October 2022

An update on our ESG scores

Templeton Global Macro Views

In this issue

In February 2018, Templeton Global Macro (TGM) released its original paper on the topic of environmental, social and governance (ESG) factors in sovereign fixed income investing. The paper (Global Macro Shifts—issue 9 [GMS-9]) explored the team's novel approach to ESG investing, which does not just measure current ESG levels as a screen, but more importantly focuses on projected changes in ESG scores that may reveal opportunities for investment as well as emerging risks to avoid. TGM had been conducting similar research on the effects of governance, social and environmental factors on macroeconomic conditions for decades. The 2018 paper was the first time those insights were publicly codified into an ESG scoring system.

Since the publication of GMS-9 in early 2018, TGM has released updates of its ESG research and scores every six months (spring and fall). These recurring updates specifically contain current scores by country, as well as projected future scores. They also contain sections on current topics in ESG and sovereign investing, along with brief case studies on specific countries. A recap of TGM's philosophy and scoring process is also included, along with an update of any refinements in our methodology. The TGM-ESG Index has actively evolved since its establishment in 2018.

In this **October 2022** publication, we once again provide updated ESG scores for the countries in our actively covered universe. We have reduced the number of countries we actively cover to 84, to account for sanctions and investability. We also provide an update on our changes to the measurement process for the "unsustainable practices," "water security" and "labor freedom" subcategories.

Our special topic in this **October 2022** update is a closer look at food insecurity, as the Russia-Ukraine war has exacerbated trends that have already been worsening for a number of years. A host of variables, from the effects of climate change to factors such as a country's institutions and income inequality, have contributed to various countries' problems with food insecurity as well as impacting their ability to deal with it. The paper concludes with a series of case studies covering ESG factors in Spain, Serbia, Thailand, Malaysia and Kenya.

A recap of TGM’s ESG philosophy and scoring process

1. **Integration:** We believe ESG is most effective as an investment tool when fully integrated into the other components of research, including traditional economic analysis and in-person visits with policymakers, which help form our core macroeconomic views on a country. ESG factors are integrated into our analysis of economic issues such as growth and inflation, and are also actively considered in the portfolio construction process.

2. **Forward-looking:** Focus is placed on forward-looking data points, rather than current ESG performance, which is strongly correlated with income levels. We believe momentum, or change in score, is the measure that truly matters for both investment performance and for where capital can be deployed to generate the most positive impact.

3. **Focus on the tails:** ESG is an important tool for identifying investment opportunities and for highlighting areas of risk. Within TGM, we are most interested in the projected “tails,” which signal major ESG shifts in either direction.

4. **Time horizon:** To benefit from ESG analysis, investors must have a sufficiently long time horizon. ESG factors guide a country’s longer-term fundamentals, but the underlying trends can be obfuscated in the short term by cyclical or temporary conditions. Conviction in an analytical view and patience to see that view come to fruition are requisites to successful ESG investing.

5. **Engagement:** Emphasis on a country’s long-term fundamentals provides an effective base from which to open communications with policymakers interested in discussing best economic practices. This dialogue is important in our efforts to evaluate ESG factors, and for government officials interested in the perspectives of private markets.

TGM-ESG Index (ESGI) methodology

The Templeton Global Macro ESG Index (TGM-ESGI) was introduced in 2018. It represents the culmination of decades of sovereign research and the formalization of long-held approaches to mapping the quality of governance, social dynamics, and the sustainability of environmental practices in countries.

The TGM-ESG Index consists of 14 ESG indicators, composed of five subcategories on governance, six on social and three on environmental topics. These indicators were designed to produce a holistic measure of the ESG situation in a country, and measure a wide range of factors such as the strength of a country’s institutions, infrastructure, demographics and social cohesion, and exposure to extreme weather risks. The indicators were selected to have low overlap with each other, as well as materiality to a country’s economic wellbeing and social welfare.

The indicators measure a topic at a high level, for instance measuring “infrastructure” as a single metric rather than incorporating different statistics for length of roads, number of harbors, quality of internet and so on. These high-level assessments enable our team of analysts to subsequently reflect nuances of underlying issues subjectively, and implicitly weight underlying topics as they view appropriate, which we consider to be one of the strengths of our approach to ESG measurement.

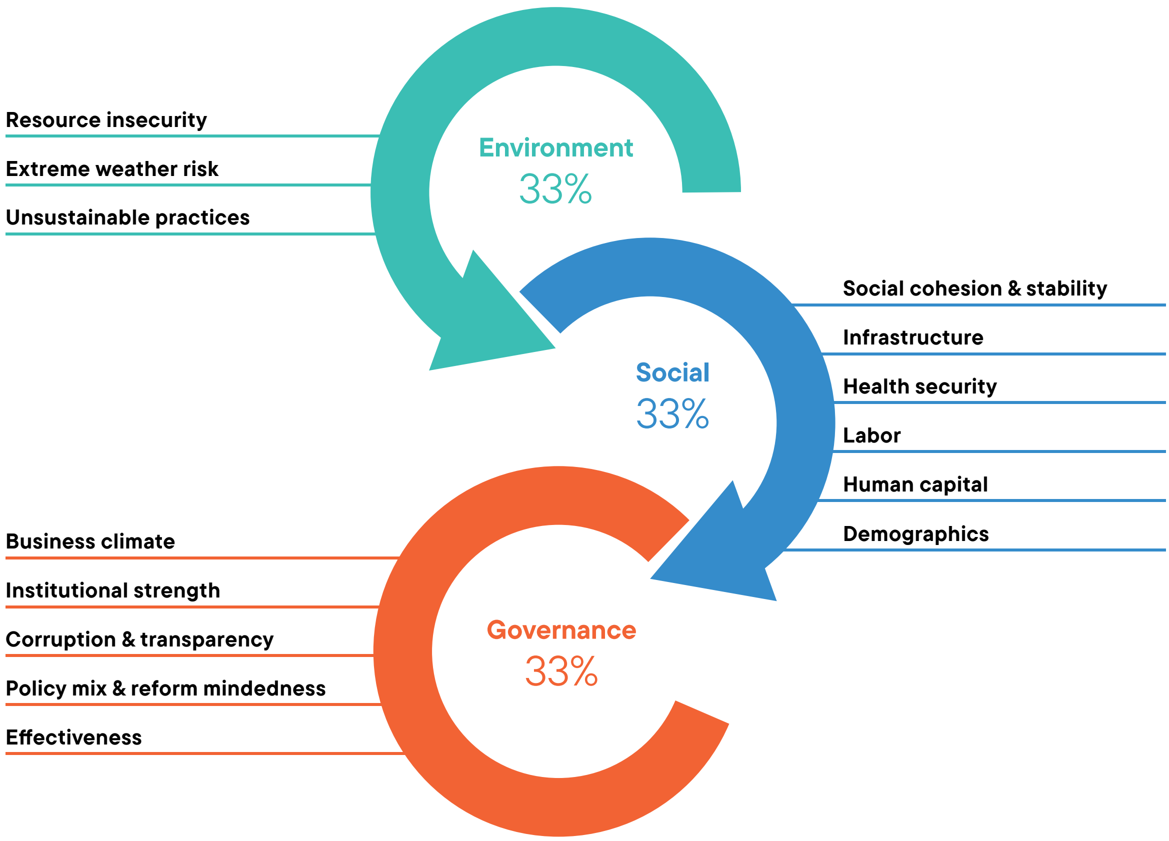
Since its first iteration, the TGM-ESGI has undergone a series of methodology changes where, for example, weights and underlying indexes have been adjusted, or new ESG categories altogether were included as research views on topics evolved. The most significant change to weightings over the past few years was the rebalancing of the index in October 2019 from 20% environmental and 40% social and governance factors to an equal-weighted 33%. In terms of changes to categories, the insertion of a Health Security subindex in 2020 was one of the most impactful. There were further tweaks to underlying data series in this round, notably adjustments to some index subcategories that are described below; however, the TGM-ESGI continues to consist of 14 subcategories, and no changes were made to the high level composition.

