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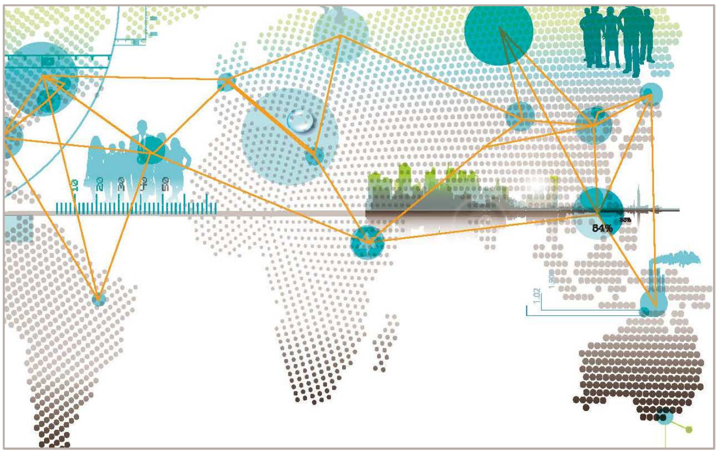
Country Sustainability Ranking Update – June 2018

A neck-and-neck race at the top

- **ESG risks dominate the global risks landscape**
- **Switzerland catching up with the top duo**
- **Taiwan the new emerging markets leader**
- **BRIICS suffering the most from air pollution**



Movement in the Spring country rankings resulted mainly from changes in environmental status and political rights & civil liberties. With Switzerland threatening Nordic dominance, a neck-and-neck race is developing at the top. With a number of large emerging market countries sliding further into authoritarian rule, key institutional pillars of the governance dimension are at risk.

A similar trend is forming among developed economies as distrust for institutions and ongoing populist tendencies undermine democratic and inclusive principles.

About this report

This semi-annual report provides a succinct summary and analysis of the Environmental, Social, and Governance (ESG) profiles of 65 countries around the globe. It builds on the results of RobecoSAM's proprietary Country Sustainability Ranking (CSR) tool which collects and analyzes ESG data from 22 developed and 43 emerging market economies via a structured and comprehensive framework to calculate an overall country score.

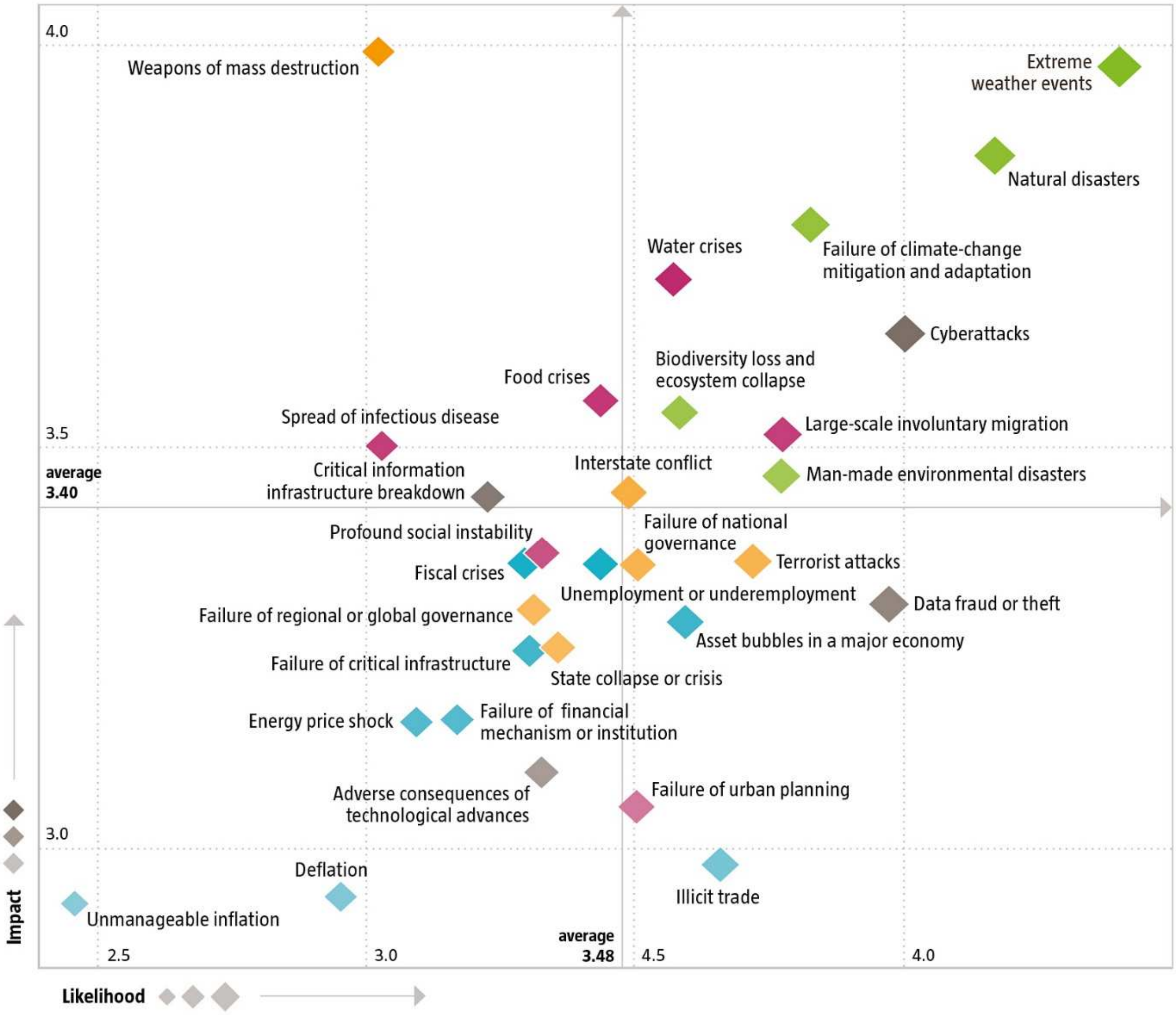
The resulting scores offer insights into the investment risks and opportunities associated with each country and provide investors with a better frame of reference for making comparisons among countries and regions from a risk-return perspective. The summary outlined here complements findings gained from the more traditional country risk assessment and is particularly focused on integrating long-term perspectives.[1)]

