standard deviation	Below mean	Above mean	Above +1 standard deviation
Automatic ESG Country Rating	B-	B+	A-	A+
Downgrade if amongst worst ESG scores	B-	B-	B+	A-
Exclusion	C	C	C	C

5. Exclusion principles

Similar to companies, countries are subject to exclusion principles. This occurs when the country's situation and institutional framework are evaluated to be incompatible with the key sustainability principles defined in this methodology. This is assessed on three dimensions: international sanctions, an alarming human rights situation, and non-ratification of key treaties on non-conventional weapons.

Exclusions outweigh a country's performance in the ESG score. This means that breaches of the minimum requirements set by the exclusion principles cannot be offset by with better performance on the indicators covered by the environmental, social and governance pillars.

The following sections provide details on three exclusions principles that are considered in the current version of the Country Rating.

5.1 COUNTRIES SUBJECT TO INTERNATIONAL SANCTIONS

This methodology complies with international sanctions, as defined by the UN Security Council and in line with the Swiss SECO sanctions [18]. This means that countries subject to such sanctions are excluded. International sanctions are usually imposed to ensure respect for public international law and, in particular, respect for fundamental human rights. In this context, countries that are subject to special procedures of the Human Rights Council (HRC) are also excluded. Special procedures of the HRC include a country mandate, which is held by a Special Rapporteur on the situation of human rights in the country. Special Rapporteurs are appointed by a resolution of the HRC.

In 2023, 26 states were under international sanctions, including 14 under special procedures of the HRC [19].

5.2 COUNTRIES WITH AN ALARMING HUMAN RIGHTS SITUATION

In addition to existing sanction regimes, Ethos has decided to exclude countries where the human rights situation is particularly alarming but where no international sanctions or procedures are in place. Indeed, international sanctions take time to implement and depend on multilateralism, where different interests have to find a consensus. In the meantime, civilians may be exposed to human rights violations. Ethos therefore adopts a proactive approach by identifying countries where serious human rights violations have been identified and documented, even in the absence of international sanctions.

To this end, Ethos uses the Human Rights and Rule of Law indicator of the Fragile States Index developed by the Fund for Peace (see section 2.2.1 Human Rights Performance). The Human Rights and Rule of Law indicator takes into account the relationship between the state and its population to the extent that fundamental human rights are protected and freedoms are observed and respected. The indicator can be scored from 0 to 10, with a higher the score indicating a more alarming the situation is in terms of the protection and respect of human rights.

For the Fragile States Index, a country's situation is considered to be on high alert when the index score is equal or above 100/120 (83%)[13]. Applying this threshold to the Human Rights indicator, a score of 8.3 is the threshold for the human rights situation to be considered alarming. Any country scoring 8.3 or higher on this indicator is therefore excluded by Ethos. Any country scoring below 8.3 is not automatically excluded for this reason unless international sanctions have been imposed.

As might be expected, this indicator is strongly aligned with international sanctions. Of the 15 countries with a score of 8.3 or higher on this indicator, 10 are already excluded due to international sanctions.

[13] The Fragile States Index is composed of 12 indicators, each evaluated between 0 and 10. The aggregation of these indicators leads to a score going from 0 to 120.

5.3 NON-RATIFICATION OF KEY INTERNATIONAL TREATIES ON NON-CONVENTIONAL WEAPONS

As part of its Charter, Ethos excludes all non-conventional weapons. Non-conventional weapons refer to the production of weapons and related equipment that are either prohibited by the main international conventions and in the Swiss Federal Act on War Material (WMA) or that do not respect the fundamental principles of international humanitarian law. These are mainly chemical, biological, and nuclear weapons, as well as cluster munitions, anti-personnel mines, and depleted uranium ammunition. In line with this principle, this methodology examines the signatory status of the main international treaties on Weapons of Mass Destruction (WMD)[20]. Specifically, three multilateral WMD treaties are considered:

- The Treaty on the Non-Proliferation of Nuclear Weapons (NPT)[21];
- The Biological Weapons Convention (BWC)[22];
- The Chemical Weapons Convention (CWC)[23].