At every iteration of our ESG scoring, we score countries from 0 to 100 on each of the 14 ESG subcategories. Every subcategory has an underlying index that provides a base score from 0 to 100 and could be reflective of quantitative considerations (such as length of the road network in a country) or qualitative considerations (for example, polls on perceived levels of corruption in a country).

Indexes are converted from their original distributions into a 0 to 100 score using one of two methodologies. Some indexes are transformed into uniformly distributed ordinal buckets (this is true for the majority of the indexes, and in most cases preserves their original distributions), while for others the original statistical distribution is preserved (for instance, for the GINI coefficient). These scores serve as the baseline score for a country on a certain topic, and analysts can subsequently make adjustments as needed. Adjustments can be made when the underlying index does not reflect recent developments (such as government policy changes or an event), or when the analyst has a different view of the nuances involved in determining a score.

The 14 subcategory scores are tallied into a total ESG score by grouping them into their respective environmental, social and governance categories, and equal weighting those three overarching categories (namely, 33% weighting for governance, 33% for social and 33% for environmental). *(Note: The number of subcategories are subject to change. Any changes will be shared in the next semiannual publication of this report.)*

We then use our internal proprietary research as a forward-looking overlay on these baseline current scores, to assess whether we expect countries to improve or deteriorate in each of the subcategories over the next two to three years, allowing space for subjectively emphasizing different nuances within each topic. These conclusions form our projected ESG scores for each country—a key distinguishing feature of TGM's approach to ESG investing.



Scoring and index changes

In every semiannual publication we describe methodological changes we make to the TGM-ESGI. These might range from a rebalancing of index weights to changes in the underlying indexes or the way we measure ESG categories. For this version, which is effectively the ninth iteration of our index, we are making the following adjustments:

Changes to the country universe

TGM-ESGI scores are currently maintained for a total of 129 countries and territories in the world. Out of that total figure, 84 are actively tracked, typically reflecting investment coverage during this period. Moreover, a number of countries either on sanctions lists that are not investable or which do not have current outstanding debt were removed from the country universe altogether in this scoring round. This reflects a change from the last rounds, where 150+ countries in total were tracked; starting from this release, countries like Russia, Venezuela and Iran are no longer reflected. The country universe remains subject to change and is reviewed on a biannual basis.

Changes to the index composition

Wherever possible, TGM-ESGI leverages publicly available indexes produced by institutions deemed to be subject matter experts on specific ESG topics. For example, the underlying base score for Energy Security is deduced from the World Energy Council's Energy Trilemma Index. We have historically given preference to this approach over building indexes ourselves using raw data. Over the last few years, however, we have seen an increasing tendency for these indexes themselves to be volatile, either due to discontinuation or changes in methodology from the publishers. The trend has therefore been to increasingly replace indexes to which this happens with our own composite indexes that both better reflect our views and are likely to provide more score stability in the future.

We are now introducing our own subindex that emphasizes greenhouse gas emissions and further reflects countries' performance in air pollution, marine health, deforestation, biodiversity and land degradation.

Unsustainable practices

The "Unsustainable Practices" subcategory within our Environment category is one example of an index where such score volatility has occurred throughout the years, causing fluctuating environmental scores that—while having no impact on the projected changes—have complicated the discernment of absolute trends in the topic. We are now introducing our own subindex that emphasizes greenhouse gas emissions and further reflects countries' performance in air pollution, marine health, deforestation, biodiversity and land degradation. Note that this index serves as a baseline score, though our analysts may subjectively emphasize different topics within a certain subcategory or have a different view on the status of a certain topic within a country.

Due to its high weighting to greenhouse gas emissions measured on a per capita basis, there are significant shifts across the board to ESG scores arising from this change. The previous index incorporated total emissions on a country level basis. Therefore, developed countries that tend to have higher per capita emissions get somewhat penalized from this reweighting. For instance, emissions are approximately 15 metric tons per capita in Luxembourg, Australia and the United States while being around 2 metric tons per capita in Colombia and Indonesia.[1]

TGM has Built its Own Index for Unsustainable Practices to Address Benchmark Volatility

Table 1: New unsustainable practices index components

Category	Dataset	Weight
Greenhouse Gas Emissions	CO2 emissions (mt per capita)	50%
PM 2.5 Levels	WB PM2.5 air pollution	10%
Marine Health	Ocean Health Index	10%
Deforestation	Yale Environmental Performance Index Tree Cover Loss	10%
Biodiversity	Yale Environmental Performance Index Biodiversity & Habitat	10%
Land Degradation	Arable land (% of land area), 5 year growth rate	10%

Source: TGM.

Water security

Previously, water security was measured by an index that reflected water stress in countries. Arguably, this approach takes a somewhat one-dimensional view of the topic, as it effectively leaves little scope for short- to medium-term improvement in countries situated in arid climates. The index has been reweighted to incorporate water use efficiency and the degree of integrated water resources management. The main impact of this change is an increased potential impact of government policy on the overall ESG score, as we now also include how well water stress is being managed. For instance, countries like Israel, Italy, Kuwait and Malta that score low on water stress but are relatively more advanced in managing water resources now get a more balanced score.

The New Water Security Index Emphasizes Management in Addition to Availability

Table 2: New Water Security Index Components

Category	Dataset	Weight
Water stress: freshwater withdrawal/available freshwater resources	UN Water	33.3%
Water use efficiency (in US dollars per cubic meter)	UN Water	33.3%
Degree of integrated water resources management implementation	UN Water	33.3%

Source: TGM.

Labor freedom

The base index for Labor Freedom is the Heritage Foundation's Index of Economic Freedom (Labor Freedom subindex), which measures "various aspects of the legal and regulatory framework of a country's labor market, including regulations concerning minimum wages, laws inhibiting layoffs, severance requirements, and measurable regulatory restraints on hiring and hours worked."[2] The methodology for Labor Freedom has been adjusted by the Heritage Foundation—for instance, by adding in paid annual leave and associational right—and, in our view, is trying to bring some balance between worker protection and market deregulation. This causes significant changes across many countries. For example, India and Italy have seen a strong jump (from 20 to 100 and from 0 to 60, respectively), while others like Saudi Arabia have declined (from 60 to 0). We have decided to incorporate these changes and reflect them in TGM-ESGI as is.

Food insecurity

Food insecurity is an ESG theme we have been monitoring with increasing attention over recent years, as the global number of undernourished people has been on the rise since 2013. The topic itself overlaps with a variety of other ESG issues such as climate change, sociopolitical stability and immigration.[3] Exacerbating this worrying trend, one of the grimmest global consequences of Russia's invasion of Ukraine in February 2022 has been the effect on food prices.

The cost of food had already been rising prior to the war due to pandemic-related disruptions, as the lack of staffing in various stages from harvesting to processing added to the increasing burden of safety and control measures.[4] Panic buying from consumers during the pandemic also resulted in shortages of key staples. The war has further accelerated the deterioration in availability of food and thus price pressures for countries around the globe, leading to greater challenges around food insecurity.

The Russia-Ukraine war has primarily impacted the price of food in two ways. The first impact is through the direct reduction of supply. In 2019, Russia and Ukraine combined provided 23% of global wheat exports, 19% of barley, 4% of maize and 64% of sunflower oil.[5] Russia blockaded Ukraine's Black Sea ports from the beginning of the conflict and prevented the export of nearly all goods. And although Russia's agricultural products have not been sanctioned, logistical and financial challenges caused by the conflict have also resulted in delayed shipments. The second impact is through the higher cost of energy, largely spurred by sanctions on Russian exports. Oil is a component of the cost of all goods transported, including that of food, while natural gas is a critical component of nitrogen fertilizers. Russia itself is a major exporter of fertilizers and has restricted external sale of its products through the end of the year.[6] Higher input costs due to energy prices will also result in an increase in food prices.

Even if the Russia-Ukraine war were to end tomorrow and all the lost grain supply returned to the market, food security continues to be threatened by climate change and its effect on natural disasters, one of the most impactful of which is drought. The UN Biodiversity Conference COP15 in May 2022 launched a report titled "Drought in Numbers" that found a 29% increase in drought events since 2000.