For a more detailed outline of the methodology used, please refer to our brochure "Measuring Country Intangibles."[2)]

Please see the Endnotes for further notes on methodology.

Recent research highlights the significant welfare costs of air pollution, underscoring the importance of the environmental dimension for a country's overall ESG profile.

Figure 1: The global risks landscape 2018[1]



Categories	Top 10 risks in terms of Likelihood	Top 10 risks in terms of Impact
Economic	1. Extreme weather events	1. Weapons of mass destruction
Environmental	2. Natural disasters	2. Extreme weather events
Geopolitical	3. Cyberattacks	3. Natural disasters
Societal	4. Data fraud or theft	4. Failure of climate-change mitigation and adaptation
Technological	5. Failure of climate-change mitigation and adaptation	5. Water crises
	6. Large-scale involuntary migration	6. Cyberattacks
	7. Man-made environmental disasters	7. Food crises
	8. Terrorist attacks	8. Biodiversity loss and ecosystem collapse
	9. Illicit trade	9. Large-scale involuntary migration
	10. Asset bubbles in a major economy	10. Spread of infectious diseases

Note: Survey respondents were asked to assess the likelihood of the individual global risk on a scale of 1 to 5, 1 representing a risk that is very unlikely to happen and 5 a risk that is very likely to occur. They also assess the impact on each global risk on a scale of 1 to 5 (1: minimal impact, 2: minor impact, 3: moderate impact, 4: severe impact and 5: catastrophic impact). See Appendix B for more details. To ensure legibility, the names of the global risks are abbreviated; see Appendix A for the full name and description.

Source: World Economic Forum Global Risks Perception Survey 2017–2018

[1] "The Global Risks Report 2018", World Economic forum, Switzerland; https://www.weforum.org/reports/the-global-risks-report-2018

Global risks landscape dominated by ESG risks

The global risk landscape remains heavily shaped by ESG factors and more than ever before environment-related risks stand out. **Figure 1** is a display of environmental risks with extreme weather events, major natural catastrophes and failure of climate change adaptation lying in the higher-impact, higher-likelihood quadrant in the upper right corner. This points to an urgent need for decisive response to climate change and enhanced efforts to protect the environment. As in previous years, the risk matrix is based on a risk perception survey of around 1000 experts among the World Economic Forum's multi-stakeholder community. It maps 30 global risks over a 10-year time horizon in terms of their perceived likelihood of occurring and their potential global impact.

