eastspring investments

A member of Prudential plc (UK)

MULTI ASSET SOLUTIONS

# ESG GOVERNMENT BOND SCORECARD – WHITEPAPER

By Colin Graham, Mary Nicola and Mitchell Tan

eastspring investments

A member of Prudential plc (UK)

# FOREWORD

Responsible Investment (RI) is an approach to investing that aims to incorporate environmental, social and governance (ESG) factors into investment decisions to better manage risk, and generate sustainable, long-term returns.

At Eastspring Investments (Eastspring), we recognise the importance of RI and integrates ESG considerations in all our investment processes. A healthy environment, a prosperous society and flourishing communities are in our clients' long-term interests – and in ours.

Our Multi Asset Solutions (MAS) team believes that governments are in the best position to set policy to achieve Sustainable Development Goals and can have the greatest impact on ESG challenges. However, the scorecards in the market are currently largely focused on corporates.

As such, we have designed and developed the Eastspring MAS ESG Government Bond Scorecard which incorporates a number of unique features to help inform us and guide our clients' government bond investments.

Our Scorecard shows, that whilst advanced economies enjoy higher ESG scores in general, a number of emerging economies are making good progress on the ESG front. If this continues, our methodology suggests this could lead to better credit ratings and lower credit default swap spreads.

We will be updating our Scorecard annually and look forward to sharing our findings with you.

**Colin Graham**
Chief Investment Officer
Multi Asset Solutions

# INTRODUCTION

**With global RI assets under management growing year-on-year, it is apparent that investors and clients alike are increasingly cognisant of the ESG risks and opportunities available, as well as the impact on long-term returns.**

There are several motives for large institutional investors, such as Eastspring Investments, to integrate ESG factors into investment decisions. Much evidence has emerged in favour of RI. The University of Oxford's meta-study proved that, overwhelmingly, good sustainability practices positively influence stock prices, lower the cost of capital, and result in better operational performance[1]. Similarly, a study by Umea University showed that there is a statistically significant negative relationship between high ESG/CSR (Corporate Social Responsibility) performance and share price volatility[2].

Ultimately, we are accountable to a large base of beneficiaries, and it is important to align fiduciary duty with the values and priorities of these beneficiaries. Changing demographics and client demand have also advanced the ESG investing agenda – for instance, millennials are twice as likely to invest in companies or funds with social and environmental objectives[3]. This is especially relevant since 35 percent of Asia's wealth will be transferred to millennials in the next five to seven years – the highest rate of change in any region[4].

For us in Asia, there is a particularly strong case for responsible investing and considering ESG factors. The region will be especially hard-hit by climate change impacts. It will be most affected by heat and precipitation extremes, with stronger warming in higher latitudes, and significant increases in the frequency and intensity of heavy rainfall events in Southeast Asia[5]. Most of Asia's economic centres are located on coastlines, with 410 million urban dwellers at risk of coastal flooding by 2025[6]. Asia's growing population, coupled with shrinking water availability, could threaten regional food and water security. Furthermore, poor environmental management and pollution control could have a dire impact on health. Seven million people die prematurely from air pollution per annum, and 96 out of the top 100 most polluted cities in the world are located in Asia[7].

As evidenced in disasters such as the Foxconn suicides and the Rana Plaza collapse, poor workplace conditions, unethical business practices, and corporate corruption can have a long-lasting impact on communities and increase corporate reputational risks. Given Asia's position as the world's manufacturing and production hub, it is essential that we address this and engage with companies to ensure that supply chains are free of exploitation and in line with global standards[8].

Issues surrounding diversity and gender parity are also especially relevant in Asia – a region historically characterised by male-dominated boardrooms. The International Labour Organisation (ILO) warned that business growth in Asia could be severely stunted if companies here do not recruit or promote more women[9]. China alone could stand to see a $2.5 trillion increase in its gross domestic product by 2025 if it attained gender parity[10].

The region also faces a strong regulatory push towards better, mandatory ESG disclosures, with a steady growth in the number of national Stewardship Codes and similar initiatives. Japan, Malaysia, Taiwan, Hong Kong and Singapore are a few of the countries that have introduced Stewardship Codes on a 'Comply or Explain' basis. China – the world's largest carbon emitter[11] -- has mandated that all listed companies and bond issuers must regularly disclose environmental risks associated with their businesses[12].

Eastspring's Multi Asset Solutions (MAS) team acknowledges the importance of ESG issues and is committed to applying a holistic approach by incorporating material risks as part of research and investment decision-making processes.

Ample research on corporates regarding their progress on environmental, social and governance factors is available – allowing investors to track company and sector progress on several material

issues, such as carbon footprint, labour issues, and corporate governance. In contrast, a similar assessment for governments can be arguably too politically sensitive and difficult to find. The ones that do exist are insufficient for our needs.

We believe that governments are best positioned to set policies that improve the ESG in their country – via legislation and regulations, governmental spending, and investments. In some ways, we believe that governments should be more influential and proactive than corporates in setting the ESG agenda.

Despite plentiful public data, there has been limited resources available to evaluate governments' ESG performance. In response, the MAS team has leveraged on internal research capabilities to create a proprietary Government Bond scorecard best aligned to our responsible investment philosophy and beliefs and our ESG fund's objectives.