In addition to the war, other factors are contributing to higher food prices. The supply-chain issues discussed earlier have improved, but continue to impact inflation broadly. The US Federal Reserve's hiking cycle, along with capital flows due to a volatile capital environment, has resulted in a strong US dollar, with currency depreciation further pressuring inflation in many countries. For food importers, weaker currencies have raised the cost of purchasing these goods from abroad. All these effects pushed food prices up 58.1% between end-2019 and peak levels in March 2022, according to the UN Food Index. Prices have since moderated to a 36.6% increase as of August.

Regions of the world will be impacted differently depending on their dependence on food imports and, more specifically, their historical dependence on Ukraine and Russia. Of course, countries that have greater reliance on the specific goods that the two countries export, such as wheat and maize, will be more affected. However, it's also important to understand the effect this will have on substitutes, such as the large increase in palm oil prices that has occurred due to its ability to replace sunflower oil. The following chart details some of the countries most dependent on Ukraine's exports of wheat. While these countries are arguably some of the most vulnerable, broadly higher prices of food impact everywhere and everyone.

Certain Countries are Disproportionately Dependent on Food Imports from Russia and Ukraine

Table 3: Dependence on Russia and Ukrainian Food Imports

	Egypt	Nigeria	Kenya	Turkey
Share of domestic supply, 2019	42.5	40.1	39.2	39.2

Source: Our World in Data.

News that Russia and Ukraine struck a deal to unblock Ukraine's ports and restart grain exports have calmed global food markets somewhat since July. The sector has also been supported by a decline in energy costs. This has resulted in a 21% moderation of the UN Food Price Index as of August, since its March peak. While this was positive news for grain supply, the future of the agreement remains uncertain, with Russia recently threatening to pull out of the deal. Ultimately, these are still two countries at war, and Moscow has little to gain from supporting Ukraine's shipments, which puts four million tons of grain on the line.[7]

Even if the Russia-Ukraine war were to end tomorrow and all the lost grain supply returned to the market, food security continues to be threatened by climate change and its effect on natural disasters, one of the most impactful of which is drought. The UN Biodiversity Conference COP15 in May 2022 launched a report titled "Drought in Numbers" that found a 29% increase in drought events since 2000.[8] Furthermore, poorer regions tend to be worse affected—44% of total global droughts in the last century occurred in Africa, with such disparity only likely to increase. Currently, the horn of Africa is undergoing its worst drought in decades, with 5.8 million individuals displaced since mid-2021 and a 70% reduction in crop production in certain parts of the region. While Africa is badly affected, it is far from the only region facing weather events: reports of record heat this summer have hit every region from Italy, France and the United Kingdom in Europe, to India and China in Asia, and the United States.

While food insecurity also exists in developed countries, the risk is greater in countries that have weaker financial ability and fiscal space to cope with higher food prices. These overwhelmingly tend to be lower income countries, many of which are still feeling the impact of the pandemic on government finances and household disposable income. The International Monetary Fund (IMF) recently found that one in eight people in sub-Saharan Africa (SSA) is expected to suffer from high malnutrition this year, an increase of almost a third since 2020, due to the combination of higher food prices and depressed incomes.[9] While the solution proposed by the IMF is for governments to increase social transfers, some countries simply do not have the financial flexibility to expense these greater outlays. Average debt in SSA rose from 42.6% of gross domestic product (GDP) in 2014 to 63.9% in 2021,[10] which, when combined with higher interest rates in the current market environment, has resulted in significantly greater debt servicing costs. Nigeria, for example, spent more on interest payments in the first four months of 2022 than it received in revenue. And neighboring Ghana is under severe pressure from investors to reduce its deficit, as its debt levels have risen to 78% of GDP as of March 2022.[11]

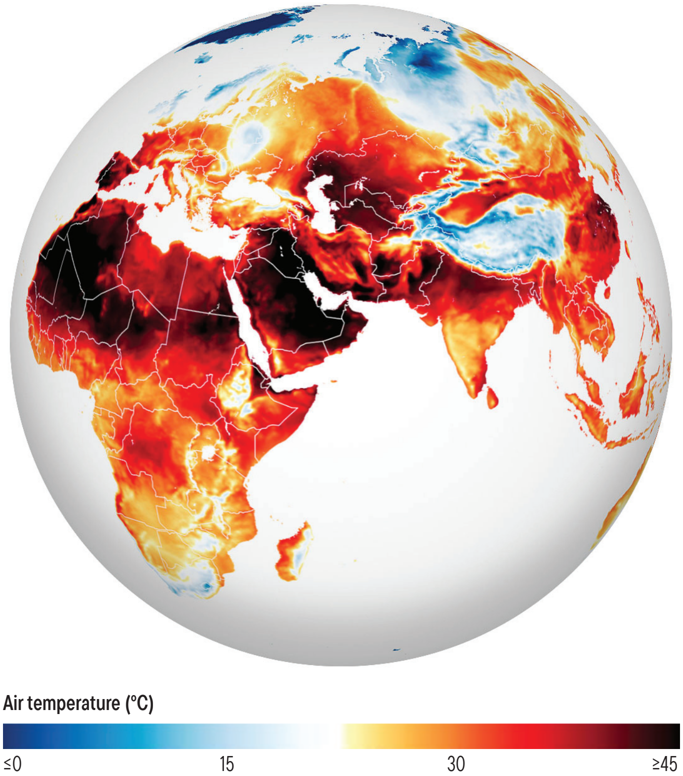
The world has seen rapid increases of food prices in the past, sometimes with significantly negative consequences. Between 2007 and 2008, the World Bank Food Price Index rose by 78% during an 18-month period. The ultimate result was higher food insecurity and, eventually, greater social unrest. The most well-known of these troubles was the Arab Spring in 2010, which activists also called the Hunger Revolution, and which ultimately spread to eight countries in the Middle East. Africa was also subject to high levels of conflict, as 14 countries experienced food-related riots between 2007 and 2008.[12] The United Nations World Food Programme found the danger of violence particularly high in political regimes where there are weak institutions, a large youth population, low levels of development, deteriorating economic conditions and high inequalities between groups.[13] The paper also found that there is a negative feedback loop, in which higher food insecurity leads to greater social instability, which in turn further reduces food security.
As investors, we oftentimes discuss ESG factors in individual terms, but it is important to remember that in the case of an issue as basic as access to food, a break in the system can lead to a spiral of increasingly negative results.

Thus while the Russia-Ukraine conflict has opened many eyes to the acuteness of the challenge, food insecurity is an issue broader than the war. Ultimately it is one of inequality in economic development, in agricultural productivity, in government capacity, and in the disparity between the countries that contribute to climate change and those that must bear the consequences. Spillover into social instability has already begun, with food price-related protests taking place in countries across the world, including Argentina, Chile, Greece, Indonesia and Tunisia.[14] We will be monitoring these developments closely.

Temperature Across the World in July 2022

Exhibit 1: Heat Map of the World

July 13, 2022



Source: NASA Earth Observatory.

Updated TGM-ESGI scores

Table 4 summarizes the TGM-ESGI scores as of September 2022, as well as the change in scores compared to March 2022. As discussed earlier in this publication, these 84 countries are a subset of the total country universe that is currently actively covered using customized overlays that reflect the analytical views of our research team.