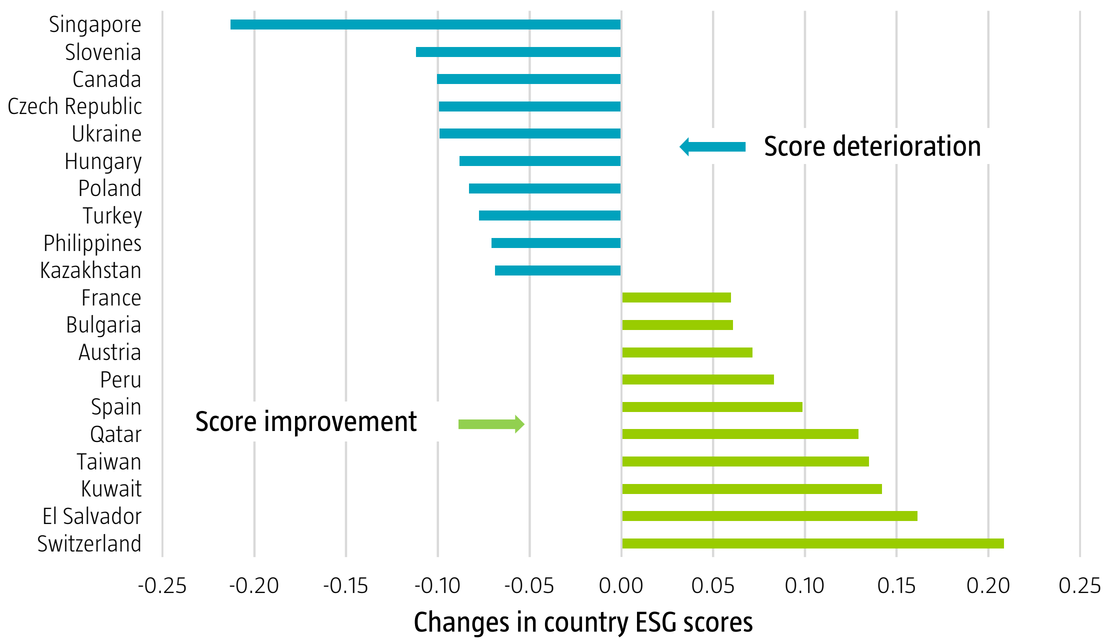
The global risk landscape remains heavily shaped by ESG factors and more than ever before environment-related risks stand out.

Apart from environmental concerns, various societal and geopolitical risks such as water crises, large-scale involuntary migration, failure of national governance, and interstate conflicts remain important threats[1]. All of these risks affect countries around the world, although to various degrees and with different economic impacts, making them an essential part of any comprehensive country sustainability/risk assessment.