Any country that has not ratified one of these treaties is excluded according to Ethos' principles. In 2023, 13 countries were excluded for this reason.

These three treaties do not cover all non-conventional weapons as defined by international humanitarian law and the Swiss Federal Act on War Material. Other important international treaties on non-conventional weapons could have been considered as part of the exclusion principles, in particular the Convention on Cluster Munitions (CCM) and the Ottawa Treaty (i.e. the Mine Ban Treaty). However, these treaties have a much lower ratification rate, and have not been acceded by some key stakeholders, including the United States, China and Russia, all permanent members of the UN Security Council. The CCM was first introduced in 2008 and prohibits the use, production, transfer and stockpiling of cluster munitions. As of 2023, 124 states are parties to the Convention. The Ottawa Treaty was established in 1997 to prohibit the use, stockpiling, production and transfer of anti-personnel mines and to ensure their destruction. As of 2023, 164 states have ratified or acceded to the treaty.

Although these treaties are crucial for regulating the production, use, transfer and stockpiling of controversial weapons, the low ratification rate may indicate a lack of consensus on the definition and scope of the regulations, hampered by the strong political interests of key stakeholders. Given the complexity of these issues, the unclear positions of these stakeholders and the lack of a broad consensus, Ethos does not consider the non-ratification of these two treaties as an exclusion criterion.

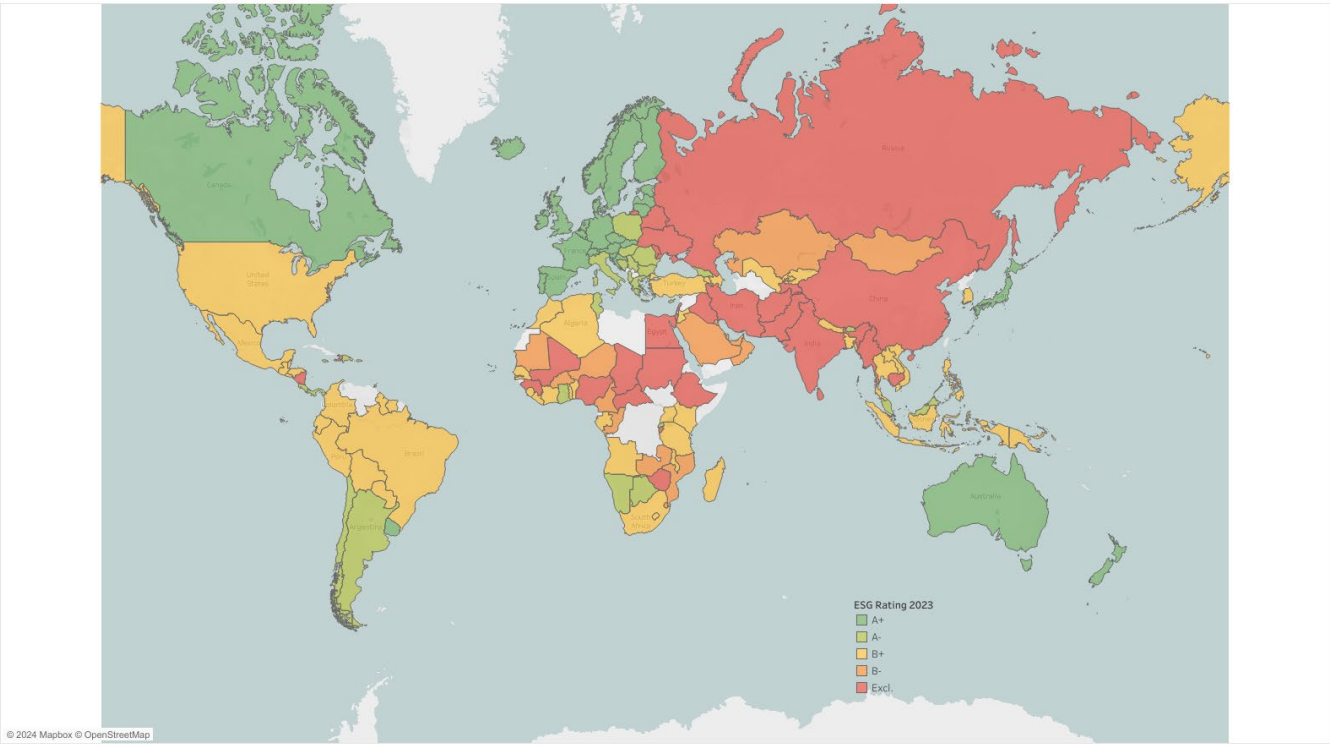
6. Overview of the 2023 Country Rating results