Environmental, Social and Governance Scores by Country (TGM-ESGI)

Table 4: TGM-ESGI Scores: Current[15] by E, S and G factors

As of September 2022

	Previous TGM-ESGI Score		Current TGM-ESGI Score	Current TGM-ESGI Score by Category		
	Mar 2022	=>	Sep 2022	E	S	G
Switzerland	89	–2.7	86	81	81	96
Sweden	90	–4.4	85	83	78	94
Finland	89	–6.5	83	70	82	96
Canada	87	–5.6	81	64	83	98
Norway	89	–8.9	81	71	77	94
Hong Kong	80	0.3	80	78	68	96
Austria	89	–9.4	79	66	78	94
France	82	–2.5	79	83	69	86
New Zealand	89	–10.5	79	62	79	96
UK	84	–5.7	78	65	78	92
Singapore	81	–4.2	77	57	77	98
Lithuania	79	–2.7	76	76	68	84
Taiwan	76	0.4	76	62	74	92
Germany	83	–7.2	76	63	73	92
Ireland	85	–9.9	75	55	76	94
Slovenia	80	–5.5	75	66	77	82
Australia	82	–6.8	75	53	76	96
Latvia	77	–1.9	75	78	64	82
US	75	0.0	75	61	73	90
Belgium	81	–6.4	74	63	72	88
Spain	76	–3.6	73	66	72	80
Netherlands	80	–8.3	72	42	78	96
Portugal	75	–4.5	71	63	71	78
Czech Republic	78	–8.2	70	58	71	80
UAE	71	–1.8	69	50	72	86
Qatar	68	0.6	69	58	67	82
Japan	75	–6.6	68	42	78	86
Israel	70	–2.5	68	62	60	82
Korea	75	–7.4	68	49	73	82
Slovakia	71	–4.6	66	60	66	74
Hungary	68	–2.5	66	63	67	68
Uruguay	65	0.6	65	61	59	76
Italy	69	–4.0	65	60	68	68
Croatia	67	–3.1	64	65	64	64
Poland	70	–6.2	63	55	68	68
Malaysia	65	–3.6	61	47	63	74
Romania	62	–2.9	60	57	58	64
Chile	63	–3.3	59	34	62	82
Bahrain	59	0.0	59	48	61	68
Costa Rica	62	–3.1	59	50	58	68
Oman	56	1.5	58	50	58	66
Bulgaria	60	–2.9	58	53	60	60
Colombia	57	–1.0	56	64	47	58
Greece	58	–2.7	55	44	58	62
Panama	55	–1.0	54	57	52	54
Namibia	48	6.2	54	67	39	56
Saudi Arabia	53	0.7	54	52	48	62
Jordan	48	5.6	54	55	46	60
Brazil	47	4.9	52	67	45	44
Kazakhstan	52	–0.9	51	51	54	48
Thailand	56	–5.2	51	39	60	54
China	54	–3.8	50	36	59	54
Mexico	47	1.6	49	53	52	42
Mongolia	46	2.6	49	44	58	44
Morocco	43	6.0	48	57	38	50
Jamaica	49	–1.5	48	36	49	58
Serbia	51	–3.7	48	35	53	54
Argentina	48	–1.4	47	55	50	36
Vietnam	47	–0.1	47	36	53	52
Peru	49	–1.9	47	49	51	40
Ecuador	44	1.2	45	54	52	30

Continued on the next page

	Previous TGM-ESGI Score		Current TGM-ESGI Score	Current TGM-ESGI Score by Category		
	Mar 2022	=>	Sep 2022	E	S	G
Egypt	39	5.9	**45**	66	38	30
Indonesia	43	2.3	**45**	33	48	54
Turkey	42	1.9	**44**	40	48	44
India	40	3.6	**44**	36	40	56
Ukraine	44	–1.0	**43**	53	38	36
Dominican Republic	43	–0.4	**42**	43	41	44
Senegal	36	5.1	**41**	44	37	44
South Africa	42	–0.8	**41**	31	39	52
Ghana	38	2.4	**41**	41	34	46
El Salvador	36	3.3	**40**	41	42	36
Sri Lanka	44	-5.7	**38**	39	48	28

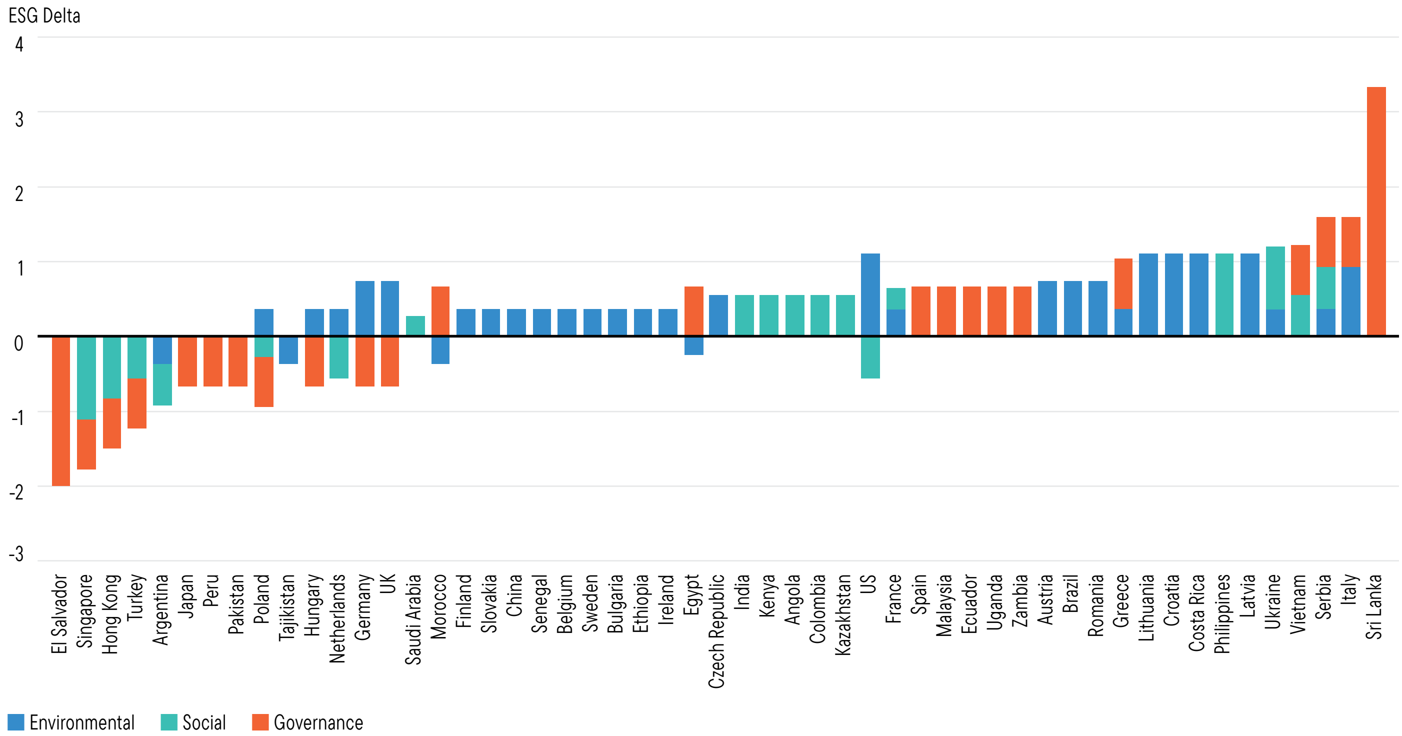
	Previous TGM-ESGI Score		Current TGM-ESGI Score	Current TGM-ESGI Score by Category		
	Mar 2022	=>	Sep 2022	E	S	G
Uganda	35	2.8	**38**	54	32	28
Kenya	36	2.1	**38**	43	38	32
Philippines	37	1.2	**38**	27	43	44
Zambia	33	1.4	**35**	51	24	28
Uzbekistan	31	3.3	**34**	34	49	20
Ethiopia	32	1.5	**34**	51	27	24
Pakistan	23	8.9	**32**	47	27	22
Tajikistan	26	5.7	**32**	43	36	16
Ivory Coast	39	–9.2	**30**	22	31	36
Angola	23	4.3	**28**	41	24	18
Mozambique	27	0.6	**28**	44	19	20
Nigeria	20	4.7	**25**	30	28	16

Source: TGM-ESGI. Our medium-term productions are for the next three years.

Exhibit 2 shifts the focus to the future, charting our projected score changes by their E, S and G components, sorted from largest total decline to largest total increase. Countries without a material projected change are not included in the chart. This looks approximately three years ahead from now, based on the assessment of our analyst team.