Sources: [1]From the Stockholder to the Stakeholder: How Sustainability Can Drive Financial Outperformance. University of Oxford and Arabesque Partners, September 2014. [2]The Effect of ESG Performance on Share Price Volatility, Umea University School of Business, Economics and Statistics, 2018. [3]Millennials Drive Growth in Sustainable Investing, Morgan Stanley, 2017. [4]Asia's Young Rich and the Challenge for Private Banks, Financial Times, 2018. [5]A Region at Risk – The Human Dimensions of Climate Change in Asia and the Pacific, Asian Development Bank, 2017. [6]Ibid. [7]The world's top 100 most polluted cities in 2018, CNN, 6 March 2019. [8]Are ASEAN Supply Chains Vulnerable to Lag in Adoption of ESG?, HSBC, 18 September 2018. [9]The Global Gender Gap Report 2017, World Economic Forum, 2 November 2017. [10]The Power of Parity: How Advancing Women's Equality Can Add $12 trillion to Global Growth, McKinsey Global Institute, September 2015. [11]China Emits More Carbon Dioxide Than The U.S. and EU Combined, Forbes, 1 July 2018. [12]Authorities Promote Mandatory Environmental Disclosure as Listed Companies Fail Test, China Daily, 13 June 2017.

eastspring investments

A member of Prudential plc (UK)

# EASTSPRING MAS ESG GOVERNMENT BOND SCORECARD

**The Eastspring MAS ESG Government Bond Scorecard is a proprietary rating framework used to assess countries' exposure to, and management of, ESG risks.**

**We believe that governments, via policy-making and legislation, have the largest influence on 'E', 'S' and 'G' measures in individual countries. As such, we have identified 13 ESG indicators we consider to be crucial in our holistic evaluation of government bonds.**

Whilst other scorecards and rating systems for government bonds are commercially available, our Scorecard has three differentiating factors:

## 1. Equal Weighting of 'E', 'S' and 'G' Pillars

We believe that environmental, social and governance factors are equally important and should, therefore, be weighted accordingly.

We recognise that advanced and emerging economies are at different stages of their development. Our approach reduces the unfair advantage which advanced economies may have if certain factors, such as governance, are given greater emphasis.

Furthermore, we feel that governments should be held equally accountable across environmental, social and governance factors as they have a significant role in spearheading laws and initiatives that lead to environmental and social progress.

## 2. Improvement Score

We believe that a government's efforts to improve its country's ESG framework should be acknowledged and featured in the scoring. At the same time, it is also important to be aware of countries which may be regressing on the ESG front. As such, we have included an Improvement Score which measures the momentum of change over a 3-year period across all three 'E', 'S' and 'G' pillars.

Our approach again considers that advanced and emerging economies are at different stages of industrialisation. Hence their starting bases and pace of improvement will be different.

## 3. Focused Universe

Our Scorecard covers 43 countries in both

### ENVIRONMENTAL INDICATORS

- Yale Environmental Protection Index
- Natural Resources
- Energy
- Air and Climate

### SOCIAL INDICATORS

- Human Capital Index
- Innovation and Competitiveness
- Gender
- Access to Infrastructure and Services
- Equality and Equity in Society

### GOVERNANCE INDICATORS

- Corruption Perceptions Index
- World Justice Project - Rule of Law Index
- Political Stability
- Progress on Sustainable Development Goals

advanced and emerging economies, which comprises a smaller universe compared to other commercially available scorecards.

We have deliberately focused on government bond markets which have sufficient breadth and depth, as well as on economies where recent and robust data is available. As such, our scoring aims to be more than a purely academic exercise but seeks to provide practicable inputs for investors.

## ESG INDICATORS

We have used 13 ESG indicators in our Scorecard. In the selection of the indicators and sub-indicators, we have tried to ensure that each captures unique elements of a country's ESG framework in order to avoid double counting. The breadth of our indicators also aims to reduce any inherent bias in our analysis. A full list of the indicators and sub-indicators can be found in Appendix A.

### Environmental Indicators

Governments are increasingly being scrutinised and held accountable – not only for their management of scarce resources, environmental performance, and pollution control measures; but also, for their contribution (or lack thereof) towards climate change mitigation and adaptation.

For instance, in 2018, the Dutch Court of Appeals upheld a ruling in favour of a citizens' climate-change group that filed a lawsuit against the government – citing that the state's legal duty of care for its citizens mandates more stringent measures to protect the country from the impact of climate change. The Dutch Government must now take measures to cut domestic greenhouse gas emissions to at least 25% below 1990 levels by 2020[1].

Given the global, transboundary nature of many environmental problems, it is essential that governments take the lead to improve the environment and their citizens' holistic quality of life. As such, we assess governments on their performance across a range of environmental factors including, but not limited to:

- **Yale Environmental Performance Index:** A government's management of the environmental health and ecosystem vitality of its country, mapped against its environmental policy goals;
- **Natural Resources:** A country's mineral depletion, change in forest cover and water risk;
- **Energy:** A country's levels of renewable energy, energy intensity and energy security;
- **Air and Climate:** A country's levels of carbon emissions and its progress towards its Nationally Determined Contributions (NDCs) as part of the Paris Climate Agreement.

### Social Indicators

Governments play a crucial role in the development and implementation of sound social policies that ensure an adequate standard of living for their citizens. Governments should be held accountable for providing necessary infrastructure and services to combat societal inequality and commit to the capacity development of their workforce.

This is especially pertinent as we enter the 'Fourth Industrial Revolution' – characterised by emerging technology breakthroughs in the fields of robotics, artificial intelligence, the Internet of Things (IOT), decentralisation and digitisation, amongst others. The World Economic Forum (WEF) suggests that these technological changes are drivers for economic growth, and will have a profound impact on governments, corporates, and society at large.

As such, we evaluate governments on their social policies and ability to ensure social inclusion and a higher standard of living for their citizens, especially within the context of such rapid technological change. The Social Indicators in our Scorecard include:

**Global Human Capital Index:** A government's commitment to the capacity development of its workforce and a society well-equipped to face new challenges – measuring education, human capital deployment, and development plans;

**Innovation and Competitiveness:** A country's competitiveness – in terms of technological readiness and innovation – and investments into Research & Development, as well as ease of doing business;

**Gender:** A country's institutional structures and legislation that impacts female participation in productive activities/labour, and their access to resources – as well as laws that protect the rights of women and girls within society;

**Equality and Equity in Society:** The levels of income inequality and child labour participation rates within a country, as well as the process of ratifying the 18 Human Rights Treaties;

**Infrastructure and Services:** The level of access to necessary social and physical infrastructure in a country – focusing primarily on the accessibility and quality of healthcare systems, as well as investment infrastructure in energy, telecommunications and transportation.