Denmark & Sweden tied for the lead - Switzerland runs a close second

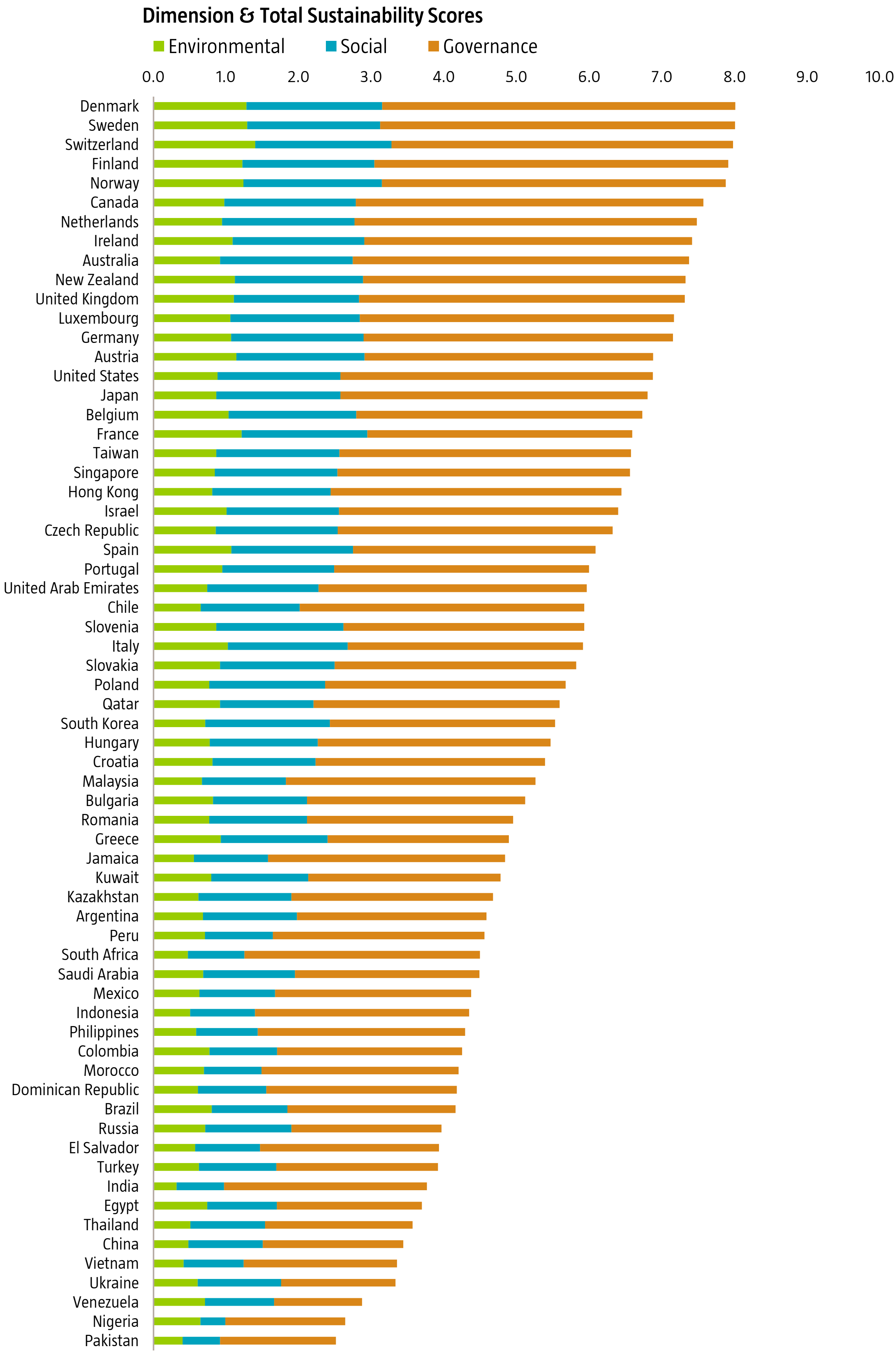
With an increase in its ESG score (+ 0.21) to 7.98, Switzerland has emerged as the biggest winner of the April 2018 country sustainability Spring update (see **Figure 2**), almost equalizing the score of the new top duo, Denmark and Sweden. Thanks to a small advance in its score to 8.01, Denmark has caught up with Sweden and the two countries now share the top position. Switzerland, which gained two ranks by overtaking Finland and Norway, has managed to crack the hegemony of Nordic countries as visible from **Figures 3 & 4**. Canada successfully defended its 6th position, despite suffering a small setback in its score (-0.10), resulting from moderate declines in the scores for Environmental Status, Environmental Risk and Political Risk. All in all, the top 10 group remained unchanged except for the fact that New Zealand has managed to grab the 10th place at the expense of the United Kingdom, which lost one position despite a stable overall sustainability score (see **Figure 4**).

Figure 2: Changes in Country ESG scores Apr 2018 vs Oct 2017: the winners & losers