The breakdown of the projections into the E, S and G components yields valuable insights, showing, for example, that while the Serbian improvement is based on environmental, social and governance factors, in a number of other instances improvement or deterioration is wholly accounted for by only one of the three factors.

Exhibit 2: TGM-ESGI Scores: Projected Change
As of September 2022



Source: TGM-ESGI. Our medium-term productions are for the next two to three years (excluding countries with neutral/flat momentum). Projections are based on the Templeton Global Macro investment team's proprietary methodologies. There is no assurance that any estimate, forecast or projection will be realized.

Main index changes

There is a notable trend across the index for higher-scoring countries to tend to see their current ESG score deteriorate, while lower-scoring countries tend to see theirs improve. The main reason for this is the revised Unsustainable Practices Index, which forms 11% of the total score. As previously described, this index saw highly significant shifts compared to the previous index version due to the inclusion of emissions per capita data that, on average, favors emerging markets in our ESG calculation. We believe that this update is an appropriate reflection of ESG risks and sensitivities, in which developed countries have a lot of scope for improvement over the next years and decades as many of them move to carbon neutrality.

In 2020–21, our projected ESG scores were mostly negatively skewed since there were more countries with negative ESG momentum than positive ESG momentum. As we look ahead from here, we now see significantly more countries with positive projected changes in scores (41) than there are negative projected changes (13). For those countries with positive momentum, the average positive projected change in score is down to +0.7 points, from +0.9 in the previous two releases. For those with negative momentum, the average negative change in score of –0.9 is improved from the previous round in which it was at –1.1 (March 2022).

In the group of countries with positive projections, we see many European countries emerge with positive environmental momentum. Energy security has deteriorated as part of the fallout of the ongoing Russia-Ukraine war. This has caused an immediate deterioration in the situation. While the outlook is country specific, many are expected to find alternative sources of energy, allowing for a recovery of energy security in the medium term.

Countries with notable projected score changes

Significant changes compared to previous publications include:

- In the group of countries with positive projections, we see many European countries emerge with positive environmental momentum. Energy security has deteriorated as part of the fallout of the ongoing Russia-Ukraine war, as many European countries are dependent on Russian oil and gas, and Russia has halted all gas exports via the Nord Stream pipeline. This has caused an immediate deterioration in the situation. While the outlook is country-specific, many are expected to find alternative sources of energy, allowing for a recovery of energy security in the medium term. Some of these recoveries may, however, take more than two to three years to play out, in our view, and so extend beyond the scope of our projections.
- Indonesia has moved to neutral after years of having a consistently positive projected score. Our view here has been positive for years, mostly on reform momentum. However, we believe that the 2024 election could be more fragmented given no single personality has support or popularity equal to that of Joko Widodo or Susilo Bambang Yudhoyono.
- Sri Lanka has become one of the most significant positive improvers, as we believe its engagement with the IMF can help to achieve more economic sustainability and have a positive impact on corruption and transparency.
- South Korea has shifted from a positive +0.7 projected change to neutral. The country suffered a large corruption scandal that resulted in the resignation of its president about five years ago. There also remains a heavy reliance on “Chaebol,” or large family-run businesses that breed corruption. We had previously projected this to improve given progress in civil society’s surveillance, and we think that this improvement now has been realized. Going forward, further progress may be more difficult as there is a growing risk of power concentration in the new president's inner circle.
- Ukraine has changed to positive momentum. Given how fluid the situation remains, it is obviously hard to make any projections with high conviction, but we do believe food

security should improve as the conflict slows/stabilizes. During earlier waves of fighting, some settlements in the east were having problems securing food and other supplies, but these logistical problems have started improving and hopefully will continue to do so. Moreover, assuming the war ends or slows considerably on a two to three year time horizon, there will likely be a large push to rebuild Ukrainian infrastructure, though this process will take time.

- Mexico has shifted from being the strongest deteriorating country in the April update to neutral in this current round. Although we foresee regulatory quality remaining poor as the country's leadership favors state-owned enterprises, the ability to implement significant negative policy is constrained by the USMCA (United States-Mexico-Canada Agreement), the loss of a supermajority in Congress, the courts, and the imperative to deliver growth. Governance has thus moved to a neutral rather than deteriorating outlook. We see environmental sustainability momentum stable, partially due to methodology changes, as Mexico's emissions per capita have been on a downward trend. Risks, however, remain worth monitoring, including the government's preference for the national electricity company to the detriment of private producers. Many of these producers have been expanding the use of renewables, which means the country may fall behind its peers in terms of emission reduction.

ESG investment performance update

For several years we have been performing quantitative research into the application and use cases of ESG in portfolio construction. As we discussed in the April 2021 ESG Update, much of the market continues to emphasize ESG as a screen rather than as a forward-looking indicator of risk and opportunity. In our view, the forward-looking metrics are exactly where ESG analysis can add the most value. In the April 2021 publication, we demonstrated how a portfolio that aimed to maximize its Sharpe ratio would significantly overweight countries with projected positive momentum, while a portfolio aiming for minimum volatility would have a more balanced mix that emphasized high ESG scores.

Intuitively, it makes sense that countries experiencing positive momentum should outperform those seeing negative momentum. South Africa and Russia are two countries that have seen deteriorating social and governance situations while Indonesia since the late 1990s has democratized and made strides in many different areas, including literacy rates, female labor force participation and corruption. This difference has been reflected in financial performance.

The critical distinction between these two approaches is that high ESG scores are a mostly objective observation, and the high ESG screen can (in theory) be replicated by anyone with access to widely available data, but forward-looking momentum relies more on subjective analytical views. The forward-looking trajectory of a country needs to be assessed by research analysts who are thoroughly familiar with the internal dynamics of these countries.

Thus we have TGM-ESGI as a quantification of analyst ESG and economic views on the countries covered. For nearly five years now, the research team has systematically reflected their views on the changing situation in the countries being analyzed. This now allows us to take stock of how those predictions have played out, particularly in the financial sense.

Intuitively, it makes sense that countries experiencing positive momentum should outperform those seeing negative momentum. South Africa and Russia are two examples of countries that are widely understood to have seen deteriorating social and governance situations over the last two decades, while Indonesia since the late 1990s has democratized and made strides in many different areas, including literacy rates, female labor force participation and corruption. This difference has been reflected in financial performance; the annualized returns on the local currency bonds between December 2005 and December 2021 have been +1.5% on Russian debt, +2.0% on South African debt and +9.0% on Indonesian debt.[16]

We see the same impact on our own indexes, as shown in Exhibit 3. Since February 2018, we have maintained a series of fixed income performance indexes that reflect the performance of a set of equally weighted portfolios.[17] These portfolios are constructed from the countries in our ESG index by grouping together those with positive momentum, negative momentum, and high or low scores. We rebalance these indexes on every publication date (typically March and September).