Countries are defined as entities that are members of the United Nations, which amounts to 193 countries [24]. The two permanent non-member observer states (Palestine and the Vatican) are also considered countries in this analysis [25], bringing the total number of potentially covered states to 195. For each of these countries, a country rating is theoretically possible, given the availability of data. Where data is unavailable or limited, the rating is not calculated. This is the case for 45 countries in the 2023 analysis. The analysis therefore resulted in 150 countries being rated.

The analysis led to the following results:

A+	28
A-	31
B+	48
B-	18
Excl.	26

OVERVIEW OF THE 2023 COUNTRY RATING RESULTS



7. Limitations and future considerations

The methodology described in this document represents an update to the previous version, which was completed in 2018. However, there are still some shortcomings that need to be recognised and addressed where a robust and reliable solution is available.

7.1 INCOME BIAS

Income bias is one of the most important shortcomings of sovereign ESG rating methodologies. Income bias manifests itself in the correlation between sovereign ESG performance and the income level of the country. Higher-income countries tend to score higher on ESG indicators than lower-income countries, and therefore receive higher ESG ratings. Achieving a higher ESG rating is not problematic, but the bias becomes apparent when ratings are used for portfolio construction. Lower ratings tend to receive lower allocations, which means that lower-income countries tend to receive less capital. This exacerbates inequality and hampers the ability of low-income countries to access finance that could help improve their situation.

This issue is complex as there are several parameters involved and the causal relationship is not clearly established. The parameters may suffer from a simultaneity bias. Higher income implies more resources available to invest in public services, basic services and policies that are captured by ESG indicators, and therefore an improved ESG score. However, the relationship may also be reversed: better underlying performance in these services may, in turn, be conducive to economic development and hence higher incomes. Research across multiple data providers has shown that the correlation is highest for governance indicators. This is partly explained by the fact that all data providers rely on the Worldwide Governance Indicators as their primary data source for governance indicators.

Several methods are used by data providers to account for this bias, including:

- Linear income trend estimation;
- Income peer group comparison;
- Dynamic weighting.

This methodology does not directly address income bias. Instead, special care has been taken in the choice of indicators to avoid including the most correlated indicators. This can be seen, for example, in the environment pillar, where high-income countries perform much worse than low-income countries. However, this approach soon reached its limits, especially for governance indicators, due to the lack of available data sources. A key priority for the next version of this assessment is to conduct additional research and develop a methodology to account for income bias.

7.2 DATA AVAILABILITY AND ROBUSTNESS

This methodology relies entirely on external data providers. Data points may be reported by the countries themselves, such as in the Sustainable Development Report and the GHG Inventory, or collected by third parties. In both cases, the data quality cannot be verified beyond the credibility of the data provider itself.

There is also often a significant time lag for government data, with some indicators last published for years prior to 2020. Particular attention has been paid to this in this methodology, with the result that only one indicator is based on data from 2019, while all others are based on data from 2021 or 2022.