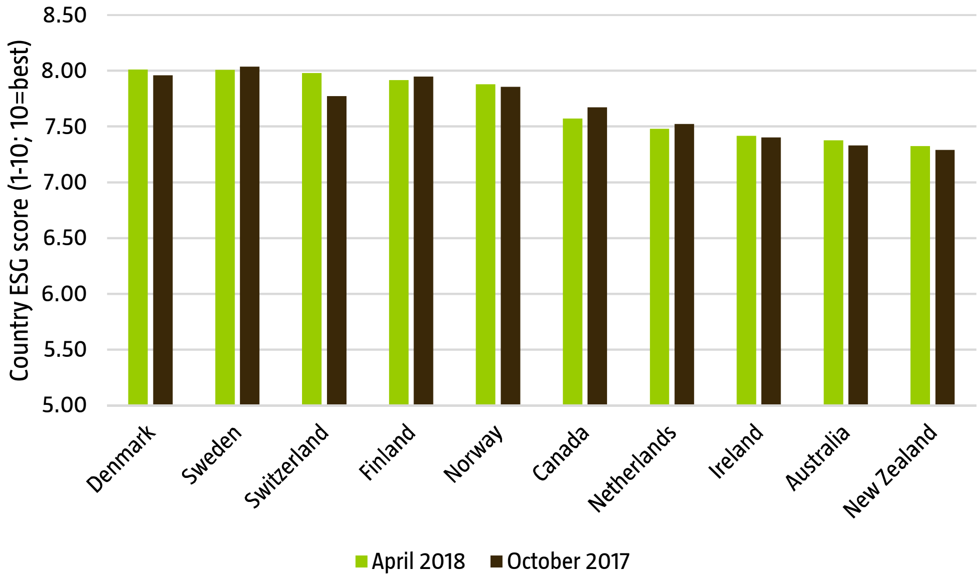
Source: RobecoSAM

Figure 3: RobecoSAM's Country Sustainability Ranking – April 2018



Source: RobecoSAM

Figure 4: Top 10 country ESG scores



Source: RobecoSAM

Apart from Canada, all countries with top score upgrades benefitted from improvements based on revised assessments of the Environmental Performance Index (EPI). In addition, most of these countries, namely Austria, Bulgaria, El Salvador, Peru, Switzerland and Taiwan obtained better political risk scores from the PRS group[2]. Moreover, Taiwan has seen an increase in its Political Rights & Civil Liberties score from Freedom House as it continued to do well in guaranteeing its citizens individual rights, stable democratic institutions and a robust judicial system. However, cross-straits ties (between Taiwan and China) are likely to remain an ongoing and hardly predictable risk factor.

Moving together at the top

Switzerland's advance is almost entirely due to a pronounced improvement in its Environmental Status, represented by the Environmental Performance Index (EPI). The EPI, produced by Yale and Columbia Universities, ranks 180 countries on 24 performance indicators across 10 issue categories covering environmental health and ecosystem vitality. Innovations in the 2018 EPI methodology and data enhancements generated a new ranking which puts Switzerland on top, followed by France and Denmark[3].

Switzerland's leading position reflects very strong performance across most EPI features, in particular air quality and climate protection. Since more than 90% of electricity is generated from hydroelectric and nuclear energy, the country's per capita GHG emissions (production-based) are half the OECD average. Nuclear power accounts for roughly 25% of total final energy consumption which poses a challenge for plans to phase out the country's nuclear energy sources. Equally ambitious is the implementation of the recently passed "Energy Strategy 2050" that envisages a 300%-plus jump in electricity production from non-hydro renewables and a 43% cut in average per capita energy consumption by 2035 (compared to 2000).

Switzerland scores better in the environmental sphere, Scandinavian countries display advantages in the governance…

The leading trio (Denmark, Sweden & Switzerland) enjoys a high standard of living and is doing well by most measures of environmental, governance, social and political well-being. This is also evident from **Figure 5**, which shows that the three

[2] PRS Group; Political Risk Services (PRS), http://www.prsgroup.com/
[3] "2018 EPI Report", Yale Center for Environmental Law & Policy, Earth Institute—Columbia University, January 2018

countries display very strong and well-balanced country ESG profiles across all three dimensions with no critical fragilities. However, a closer look at their ESG profiles nevertheless reveals that they all have relative strengths and weaknesses. While they score very similarly in the social dimension, Switzerland scores better in the environmental sphere (explained by the newly generated EPI scores) whereas the two Scandinavian countries display advantages in the governance area.

Figure 5: Top trio's ESG profiles in comparison

Source: RobecoSAM

Aging emerges as a particularly interesting feature with large differences in scores between Denmark and Switzerland. Thanks to more favorable demographics, lower projected future pension spending costs and high pension assets-to-GDP ratio (the highest rank), Denmark's aging indicator is a key strength.

On the other hand, in Switzerland, a more rapidly aging population and higher projected future pension and health care spending costs contribute to a rather poor score for the aging indicator. Ensuring the sustainability of the old-age pension system and implementing effective policies supporting longer working lives are becoming more urgent. In this context, it is worrying to note that in 2017, Swiss voters rejected pension reform plans – the third unsuccessful reform attempt in almost two decades.

Finland with the best ESG profile within EMU

Finland has managed to defend its leading position amongst EMU countries ahead of the Netherlands and Ireland (see **Figure 6**). It suffered a slight setback in its overall ESG score (-0.03) to 7.91 because of a decline in the EPI and Energy Trilemma Index scores. These declines were not fully offset by improvements in the Political Risk and Political Rights & Civil Liberties indicators.

Greece continues to maintain the worst sustainability record amongst EMU economies. The renewed relapse in the overall score is entirely due to the new evaluation of its Environmental Status and a minor decline in the Climate Risk Index, while all other indicators remained stable or have recorded only small gains. This could indicate that structural reforms are finally bearing fruit and that the disappointing developments in recent years are about to change for the better.

Greece continues to maintain the worst sustainability record amongst EMU economies.