## Governance Indicators

Well-governed countries – characterised by transparent decision-making processes, low levels of corruption, and a sound rule of law – are crucial in ensuring political stability and safety for their citizens. Increased levels of corruption, for example, have been accompanied by a decline in political and civil rights in some countries, as well as weakened government accountability.

Good governance structures and processes influence the management of environmental, social and institutional risks that countries face.

As such, we assess not only the strength of the institutions within a country, but also the government's ability to deliver on global commitments, such as the Sustainable Development Goals (SDGs). The Governance Indicators in our Scorecard include:

**Corruption Perceptions Index:** The perceived levels of public sector corruption within the countries, according to experts and business people – assessing various factors, such as levels of transparency, accountability, diversion of public funds, state capture, presence of excessive red-tape increasing opportunities for corruption, and legal protection for whistle-blowers, amongst others;

**Rule of Law Index:** The rule of law adherence in a country, measured by eight factors – constraints on government powers, absence of corruption, open government, protection of fundamental rights, order and security, regulatory enforcement, levels of civil justice and criminal justice;

**Political Stability:** Measures the level of political stability and the absence of violence in a country – this is pivotal, as political stability and economic growth are inextricably linked;

**Progress on the Sustainable Development Goals[2]:** Measures a country's progress to the best possible outcome across the 17 SDGs, which includes goals covering all 'E', 'S', and 'G' pillars.

## OUR FINDINGS

Norway achieved the highest Overall Country Score based on our methodology. Besides providing its people with a politically stable economy with low corruption and a high standard of living, Norway also has a high usage of renewable energy and low carbon footprint. At the same time, Norway's Government Pension Fund Global has a strong focus on governance and sustainability issues in its investments.

Our Scorecard shows that the emerging economies are ranked lower as greater reliance on manufacturing tends to result in lower Environmental Scores. That said, the relatively high rankings of selected emerging economies may surprise investors. The Czech Republic, for example, is ranked 9th in our Scorecard.

### Emerging economies making progress

Investors may also want to pay attention to a number of emerging economies that are making progress on the ESG front.

Our Scorecard shows that China ranked highest in terms of the Improvement Score (See Fig. 1), with the largest contribution coming from the Environmental Score. This is in line with the Chinese government's efforts in recent years to reduce the number of coal-fired power stations and create sustainable development zones in Shenzhen, Guilin and Taiyuan. Our Scorecard also captured the stronger regulatory framework which the Chinese government has put in place with the set-up of a new Ministry of Ecology and Environment, a five-year Air Pollution Action Plan as well as funding to finance the transition to a greener economy through green bond issues and collection of environmental taxes.

Indonesia also scored well on the Improvement Score as the world's largest palm oil producer has taken positive steps towards climate change by imposing a three-year freeze on new palm oil concession permits. (See Fig.1).

### Better Overall Country Scores correlate to stronger bond metrics

Importantly, we find that the better Overall Country Scores from our Scorecard are positively correlated to higher credit ratings (See Fig.2) and lower Credit Default Swap (CDS) spreads (See Fig.3).

## CHALLENGES

We have relied on publicly available data from reputable institutions to reduce any potential bias in our analysis. Whilst we have made every effort to use the most recent data in our scoring, this was not always possible due to the low frequency at which selected data sets were updated.

The original readings for the indicators and sub-indicators were in various formats (e.g. percentages, rankings etc). For our analysis, we converted the readings into z scores for ease of interpretation and scoring.

We were not able to conduct back-testing given the relatively short history (<10 years) and limited data points of most of the indicators. Nevertheless, our findings show that the better Overall Country Scores from our Scorecard are associated with positive bond metrics.