Large datasets covering more than 190 countries for specific indicators are not common and tend to come from the same data providers: the World Bank, the United Nations agencies, and large NGOs or institutions. This also limits the scope for innovation to avoid certain biases as discussed above. Ethos conducts ongoing research to find the most appropriate data, which remains the most informative while ensuring a large and recent coverage.

7.3 ACCOUNTING FOR SUBNATIONAL GOVERNMENTS

For the time being, subnational governments (such as, but not limited to, municipalities, cantons, provinces, or states) are ranked one level below its country level. The main reason for this is the lack of information and data availability, which leads to a cautious approach. However, greater granularity would enable more precise investment decisions. Among others, it could allow better targeting of subnational issuers that outperform their countries, which is not possible with the current methodology. This aspect therefore represents a potential improvement.

7.4 INCORPORATING TRENDS

Finally, in this methodology, indicators provide a snapshot of a country's performance at a particular point in time. It does not provide information on progress against the indicator. A future development of this methodology is to incorporate trends into the rating's construction. The sovereign data under consideration offer a great opportunity as they provide a long history, sometimes with complete datasets dating back to the 2000s. This would make it possible to construct trends and capture a country's progress within an indicator and overall. This, in turn, would allow for a deeper qualitative assessment to focus on improving/deteriorating states, supported by quantitative data.

7.5 POTENTIAL EXCLUSION PRINCIPLES

The Ethos' Charter includes several other exclusion criteria for companies [26]. However, these criteria are more complicated to take into account when rating countries, as they relate to the country's legal framework, its policies and their implementation. Taking these topics into account requires an in-depth analysis of each country, including both quantitative indicators and a qualitative assessment of the context. This work requires resources that are not available and has therefore not been included in this version of the rating. This is one of the limitations of the current Ethos Country Rating.

8. Bibliography

[1] ASIP, 2022, «Reporting ESG - Norme pour les caisses de pension», https://www.asip.ch/fr/salle-de-presse/le-coin-des-medias/183-asip-esg-reporting-2022

[2] European Securities and Markets Authority, September 2023, «ESAs analyse the extent of voluntary disclosure of principal adverse impacts under the SFDR», https://www.esma.europa.eu/press-news/esma-news/esas-analyse-extent-voluntary-disclosure-principal-adverse-impacts-under-sfd

[3] European Commission, April 2022, C(2022) 1931 final, «Annex 1: Template principal adverse sustainability impacts statement», https://ec.europa.eu/finance/docs/level-2-measures/C_2022_1931_1_EN_annexe_acte_autonome_part1_v6.pdf

[4] United Nations, Sustainable Development Goals (2015), https://sdgs.un.org/goal

[5] Gütschow, J.; Pflüger, M. (2023): The PRIMAP-hist national historical emissions time series v2.5 (1750-2022). zenodo. doi:10.5281/zenodo.10006301

[6] The World Bank, accessed in November 2023, «Population , total», https://data.worldbank.org/indicator/SP.POP.TOTL

[7] United Nations Climate Change, Reporting Requirements on Greenhouse Gas Inventories - Annex I Parties, https://unfccc.int/process-and-meetings/transparency-and-reporting/reporting-and-review-under-the-convention/greenhouse-gas-inventories-annex-i-parties/reporting-requirements

[8] Footprint Data Foundation, York University Ecological Footprint Initiative, and Global Footprint Network: National Footprint and Biocapacity Accounts, 2023 edition. Downloaded from https://data.footprintnetwork.org

[9] Sachs, J.D., Lafortune, G., Fuller, G., Drumm, E. (2023). Implementing the SDG Stimulus. Sustainable Development Report 2023. Dublin: Dublin University Press, 2023. 10.25546/102924

[10] United Nations, Sustainable Development Goals (2015), Goal 7, https://sdgs.un.org/goals/goal7