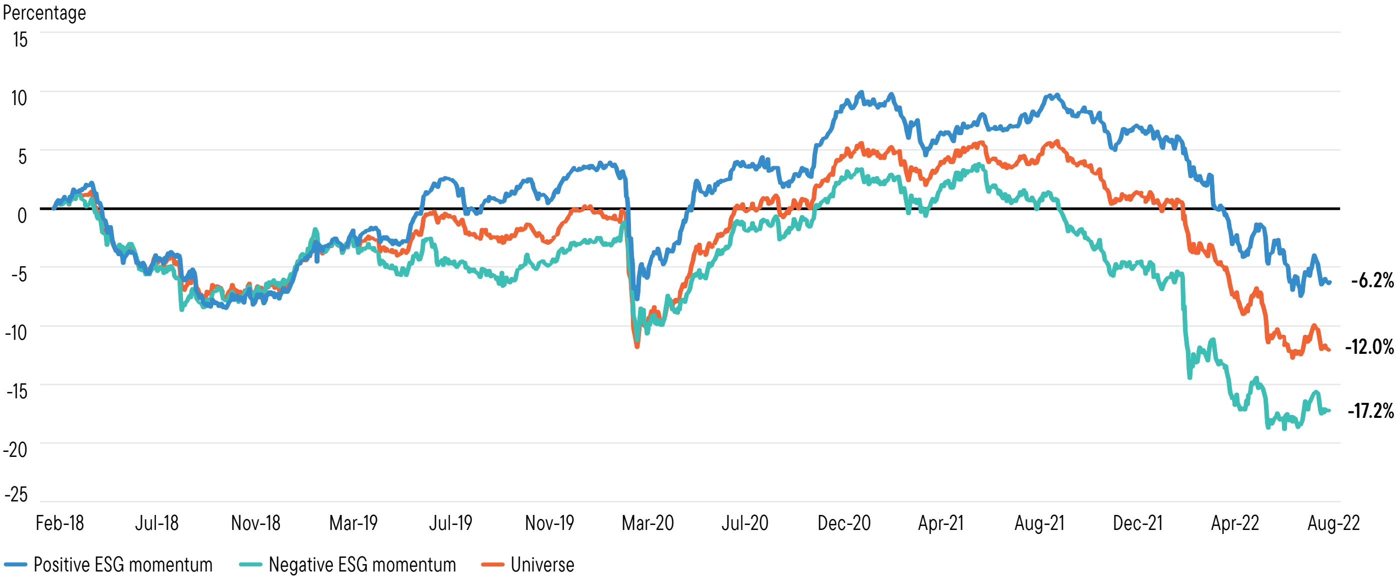
Since February 2018, positive momentum has achieved a return of –6.2%, therefore performing better than negative momentum by 1100 basis points. There are many factors at play here, including the bucket of positive momentum countries at times being more concentrated and on average more heavily weighted toward emerging market countries. Those considerations notwithstanding, the fact is that historically speaking, if one had invested in these positive momentum countries, one would have performed better than negative momentum countries by 2.3% per annum.

Previous quantitative research and publications (specifically Global Macro Views—April 2021) have outlined how a portfolio with higher ESG scores probably leads to lower volatility, while positive momentum can—if the analyst team is able to successfully predict the direction—lead to higher potential returns. In a multi-asset context, we found that approximately two-thirds in positive momentum and one-third in higher ESG scores leads to maximum Sharpe ratios.

ESG Momentum Groups

Exhibit 3: Ex-post Performance of Countries Grouped by Positive ESG Momentum vs. Negative ESG Momentum

As of September 2022



Source: TGM. Past performance is not an indicator or a guarantee of future performance. Momentum is the projected change in score. The term, "positive momentum," refers to countries that are projected to have improving ESG scores, while "negative momentum" refers to countries that are projected to have deteriorating ESG scores.

Case studies

Malaysia

Upheld conviction for former prime minister a step in the right direction on corruption

Environment

- Malaysia has utilized numerous policies to lower emissions since the 2000s, but these fragmented, command-and-control approaches have not led to systematic decarbonization. It has revised the target value to a reduction in 45% emissions intensity (versus GDP) by 2030, to 2005 levels. This new mitigation target marks increased ambition compared with the previous nationally determined contribution (NDC) in 2016, in which a 35% reduction was planned.
- Malaysia has committed to maintain 50% of land as forest cover, in line with the United Nations Sustainable Development Goals. Malaysia currently has 18.27 million hectares of forested areas, accounting for 55.3% of the country's land area.[18]

Social

- Malaysia's three primary ethnic groups are the Malay, Chinese and Indian. The current political environment reflects the large role that religion and race play, with ethnic Malays receiving a constitutionally protected status. Politicians also regularly appeal to these divides to mobilize supporters, which has worsened polarization and resulted in greater political instability.
- Management of the pandemic was bungled due to political instability, evidenced by the suspension of parliament and cabinet reshufflings (including of top health officials). Partial lockdowns with the continuation of manufacturing production resulted in high levels of cases that overwhelmed hospital infrastructure. This resulted in a large Delta wave of COVID-19 that delayed the country's ability to reopen.
- The population is aging due to declining fertility in combination with lower mortality rates, and the share of the population above the age of 65 is now higher than 7%. The number of Malaysians above 65 is expected to triple by 2040.[19]

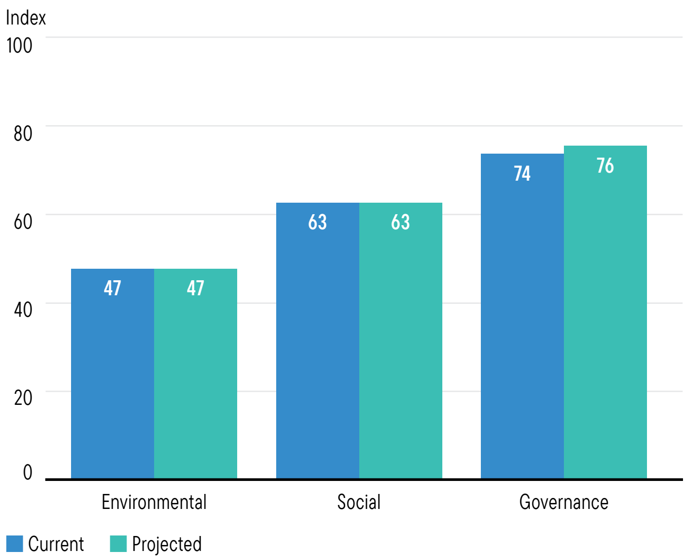
Governance

- The last two years have witnessed a series of political developments, from a change in federal government in early 2020, as well as shifts in many state governments, and ending most recently with yet another government change in August 2021. Malaysia has therefore seen three federal governments over a period of two years. This political instability has created an inconsistent policy and reform landscape.
- The recent guilty verdict for former Prime Minister Najib Razak demonstrated the credibility and institutional strength of Malaysia's judiciary, proving its ability to rule in a high-profile and politically sensitive case. Najib has begun his 12-year prison sentence for his role in the 1MDB multi-billion-dollar graft scandal.
- Malaysia's business environment is governed by several regulatory bodies to maintain an efficient and competitive private sector. The country is considered one of the most attractive locations in Southeast Asia to invest in due to an easy and cost-competitive market for doing business, a highly qualified workforce, and strong integration into the global economy.

Malaysia

Exhibit 4: Current and Projected Conditions (TGM-ESGI)

As of September 2022



Source: TGM-ESGI. Our medium-term productions are for the next two to three years.

Thailand
Legacy of military coup remains despite return to civilian rule

Environment

- Thailand aims to reach its peak greenhouse gas (GHG) emissions in 2030, and its net greenhouse gas emissions by 2050 are projected to be consistent with the global 2-degree pathway. Thailand has plans to achieve these goals through expansion of renewable energy generation, moving toward 100% electric vehicle sales starting in 2035, and continued expansion of carbon sinks in the forestry sector.

- In Bangkok, average PM2.5 (fine inhalable particle) concentrations exceeded the World Health Organization's annual mean Air Quality Guideline during every month of 2021, and pollution was estimated to have caused 29,000 deaths. Air pollution in Thailand can be attributed to two main sources: meteorological factors during the dry season and point source pollution. To address this problem, the Royal Thai Government has formulated the 20-Year Master Plan on Air Quality Management (2018–2037).

Social

- Thailand's population is projected to gradually increase until around 2030, from which point it will start to decline. A decline in the birth rate concurrent with an increase in life expectancy has shaped Thailand's population structure into one of an aging society. The old/young ratio (the percentage of people aged 60 and over divided by people aged younger than 15) will increase steadily. By 2040, the old population will be more than double that of the youthful population.

- There are historical divisions on what constitutes legitimate leadership, resulting in a population divided between support for the monarchy and military versus elected officials. Recent elections seem to show that a preference for democracy is higher among the younger population.

- Thailand's policy on universal health coverage has made good progress since its inception in 2002. Every Thai citizen is now entitled to essential preventive, curative and palliative health services at all life stages.

Governance

- The business climate is open, and Thailand is a pro-private sector economy and country which attracts significant foreign investment. Thailand is the largest automotive exporter among Southeast Asian countries.