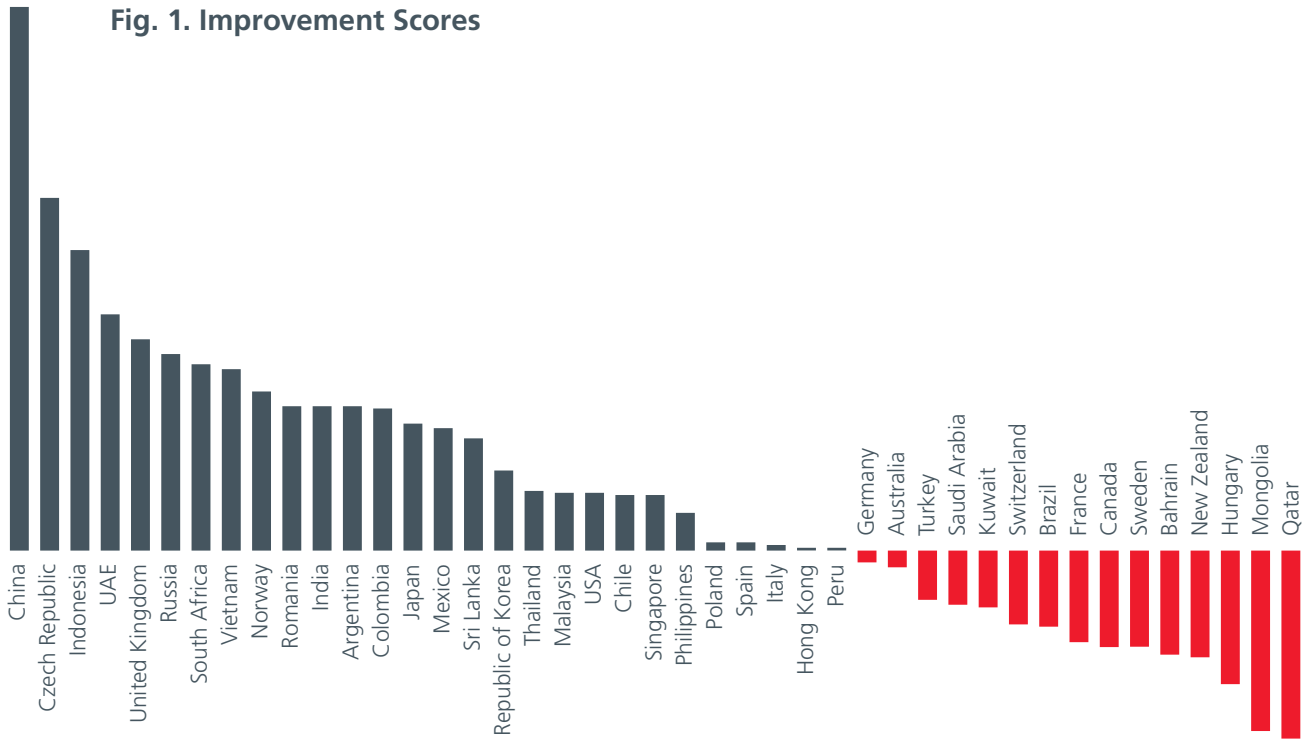
## CONCLUSIONS

The Eastspring MAS ESG Government Bond Scorecard is a tool to help investors assess governments with an ESG lens. This fills a potential gap where other commercially available scorecards and data providers currently tend to focus on corporates instead. The genesis of the Scorecard stems from the team's belief that government policy can and does have the biggest influence over ESG factors in a country.

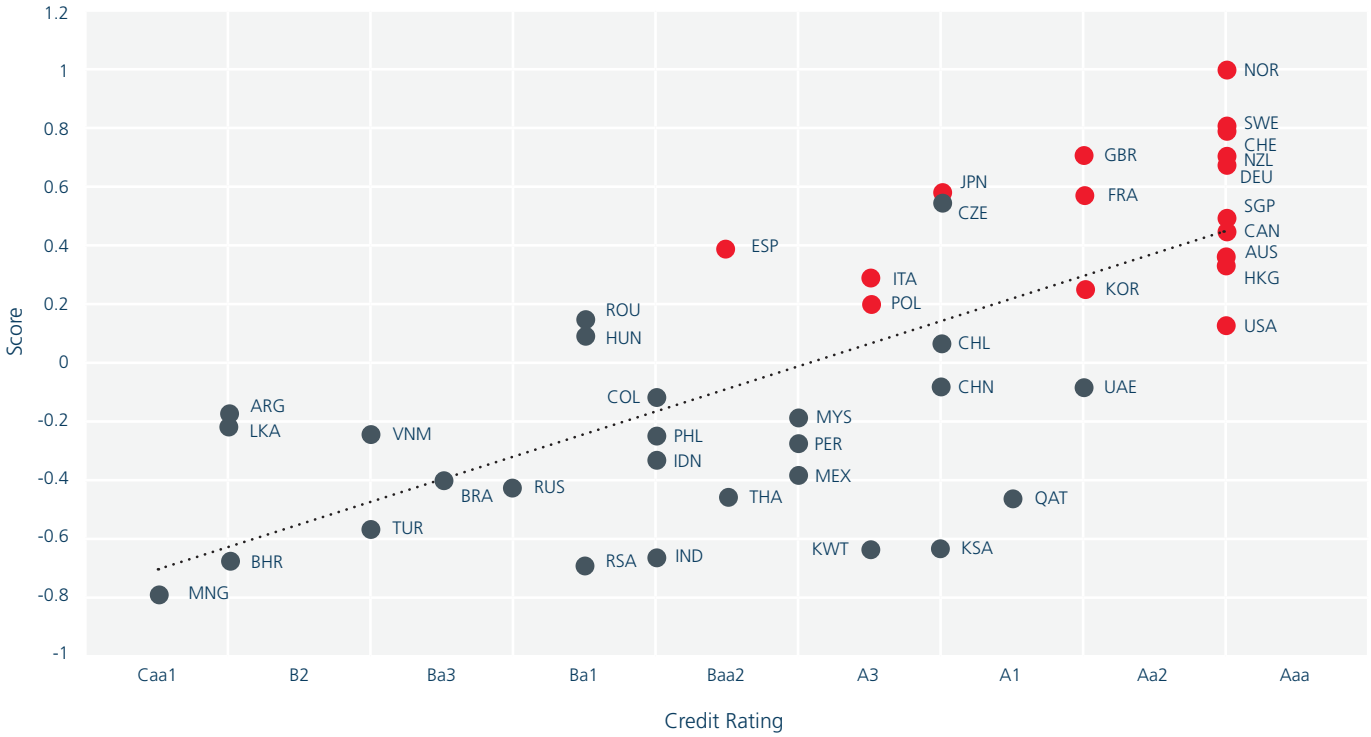
By giving equal weights to the 'E', 'S' and 'G' pillars, our Scorecard seeks to limit inherent biases found in other scorecards available in the market. The differences in rankings between our Scorecard and others can also help investors better understand what drives the different scores, allowing them to validate their assumptions and make more informed investment decisions.

Importantly, our Scorecard tracks countries that are making progress or those that are regressing on the ESG front. This can either highlight potential opportunities or serve as red flags for investors.