[11] Notre Dame Global Adaptation Initiative. 2021. «ND-GAIN Country Index - Vulnerability» https://gain.nd.edu

[12] The Fund For Peace, Fragile States Index, 2023, https://fragilestatesindex.org

[13] European Commission, February 2022, COM (2022) 71: Proposal for a DIRECTIVE OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL on Corporate Sustainability Due Diligence and amending Directive (EU) 2019/1937, https://eur-lex.europa.eu/legal-content/EN/TXT/?uri

[14] Daniel Kaufmann and Aart Kraay (2023). Worldwide Governance Indicators, 2023 Update (www.govindicators.org), Accessed on 10/19/2023

[15] Facundo Alvaredo and Anthony B. Atkinson and Thomas Piketty and Emmanuel Saez. 2022. World Inequality Database. WID.world. http://wid.world/data

[16] United Nations Development Programme, Human Development Report. 2021. «Human Development Index» http://hdr.undp.org/en/composite/HDI

[17] United Nations Development Programme. 2021. «Gender Inequality Index» The Human Development Report. http://hdr.undp.org/en/content/gender-inequality-index-gii

[18] SECO – Secrétariat d'Etat à l'économie, December 2023, «Sanctions de la Suisse», https://www.seco.admin.ch/seco/fr/home/Aussenwirtschaftspolitik_Wirtschaftliche_Zusammenarbeit/Wirtschaftsbeziehungen/exportkontrollen-und-sanktionen/sanktionen-embargos/sanktionsmassnahmen.html

[19] United Nations, Human Rights Council, November 2023, «Country Mandates», https://spinternet.ohchr.org/ViewAllCountryMandates.aspx

[20] United Nations, Office for Disarmament Affairs, «Weapons of Mass Destruction», https://disarmament.unoda.org/wmd

[21] United Nations, Office for Disarmament Affairs, «Treaty on the Non-Proliferation of Nuclear Weapons (NPT)», https://disarmament.unoda.org/wmd/nuclear/npt/#:~:text=The%20NPT%20is%20a%20landmark,and%20general%20and%20complete%20disarmament

[22] United Nations, Office for Disarmament Affairs, «Biological Weapons Convention», https://disarmament.unoda.org/biological-weapons

[23] United Nations, Office for Disarmament Affairs, «Chemical Weapons», https://disarmament.unoda.org/chemical/#:~:text=The%20CWC%20opened%20for%20signature,under%20universally%20applied%20international%20control

[24] United Nations, «UN Membership», https://www.un.org/en/about-us/about-un-membership

[25] United Nations, «Non-member-States», https://www.un.org/en/about-us/non-member-states

[26] Ethos, October 2022, «Ethos Principles for Socially Responsible Investment», https://www.ethosfund.ch/sites/default/files/2022-11/2022_Principes_Ethos_pour_ISR_EN_A4_FINAL_fixed.pdf