Interesting developments have emerged in Portugal and Spain, which have overtaken Slovenia in the ranking. In Slovenia, the right-wing Slovenia Democratic party (SDS) of former Prime Minister Janez Janša won the parliamentary elections on June 3rd. This outcome could result in a prolonged period of political uncertainty given the SDS's hardline stance on immigration has left it short of potential coalition partners with whom to form a government.

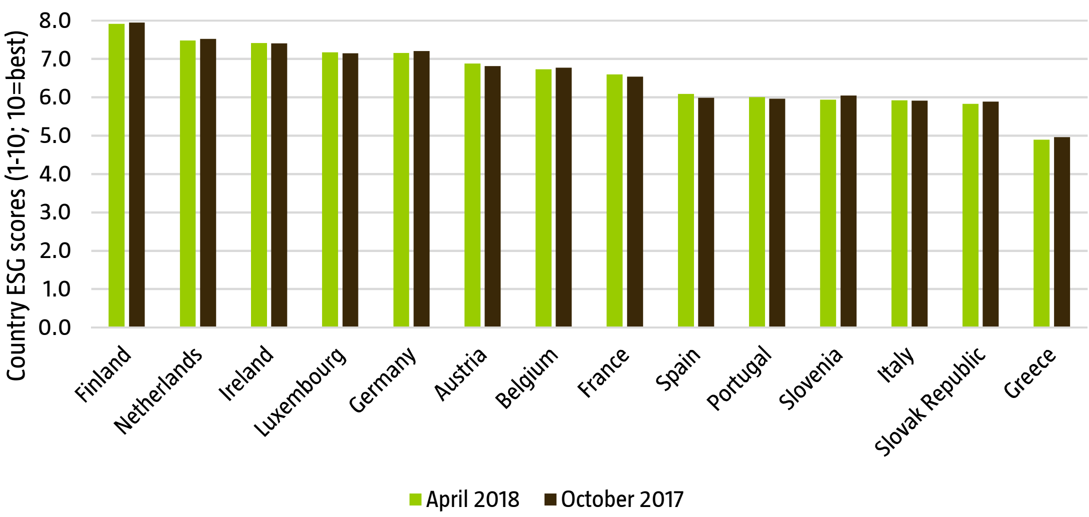
Meanwhile in Spain, Prime Minister Mariano Rajoy was ousted over a corruption scandal, becoming the first Spanish leader in modern history to be forced out of office by a no-confidence vote. He has been replaced by Socialist, Pedro Sanchez, who will now have to tackle the smoldering Catalan separatism crisis. True, Sanchez promised to open talks with Quim Torra, the new president of the autonomous region, but in view of Torra's strong position on the independence issue, renewed political confrontation with Madrid is a real possibility.

Italy is marked by stagnation, with little hope for improvement in terms of overall sustainability.

Italy is marked by stagnation, with little hope for improvement in terms of overall sustainability. Finally, three months after its elections (and several surprising twists later), the country has a new populist government led by the anti-establishment Five Star Movement and the far-right League under Prime Minister Giuseppe Conte, a political novice. Still, President Mattarella managed to imbed some competent external technocrats in the cabinet, including Giovanni Tria, Economy Minister and advocate of Italy's EMU membership, as well as Enzo Moavero, a member of the pro-European Monti Cabinet between 2011 and 2013, as Foreign Minister.

However, this does not signify that the conflict with Brussels is over. The more so, as the two populist parties' proposed policy agenda contains sufficient potential for controversies. These include a tougher approach toward migrants, tax cuts, a minimum basic income, and the (partial) reversal of the pension reform, all of which threaten to exacerbate Italy's already grave pension system and debt problems.

Figure 6: Country ESG scores for EMU members



Source: RobecoSAM

Singapore cedes position to Taiwan & democracy loses amidst authoritarian threats

An adjusted EPI score was also the main reason for the (0.21) point decline in Singapore's score, as a small increase in the Political Rights & Civil Liberties score was not sufficient to offset the deterioration in the EPI. In 2018, the country ranks poorly with respect to air quality (#134 out of 180 countries), biodiversity & habitat (#175) and agriculture (#173). As a result, Singapore lost three ranks and with an ESG score of 6.56 (#20) it had to cede its top position among emerging markets to Taiwan (#19 with a score of 6.57).