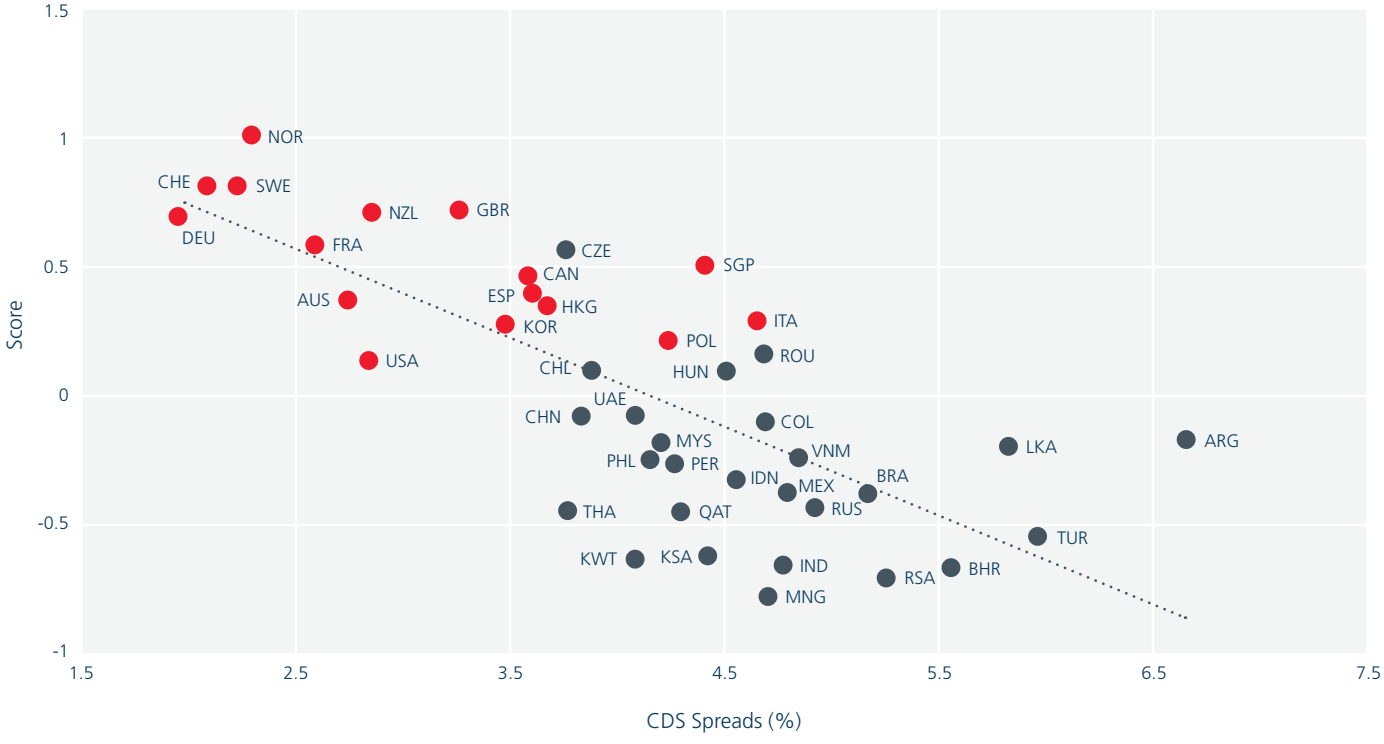
**Fig. 1. Improvement Scores**



## Fig. 2. Correlation of Overall Country Score with credit rating[4]




## Fig. 3. Correlation of Overall Country Score with credit default swap (CDS) spreads[5]



## METHODOLOGY AND SCORING

### Overview

The MAS ESG scoring methodology for Government Bonds is presented in Fig. 4.

The Overall Country Score is equally weighted between the three pillars (Environmental, Social and Governance). The score for each pillar in turn consists of the Current Score and the Improvement Score, both of which are weighted.

We believe that countries that are already performing well on the ESG front should be recognised and rewarded with a good ESG Current Score. However, our grading methodology also ensures that improvements are factored into the Overall ESG and Overall Country Score.

The Improvement Score acts as a momentum indicator to reward countries that have made significant progress on the ESG front relative to their peers. The Improvement Score captures changes in the underlying indicators and sub-indicators of a country over a three-year period.

The indicators and sub-indicators used to calculate the Current Score and Improvement Score are the same. However, in a scenario where the three-year historical data is not available for calculating an Improvement Score, the indicator/sub-indicator will be excluded from the Improvement Score calculations, although it will remain in the Current Score calculations. The weight of the excluded indicator/sub-indicator will then be distributed among the remaining indicators/sub-indicators that correspond to that Improvement Score.

### Indicators & Sub-indicators

Each pillar includes multiple indicators that contribute to the Current Score and the Improvement Score. Each indicator leading up to a Current/Improvement Score is weighted and, in turn, each sub-indicator under a particular indicator is also weighted. Some indicators are composite indicators and will not have sub-indicators. As we conduct further research, the relative importance of the sub-indicators may change to reflect our findings.

**For example, in Fig. 5, the indicators that make up the Environmental Score include:**

- Environmental Performance Index (EPI)
- Natural Resources
- Energy
- Air and Climate

In this example, each indicator carries a specific weight of the current score. The EPI is a composite indicator and does not have sub-indicators. On the other hand, the sub-indicators under the "Air and Climate" indicator include:

- Nationally Determined Contributions (NDCs) and Climate Alignment
- Carbon Emissions
- Particulate Emission Damage

These sub-indicators combined make up the weight of the 'Air and Climate' Indicator.