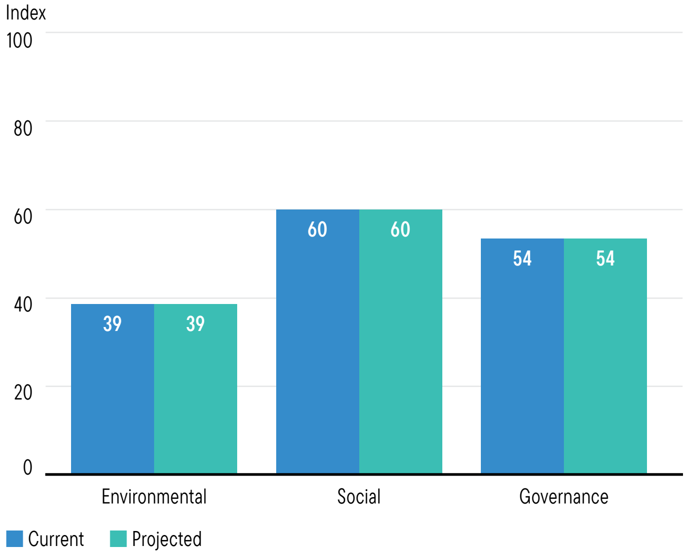
- Despite Thailand's transition from military rule to semi-civilian control in 2019, anyone perceived as a critic of the military or the monarchy remains at high risk of surveillance, arrest and imprisonment. Thailand's post-junta government has retained 140 laws, including laws that restrict freedom of expression, which were implemented during military rule (2014–2019). The government also retained the junta's 2016 Computer Crime Act, which gives authorities broad powers to restrict online expression, impose censorship, and enforce surveillance, and extends enforcement of the lèse-majesté provisions online.

- Although Thailand's constitution grants independence to the judiciary, in practice its courts are politicized. The Constitutional Court, which has been accused of favoring the military, has sweeping powers, including the ability to dissolve political parties, overthrow elected officials and veto legislation.

Thailand

Exhibit 5: Current and Projected Conditions (TGM-ESGI)

As of September 2022



Source: TGM-ESGI. Our medium-term productions are for the next two to three years.

Spain

Heatwaves have sparked massive wildfires across the country

Environment

- Spain suffers from repeated heat waves and a high incidence of wildfires that consume large swathes of land. The country has registered over 43 large wildfires so far in 2022, classified as those that have burned at least 500 hectares of land. The total area burned has reached over 275,000 hectares, or four times the annual average since 2006.[20]

- One of the greatest resource risks is the loss of fresh water, with the main stressor being agriculture, which accounts to 70%–80% of water use.[21]

- Funds of the national recovery and resilience plan are directed toward the development of agriculture and the creation of resilient ecosystems and infrastructure.

Social

- Spain has experienced a strong increase in its median population age and has one of the older populations in Europe, with one of the lowest fertility rates. The slight rise in the total population has been entirely due to immigration. While the total working-age population has been on an increasing trend, its rise has been smaller than that of the total population, depressing the participation rate.

- The bifurcated labor market is characterized by an insider-outsider problem, high severance payments and a strong prevalence of short-term contracts. These short-term and temporary job contracts were largely blamed for job insecurity in Spain, especially among young people. Youth unemployment is very high and presents a significantly problem for productivity growth, the social security system and ultimately social cohesion. The government passed labor reform that limits most temporary contracts to a maximum of three months and brings back collective bargaining, with unions as the main mode of negotiating pay and conditions.

- Spain has been using ample funds from the European Union (EU) to upgrade and improve its infrastructure. A new high-speed link from the capital to the northwestern province of Galicia was completed, which has improved the median level of railroad density. Spain's road connectivity and quality of roads are excellent.

Governance

- The effectiveness of government service delivery and policies is constrained by the fact that Prime Minister Pedro Sánchez heads a minority coalition which is dependent on the votes of smaller regional parties that are not a formal part of the coalition. A case in point is the federal budget, which took the government several years after its inauguration to finally get one passed in parliament.

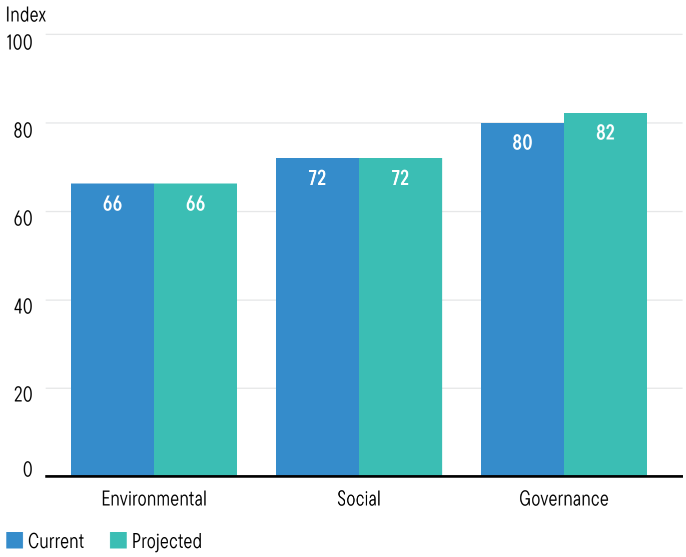
- The government managed to secure pre-funding by the EU for the Next Generation EU funds in 2021 and continues to work on reaching the milestones necessary for further timely disbursements. The administration announced several ambitious reforms to reinvigorate the economy. The focuses of attention are the public sector and progress with digitalization. These measures should improve the effectiveness of administrative processes and the implementation of reforms.

- Corruption is still a worrying issue. Political institutions and private interests are prone to scandals that include bribery and fraud, particularly in the construction sector. Courts have a solid record of investigating and prosecuting corruption cases, but the system is often overburdened.

Spain

Exhibit 6: Current and Projected Conditions (TGM-ESGI)

As of September 2022



Source: TGM-ESGI. Our medium-term productions are for the next two to three years.

Serbia
EU helps lead reforms in business climate, although complicated by close ties to Russia

Environment

- While Serbia has high GHG emissions—like most of its central and southeastern European peers—soil erosion due to poor mining practices and a lack of protections for key ecosystems have also negatively impacted Serbia's environment score.
- Serbia is almost completely reliant on Russian gas imports and will remain so until at least 2024–2025. At the same time, European sanctions have complicated Serbian oil imports via Croatia, leading to a weak energy security score that is set to improve only modestly.

Social

- Serbia still does not recognize Kosovo as a state, and small flare-ups in tensions around the border, such as the protests and barricades in response to license plates and entry requirements that took place this summer, will likely continue.
- The Russian invasion of Ukraine has made balancing relations with the EU and Russia a challenging domestic and foreign policy issue given Serbia's historical and cultural ties to Russia.
- Its infrastructure is of poor quality, with road quality among the worst in the region, due to years of neglect after the Yugoslav Civil War. However, there has been a new push for repairing and expanding infrastructure with the help of the European Bank for Reconstruction and Development and Chinese funding that should lead to improvements in the coming years.

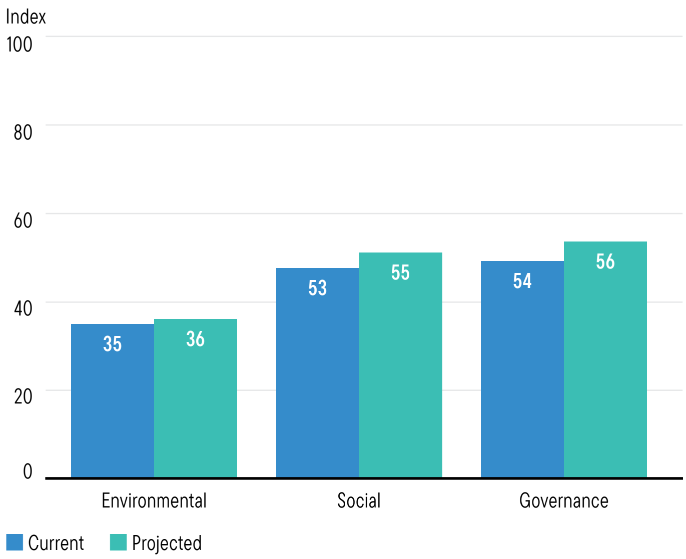
Governance

- In March, President Aleksandar Vučić won another term, and the Serbian Progressive Party (SNS) and its allies will continue to shape policy. In his previous term, Vučić and SNS made numerous moves to consolidate power and influence by eroding political rights and pressuring independent media and opposition parties.
- Public trust in institutions is low, particularly for the judiciary and media. This is driven by continued corruption in the judiciary and an increasingly polarized media landscape.
- At the same time, the EU accession process has resulted in several reforms in recent years that have led to a better policy mix and business climate, though bureaucratic delays and institutional shortcomings are often cited as areas needing further work. The trend of an improving business climate is expected to continue as the government is planning reforms that would facilitate starting a new business (such as permitting), provide easier access to electricity and other services, and increase the ease of getting loans for new enterprises.