9. Annex

9.1 SUMMARY OF INDICATORS

INDICATORS	DESCRIPTION	DATA SOURCE	YEAR OF DATA
GENERAL			
Population	Population of the country	World Bank, Population	2022
GDP	PPP-adjusted GDP in current USD	World Bank, PPP Adjusted GDP	2022
Income Group	The World Bank Group assigns the world's economies to four income groups – low, lower-middle, upper-middle, and high. It aims to reflect a country's level of development, drawing on Atlas Gross National Income (GNI) per capita as a broadly available indicator of economic capacity.	World Bank, Country and Lending Group	2023
ENVIRONMENTAL			
Emissions per Capita	Total GHG emissions including all Kyoto greenhouse gases as per UNFCCC guidelines for GHG inventory reports, divided by the national population.	PRIMAP-hist national historical emissions time series v2.5 (1750-2022), World Bank, Population	2022
Emissions per million GDP (in current USD)	Total GHG emissions including all Kyoto greenhouse gases as per UNFCCC guidelines for GHG inventory reports, divided by the PPP-adjusted GDP in current USD.	PRIMAP-hist national historical emissions time series v2.5 (1750-2022), World Bank, PPP-adjusted GDP	2022
Ecological Footprint	The Ecological Footprint per Capita represents a country's natural resources consumption required to sustain its lifestyle and is measured in global hectares.	Global Footprint Network, National Footprint and Biocapacity Accounts	2022
Level of Water Stress	Freshwater withdrawal as a proportion of available freshwater resources is the ratio between total freshwater withdrawn by all major sectors and total renewable freshwater resources, after taking into account environmental water requirements.	Sustainable Transformation Center, Sustainable Development Report 2023	2019
Access to Clean and Affordable Energy	SDG 7 aims to ensure access to affordable, reliable, sustainable, and modern energy for all. It considers indicators such as the share of population with access to electricity, the share of fossil fuels, and the share of renewable energy in total energy consumption.	Sustainable Transformation Center, Sustainable Development Report 2023	2022
Vulnerability to Climate Change	Vulnerability to Climate Change considers a country's exposure, sensitivity, and adaptive capacity relative to climate change.	ND-GAIN Country Index Vulnerability	2021

INDICATORS	DESCRIPTION	DATA SOURCE	YEAR OF DATA
SOCIAL			
Human Development Index	The Human Development Index (HDI) is based on 3 indicators (life expectancy, education and per capita income).	UNDP, Human Development Index (HDI)	2021
Gender Inequality Index	The Gender Inequality Index (GII) aims to provide insights into gender disparities between women and men on three dimensions: reproductive health, empowerment, and the labour market.	UNDP, Gender Inequality Index (GII)	2021
Income inequality: Top 10 % to Bottom 50 % Ratio	The top 10 % to bottom 50 % average income gap is the ratio between the income shares of the top 10 % and the bottom 50 %. It measures the average income difference between the poorest half and the highest earners within a population.	World Inequality Lab, World Inequality Database	2022
Human Rights Performance	The Human Rights and Rule of Law Indicator considers the relationship between the state and its population insofar as fundamental human rights are protected and freedoms are observed and respected.	Fund for Peace, Fragile State Index	2023
Voice & Accountability	Voice and Accountability captures perceptions of the extent to which a country's citizens are able to participate in selecting their government, as well as freedom of expression, freedom of association, and a free media.	World Bank, Worldwide Governance Indicators	2021
GOVERNANCE			
Control of Corruption	Control of Corruption captures perceptions of the extent to which public power is exercised for private gain, including both petty and grand forms of corruption, as well as «capture» of the state by elites and private interests.	World Bank, Worldwide Governance Indicators	2021
Political Stability	Political Stability and Absence of Violence/Terrorism measures perceptions of the likelihood of political instability and/or politically motivated violence, including terrorism.	World Bank, Worldwide Governance Indicators	2021
Government Effectiveness	Government Effectiveness captures perceptions of the quality of public services, the quality of the civil service and the degree of its independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government's commitment to such policies.	World Bank, Worldwide Governance Indicators	2021
Regulatory Quality	Regulatory Quality captures perceptions of the ability of the government to formulate and implement sound policies and regulations that permit and promote private sector development.	World Bank, Worldwide Governance Indicators	2021

INDICATORS	DESCRIPTION	DATA SOURCE	YEAR OF DATA
Rule of Law	Rule of Law captures perceptions of the extent to which agents have confidence in and abide by the rules of society, and in particular the quality of contract enforcement, property rights, the police, and the courts, as well as the likelihood of crime and violence.	World Bank, Worldwide Governance Indicators	2021

Headquarter
Place de Pont-Rouge 1
P.O. Box 1051
1211 Geneva 26

Zurich Office
Glockengasse 18
8001 Zurich

info@ethosfund.ch
www.ethosfund.ch
T +41 58 201 89 89