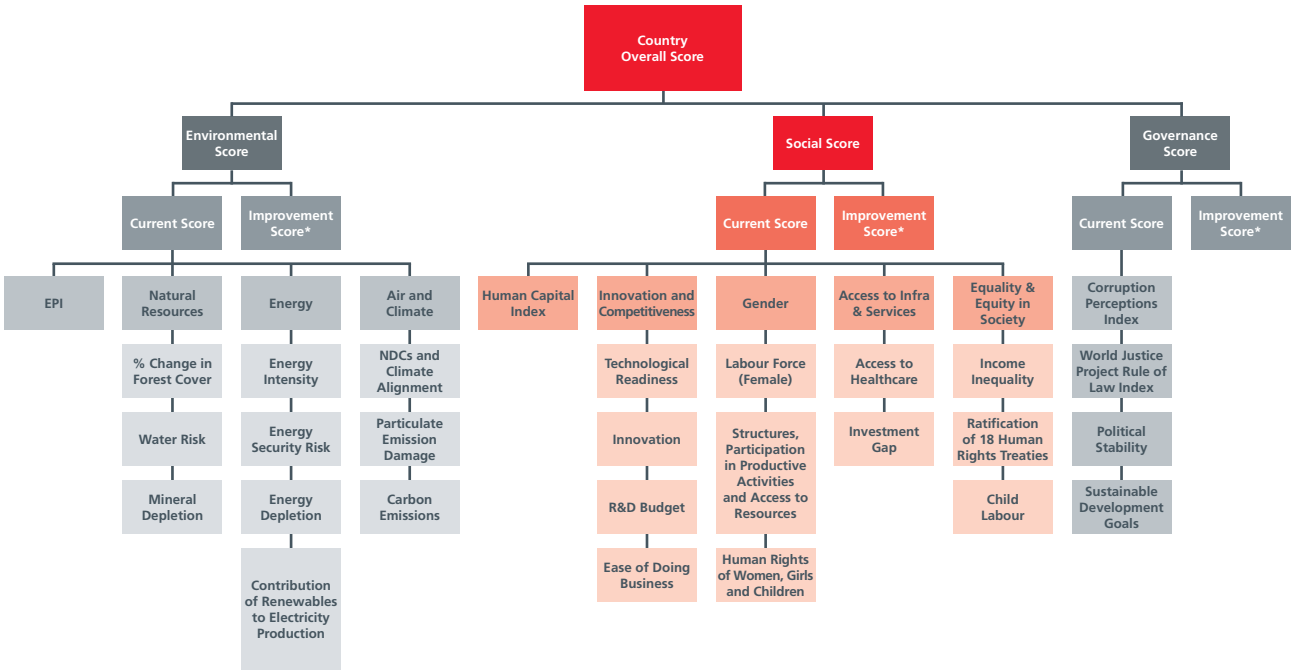
## SCORING

The Current and Improvement Scores are calculated separately using the following scoring methodology. The Current Score, x (mentioned in the methodology below) refers to the latest data point for the particular indicator or sub-indicator. For the Improvement Score, x refers to the delta between the latest data point and the reading dated three years earlier. All data points used are from publicly available sources.

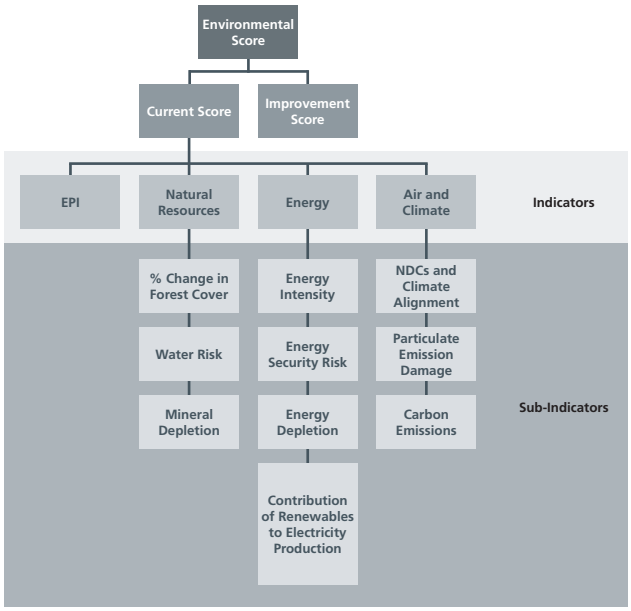
### Sub-Indicator Scoring

For each sub-indicator, the latest data points are obtained for each of the 43 countries. Each country will receive a score of -3 to 3 for each sub-indicator. The better performing a country is with respect to the sub-indicator, the more positive

## Fig. 4: Score chart with different pillars, indicators, and sub-indicators




## Fig. 5: Environmental Indicators




*Improvement Scores will follow the same breakdown and ratio of Current Scores

the score. The sub-indicator score for each country is calculated using one of the two following formulas, depending on the respective criteria:

**1. Criteria:** The lower the data point, the better performing the country.

$$ss_{ij} = \frac{\bar{x}_j - x_{ij}}{s_j}$$

**subject to** $[ss_{ij}] = -3$ and $[ss_{ij}] = 3$
**where** $ss_{ij}$ represents the score of sub-indicator $j$ of country $i$, $x_{ij}$ represents the data point of sub-indicator $j$ of country $i$, $\bar{x}_j$ represents the data mean of sub-indicator $j$, and $s_j$ represents the data (sample) standard deviation of sub-indicator $j$.

An example of a sub-indicator that will use formula 1 is carbon emissions. The lower the volume of carbon emissions, the better performing the country is with respect to the sub-indicator.

**2. Criteria:** The higher the data point, the better performing the country.

$$ss_{ij} = \frac{x_{ij} - \bar{x}_j}{s_j}$$

**subject to** $[ss_{ij}] = -3$ and $[ss_{ij}] = 3$
**where** $ss_{ij}$ represents the score of sub-indicator $j$ of country $i$, $x_{ij}$ represents the data point of sub-indicator $j$ of country $i$, $\bar{x}_j$ represents the data mean of sub-indicator $j$, and $s_j$ represents the data (sample) standard deviation of sub-indicator $j$.

An example of a sub-indicator that would use formula 2 is the contribution of renewables to electricity production. The more a country uses renewables for electricity production, the better performing the country is with respect to the sub-indicator.

The implication of both formulas is that the score of the country represents how many standard deviations they are away from the mean. If a country performs poorly with respect to the sub-indicator, but is not significantly worse than the average, it will not be heavily penalised with an extremely low score.

Similarly, if a country performs well with respect to the sub-indicator, but is not significantly more outstanding than the average, it will not be rewarded with an extremely good score.

In addition, by applying a floor and ceiling to the scoring, we ensure that a sub-indicator will not have the ability to overly skew a country's overall score.