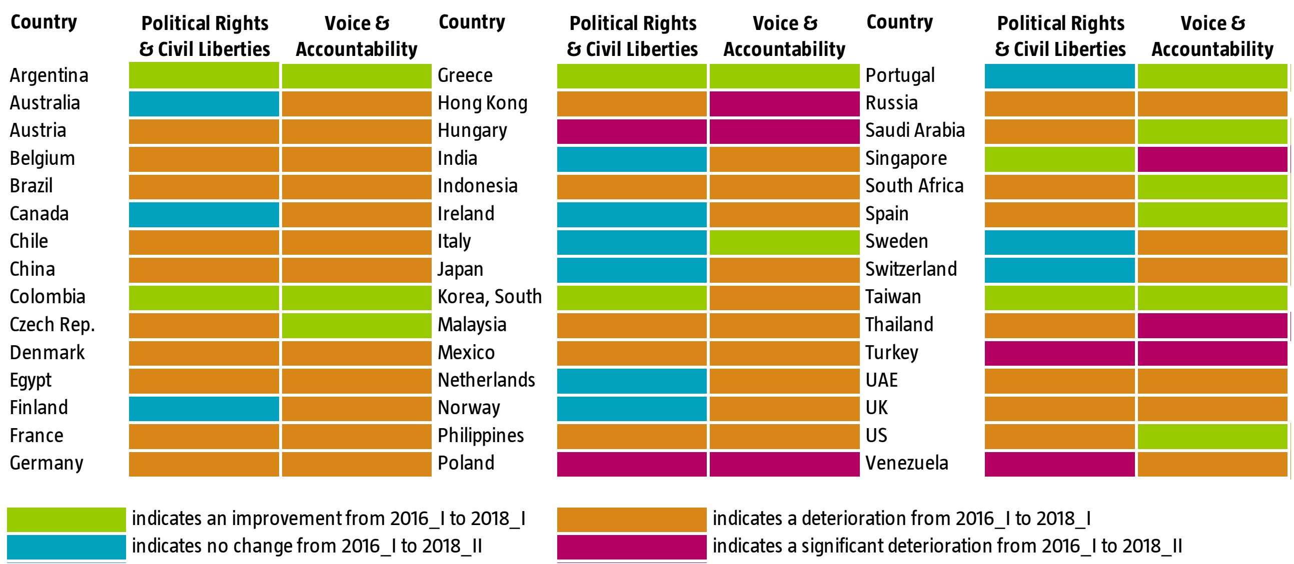
A clear majority of large…developed and emerging economies…suffered declines in political rights and civil liberties, voice & accountability

Among the main losers are three Central European countries the Czech Republic, Hungary and Poland, where the worrying authoritarian trend has continued (see **Figure 2**). True, a sweeping government reshuffle by the new Polish prime minister early in the year as well as Prime Minister Orban's victory in the April 8th elections in Hungary appear to have contributed to a (temporary) recovery in the political risk score.

However, both countries are on a treacherous road from democracy to authoritarianism, dismantling liberal checks and balances, discrediting the political opposition, undermining press freedom and scapegoating minorities—despotic actions which are clearly reflected in their declined scores for Political Rights and Civil Liberties. The Czech Republic is following a similar path, albeit to a lesser extent.

The spreading of authoritarian tendencies and the overturning of long-standing democratic cornerstones are worrisome trends that are increasingly observed in a number of regions worldwide. These trends are reflected in declining ESG performance for many countries as is underscored in **Figure 7** which shows that a clear majority of the 50 large, developed and emerging economies that are part of our ESG country universe suffered declines in political rights and civil liberties, as well as in voice & accountability over the past two years.

Figure 7: Key pillars of democracy in retreat



Source: Freedom House, World Bank

The two indicators displayed in the graph are perhaps the most appropriate to illustrate this adverse development which is particularly evident in the Philippines, Turkey and the Ukraine, all of which suffered a deterioration in their political climates.

In the Ukraine, the ongoing conflict in its eastern regions will continue to fuel political tensions domestically as well as externally with Russia. Russia too, has suffered another decline in its ESG score, even though the country is not among the major losers. President Putin won re-election for his second consecutive (fourth overall) term on March 18th. While this might suggest that Russia is politically stable in the near term (as also indicated by a small improvement in the PRS Group's Political Risk score), it does not bode well for political stability and the country's overall ESG prospects in the longer run.

In the Philippines and in Turkey, the governments of President Duterte and Erdogan, respectively, have turned into authoritarian regimes, clearly mirrored in declined scores with regards to Political Risk and Political Rights & Civil Liberties. Turkey, now in the bottom 10, is no longer characterized as a free country in the 2018 Freedom in the World Report by Freedom House. And in calling for snap presidential and parliamentary elections on June 24th of this year (instead of late 2019), President Erdogan is aiming to ride a favorable wave of nationalism and benefit from his popularity.