Serbia

Exhibit 7: Current and Projected Conditions (TGM-ESGI)

As of September 2022



Source: TGM-ESGI. Our medium-term productions are for the next two to three years.

Kenya

Declining election violence with credible judiciary and weaker tribal influence on politics

Environment

- Kenya, along with the broader horn of Africa, is currently experiencing the worst drought the region has seen in four decades following multiple seasons of below-average rainfall. According to the UN Office for the Coordination of Humanitarian Affairs, 3.5 million people in Kenya are food insecure because of the drought as the prices of staple foods like maize and beans have risen by 20%–60%.

- Approximately 90% of Kenya's electricity is generated by renewables, with a mix between hydro, geothermal and wind power.[22] As a result, Kenya has among the lowest emissions per capita globally. The country has also pledged to adopt 100% clean energy by 2030.

Social

- Kenya is a multi-ethnic country with no single dominant group, and tribal divisions have historically resulted in often violent national elections. The most recent election in August 2022, however, progressed relatively smoothly and was largely devoid of the large-scale protests seen in previous cycles. This was due to greater apathy among the electorate and the uniting of younger voters along common interests rather than along ethnic lines. The peaceful result bodes well for the future of election-related conflict in Kenya.

- The Kenyatta administration spent heavily on infrastructure investment, including high profile projects such as the Port of Mombasa and the Standard Gauge Railway, among others. With debt at 67% of GDP as of Q1 2022[23] infrastructure spending will likely have to decline for budget rationalization.

Governance

- Kenyan politics is dominated by a few elite members, often with family lineages. Alliances shift frequently based on political calculations rather than topical issues, as evidenced by the Kenyatta-Odinga partnership following their contested election in 2017 that resulted in nationwide riots. Similarly, political parties are weak and mostly serve as vehicles for individuals to win elections.

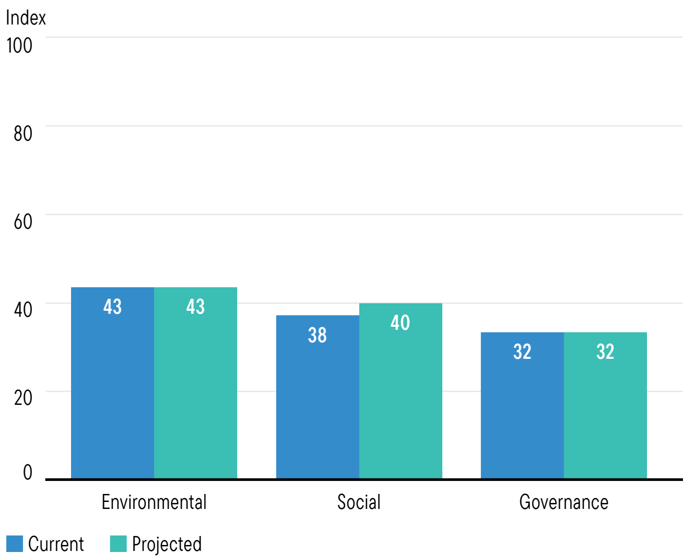
- The courts have demonstrated growing institutional strength and credibility as arbitrators of political disputes, including preventing former President Uhuru Kenyatta from changing the constitution to broaden the powers of the executive branch. The courts have also become an important authority in elections that are oftentimes fervently disputed.

- Kenya has emerged as a regional hub within east Africa for foreign businesses, with major corporations such as Alphabet and Visa choosing to locate there. Fast growth, improving logistics infrastructure and a burgeoning startup sector have all made the country an attractive destination for investment, in our view.

Kenya

Exhibit 8: Current and Projected Conditions (TGM-ESGI)

As of September 2022



Source: TGM-ESGI. Our medium-term productions are for the next two to three years.

Endnotes

1. Source: The World Bank.
2. Source: The Heritage Foundation, 2022 Index of Economic Freedom.
3. Source: Max Roser and Hannah Ritchie (2019)—"Hunger and Undernourishment", Our World in Data.
4. Source: Deloitte, "COVID-19 has broken the global food supply chain. So now what?".
5. Source: Our World in Data, March 24, 2022.
6. Source: Reuters, "Russia extends quotas for fertiliser exports to help domestic farmers", May 31, 2022.
7. Source: Carnegie, "Why Is Russia Jeopardizing the Ukraine Grain Deal?", September 16, 2022.
8. Source: United Nations, Drought in Numbers, May 11, 2022.
9. Source: Bloomberg, "Hunger in Africa Soars by Almost a Third in Two Years, IMF Says", September 15, 2022.
10. Source: Brookings Africa Growth Initiative, Sub-Saharan Africa's Debt Problem, October 2021.
11. Source: Bank of Ghana, Ghana Statistical Services, TGM Calculations.
12. Source: Science Direct, "Explaining the African food riots of 2007–2008: An empirical analysis", 2012.
13. Source: World Food Program, Occasional Paper 24—Food Insecurity and Violent Conflict: Causes, Consequences, and Addressing the Challenges, July 25, 2021.
14. Source: Reuters, "Factbox: Surging food prices fuel protests across developing world", June 9, 2021.
15. Current scores are the results of the research team overlaying their views on the benchmark scores, allowing for +/– 20 point deviations in each subcategory. In the TGM investment process itself, any restrictions related to ESG scores are implemented based on the unadjusted benchmark scores.
16. Source: JNDCSA Index (J.P. Morgan Govt Bond Unhedged USD South Africa), JGRUUUSD Index (J.P. Morgan GBI-EM Russia Unhedged USD), JGIDUUSD Index (J.P.Morgan GBI-EM Indonesia Unhedged USD) total return between 12/30/2005 and 12/31/2021. Indexes are unmanaged and one cannot directly invest in them. They do not include fees, expenses or sales charges. Past performance is not an indicator or a guarantee of future performance.
17. These indexes are constructed in a rules-based way, equally weighting at every semiannual rebalancing date the countries in the specific buckets, and equally weighting within them all of the countries' outstanding local currency debt subject to certain exclusion rules (e.g., no inflation linked bonds, sukuks or zero coupon bonds; with a maturity of 1–10 years; and with total amount outstanding of more than US$100 million to ensure liquidity).
18. Source: United Nations, 17th Session of United Nations Forum on Forests, May 2022.
19. Source: Department of Statistics—Malaysia. Population and Demographics Ageing Newsletter.
20. Source: Associated Press, "Winds drive major wildfire in Spain; Portugal goes on alert", August 19, 2022.
21. Source: WeAreWater Foundation, "Water in Spain: the challenge of a dry land", April 6, 2022.
22. Source: Reuters, "UPDATE 1-Renewables hit 90% of Kenyan power with new 50 MW solar plant", December 13, 2019
23. Source: Central Bank of Kenya, Kenya National Bureau of Statistics, TGM Calculations.

Templeton Global Macro Views is a complementary publication that will update and/or amplify the periodic research-based briefing on global economies called Global Macro Shifts. Both feature the analysis and views of Dr. Michael Hasenstab and senior members of Templeton Global Macro. This economic team, trained in some of the leading universities in the world, integrates global macroeconomic analysis with in-depth country research to help identify long-term imbalances that translate to investment opportunities.

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Notes

Notes

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