## Indicator Scoring

If an indicator is a composite indicator and does not have sub-indicators, it is scored the same way as a sub-indicator.

If the indicator comprises of sub-indicators, the first step is to calculate the total sub-indicators' score for each country, by taking the summation of the sub-indicators' that makes up the indicator. The next step will be to apply a z scoring to the sub-indicators' total score across the countries to arrive at the indicator score. This is expressed in the following formulas:

$$st_{ik} = \sum_{j_{k=1}}^{n_k} ss_j$$

$$is_{ik} = \frac{st_{ik} - \bar{st}_k}{st}$$

**subject to** $[st_{ik}] = -3$ and $[st_{ik}] = 3$
**where** $st_{ik}$ represents the total score of sub-indicator $k$ of country $i$, $\bar{st}_{ik}$ represents the mean of the total sub-indicator $k$ of country $i$, $st_{jk}$ represents the mean of the total sub-indicator score of indicator $k$, and $s_k$ represents the (sample) standard deviation of the total sub-indicator score of indicator $k$.

## Pillar Scoring

The Current Score for each pillar is calculated by taking the average of the scores of their respective indicators. The Improvement Score is calculated in the same way.

The Current and Improvement Scores are then combined to give each country an overall Environmental, Social and Governance Score. For example, the Environmental Score will be calculated as such:

**Environmental Score =**
(weight * Environmental Current Score) +
(weight * Environmental Improvement Score)

## Country Overall Scoring

The overall score is obtained by equally weighting the Environmental score, Social score, and Governance Score:

**Country Overall Score =**

$\frac{1}{3}$ (Environmental Score + Social Score + Governance Score)

## GRADING

The countries are ranked based on their Country Pillar and Country Overall Scores. They are given an overall grade based on their percentile rank (See Fig. 6). They are also given a separate grade for 'Environmental', 'Social' and 'Governance' pillars, based on their percentile rank within each of the three pillars.

Figure 6 has been created using a normal distribution with the 68-95-99.5 rule (i.e. 68% of the countries will receive a BB to B grade, 95% of the countries will receive an A to CC grade, and 100% of the countries will receive an AA to CC grade).

### Fig. 6: Grading table

| Grade | Percentile |
|---|---|
| AA | x > 97.5% |
| A | 84% < x < = 97.5% |
| BB | 50% < x < = 84% |
| B | 16% < x < = 50% |
| CC | 2.5% < x < = 16% |
| C | x < = 2.5% |

## DATA SOURCES

All data used is obtained from publicly available sources, including:

- G20;
- The Global Innovation Index;
- International Energy Agency (IEA);
- The OECD;
- Transparency.org;
- United Nations (UN);
- The World Bank;
- The World Economic Forum;
- The World Justice Project;
- The Yale Environmental Performance Index

## APPENDIX A

## Environmental Indicators

| Indicators | Sub-Indicators | Description |
|---|---|---|
| **Environmental Performance Index** | Air Quality | Ranks 180 countries on 24 performance indicators across ten issue categories, covering environmental health and ecosystem vitality – provides a gauge at a national scale of how close countries are to established environmental policy goals. Highlights the leaders and laggards in environmental performance, gives insights on best practices, and provides guidance for countries that aspire to be leaders in sustainability. |
| | Water Quality | |
| | Heavy Metals | |
| | Biodiversity & Habitat | |
| | Forests | |
| | Fisheries | |
| | Climate & Energy | |
| | Air Pollution | |
| | Water Resources | |
| | Agriculture | |
| **Natural Resources** | % Change in Forest Cover | % change in forest cover measures the percentage change over a year of land spanning more than 0.5 hectares with trees higher than 5 metres and a canopy cover of more than 10 percent, or trees able to reach these thresholds in situ. |
| | Water Risk | Water risk identifies areas with higher exposure to water-related risks and is an aggregated measure of selected indicators from Physical Quantity, Physical Risk Quality and Regulatory and Reputational Risk. |
| | Mineral Depletion | Mineral depletion is the ratio of the value of the stock of mineral resources to the remaining reserve lifetime. It contains tin, gold, lead, zinc, iron, copper, nickel, silver, bauxite, and phosphate. |
| **Energy** | Energy Intensity | Megajoules per USD constant 2011 GDP using PPP |
| | Energy Security Risk | Index calculated in relation to average reference index measuring risk for OECD member countries |
| | Energy Depletion | Energy depletion is the ratio of the value of the stock of energy resources to the remaining reserve lifetime. It covers coal, crude oil, and natural gas. |
| | Contribution of Renewables to Electricity Production | Energy supply contributed by renewables / Total energy supply |
| **Air and Climate** | NDCs and Climate Alignment | The Climate Action Tracker tracks 32 countries covering 80% of global emissions – quantifying and evaluating climate change mitigation commitments in the form of NDCs, 2020 pledges, long-term targets and current policies, against whether they are consistent with a country's fair share effort to the Paris Agreement 1.5°C temperature goal. |
| | Particulate Emission Damage | Particulate emissions damage is caused by the exposure of a country's population to ambient concentrations of particulates measuring less than 2.5 microns in diameter (PM 2.5), ambient ozone pollution, and indoor concentrations of PM2.5 in households cooking with solid fuels. Damages are calculated as foregone labour income due to premature death. |
| | Carbon Emissions | Carbon dioxide emissions / GDP using PPP |

## Social Indicators

| Indicators | Sub-Indicators | Description |
|---|---|---|
| **Global Human Capital Index** | Human Capital and Capacity | An Index on the contribution of education and health to the productivity of next generation workers. It includes a summation of indicators covering education attainment levels, capacity development and resources, as well as levels of employment |
| | Deployment of Human Capital | |
| | Development of Human Capital | |
| **Innovation and Competitiveness** | Technological Readiness | A country's competitiveness – in terms of technological readiness and innovation – and investments into Research & Development, as well as the ease of doing business.<br><br>WEF Competitiveness Index (% away from the best) |
| | Innovation | |
| | R&D Budget | Research and Development Expenditure (% of GDP) |
| | Ease of Doing Business | Ease of Doing Business Index (Rank, starting from 1) |
| **Gender** | Labour Force (Female) | % female of total labour force |
| | Structures, Participation in Productive Activities and Access to Resources | Summation of ILO Conventions, with ratified = 1 and not ratified = 0:<br>› **100** (equal remuneration for women and men),<br>› **111** (discrimination in employment and occupation),<br>› **156** (workers with family responsibilities), and<br>› **183** (maternity protection) |
| | Human Rights of Women, Girls and Children | Summation of laws, on:<br>› Domestic abuse,<br>› Reservation of CEDAW,<br>› Laws on inheritance discrimination,<br>› Laws prohibiting child marriages |
| **Infrastructure and Services** | Healthcare | EIU Global Access to Healthcare Index – consisting of two domains of accessibility and healthcare systems, considering global policy agendas like the Sustainable Development Goals (SDGs):<br>› **Accessibility:** measures current access to prevention and treatment services across as set of disease areas: child and maternal health services; infectious diseases; and non-communicable diseases, such as cardiovascular diseases, cancer and mental health<br>› **Healthcare Systems:** measures conditions that allow good access to effective and relevant healthcare services, such as policy, institutions and infrastructure |
| | Infrastructure Investment Gap | Investment Gap, as % of GDP (investment needed-investment current trends) – Energy, Telecommunications, Transportation |
| **Equality and Equity in Society** | Income Inequality | Gini co-efficient of income inequality |
| | Ratification of 18 Human Right Treaties | The indicator refers to the expression by the State of its consent to be bound by a human rights treaty under international law. |
| | Child Labour | % of children aged between 5-17 years old involved in child labour |

## Governance Indicators

| Indicators | Sub-Indicators | Description |
|---|---|---|
| **Corruption Perceptions Index** | Control of Corruption | The Corruption Perceptions Index ranks 180 countries and territories by their perceived levels of public sector corruption, according to experts and business people. Index from 0 to 100 (0 = highly corrupted) |
| **Rule of Law Index** | Constraints on Government Powers | The World Justice Project Rule of Law Index measures rule of law adherence on more than 110,000 household and 3,000 expert surveys.<br><br>The index spans across 8 primary rule of law factors, comprising of 44 indicators. |
| | Absence of Corruption | |
| | Open Government | |
| | Fundamental Rights | |
| | Order and Security | |
| | Regulatory Enforcement | |
| | Civil Justice | |
| | Criminal Justice | |
| **Political Stability** | Political Stability and Absence of Terrorism | Percentile rank of political stability and absence of violence/ terrorism |
| **Sustainable Development Goals** | Sustainable Development Goal Index | The SDG Index describes a country's progress towards achieving the SDGs and indicates areas requiring faster progress. The difference between 100 and a country's score is, therefore, the distance in percentage that needs to be completed to achieve the 17 SDGs and its goals.<br><br>The SDG index score signifies a country's position between the worst (0) and the best or target (100) outcomes. For instance, Sweden's overall index score of 85 suggest that the country is, on average, 85% on the way to the best possible outcome across the 17 SDGs. |

## APPENDIX B

### Eastspring Investments – Responsible Investment Philosophy

We believe that the quality of corporate governance practices, and how companies and governments manage the environmental and social aspects of their operations and policies, can be material to delivering superior longer-term shareholder value.

In acknowledging the importance of ESG issues and, given they may not have been a central focus for financial markets historically, we are committed to making the assessment of ESG factors explicit for the benefit of our investment processes. The explicit incorporation of ESG issues permeates every aspect of our activities as investors – both before we make investment decisions and for the duration of that investment. As stewards of our clients' assets, we maintain a dialogue with the entities in which we invest, where feasible.

We believe that, by taking ESG issues into account, we can meet our clients' financial expectations, serve their other long-term interests, and contribute to society. With that in mind, we expect that our approach to ESG integration will evolve over time to reflect changes in business practices, structures, technology, and the law.

Furthermore, to demonstrate our commitment towards RI, Eastspring Investments is a signatory of the United Nations-supported Principles for Responsible Investment (UN PRI). These Principles drive our asset management practice, and we encourage others in the investment industry to also accept and implement them.

We are also members of several RI-focused collaborative organisations such as the Asia Corporate Governance Association (ACGA), the Asia Investor Group on Climate Change (AIGCC), and the International Corporate Governance Network (ICGN). We are supportive of the application of Stewardship Codes in markets where we operate, and are signatories to the Japan, Korea, Singapore and Taiwan Stewardship Codes.

We have a rigorous Responsible Investment Framework and Governance Structure in place to oversee the implementation of the UN PRI and our firm-wide RI standards. The Eastspring Investments Responsible Investment Advisory Committee (ERIAC) – comprising of all Chief Investment Officers across our local business units (LBU) – assists the firm's CEO and Executive Committee in providing oversight over all RI-related activities and is supported by the Eastspring Investments Responsible Investment Working Group (ERIWG). The ERIWG consists of senior representatives across the LBUs and assumes responsibility for the operational aspects of implementing the firm's RI standards and respective investment teams' ESG policies.

Sources: [1]"Dutch Court Rules that Government Must Help Stop Climate Change", Nature International Journal of Science, 10 October 2018. [2] The Sustainable Development Goals (SDGs), adopted by all member states of the United Nations in 2015, describe a universal agenda that applies to and must be implemented by all countries by 2030. [3]Eastspring Investments. April 2019. [4]Eastspring Investments. April 2019. Credit rating from Moody's. [5]Eastspring Investments. April 2019. Japan was excluded from the Figure as it is an outlier. Japan's CDS is less than 1. Taking a log of a number smaller than 1 will result in a negative number. CDS - 5-year credit default swaps and sourced from Reuters.



eastspring investments

A member of Prudential plc (UK)