However, this current popularity could suffer given recent lira weakness, surging prices, and rising unemployment, benefitting opposition candidates. It cannot be excluded that the presidential election will be decided in a run-off—an event which may leave both the AKP and Erdogan in precarious positions that could mean a loss of parliamentary majority for the one and a decline in power for the other.

Stark contrasts in Colombia and more of the same in China and India

A crucial presidential election also lies ahead in Colombia given first round voting on May 27th failed to yield a decisive majority vote. A runoff is scheduled for June 17th between two candidates representing political extremes. At one end is Ivan Duque, a hardline conservative and fierce critic of the peace accord with the FARC, and Gustavo Petro, the leftwing former mayor of Bogota, and once *guerrillero*, at the other. The stark contrast between the two candidates parallels the deep divisions currently present across Colombian society.

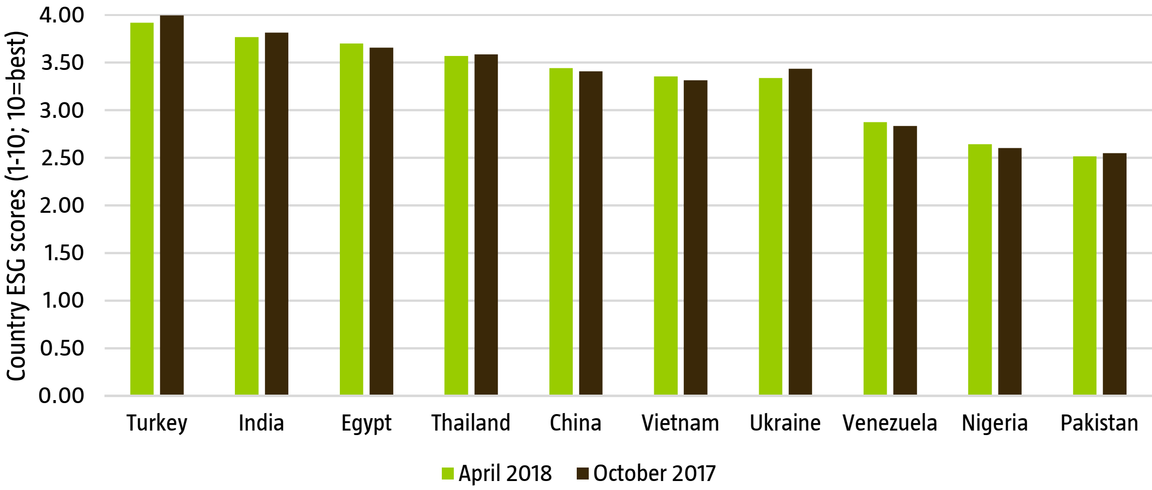
Furthermore, the face-off comes at a critical point that could bring changes in how Colombia steers its future policy agenda. The outcome will not only impact the peace process with leftist rebels, but also shape Colombia's broader economic, social and political prospects over the next four years. This is significant, as it could decisively determine whether the timid progress in the country's sustainability performance in recent years can be maintained.

...among the poorest performing countries, are the two emerging giants India and China.

No change has occurred in the composition of the bottom 10 since Fall's country sustainability review except for the switch between Turkey and El Salvador, with the latter gaining two ranks, mainly as a result of an improved Environmental Performance Index (EPI) score. Still among the poorest performing countries, are the two emerging giants India and China. While China continued its gradual upward trend, mainly due to an improved EPI and Political Risk score, India had to register a slight setback in its overall score moving one notch down to position #57 (resulting from very marginal declines in various indicators).

Venezuela also saw no change for the better, despite a very small improvement in the overall score, which is entirely due to the revised EPI. Given that President Madura has just been re-elected for another six-year term in the snap election on May 20th—an outcome deemed illegitimate by many countries in the Americas and Europe—no improvement in the country's ESG profile can be expected in the foreseeable future. To the contrary, Maduro's victory will continue to drive Venezuela into isolation and is likely to aggravate the years-long and profound economic, humanitarian and social crisis, provoking further instability.

Figure 8: Bottom 10 country ESG scores



Source: RobecoSAM

Malaysia—What will follow an historic election result?

Malaysia scored a major political upset when the opposition coalition, led by 92-year old former Prime Minister Mahathir Mohamad, defeated the ruling coalition of Prime Minister Najib Razak in the general elections on May 9th. For the first time ever, the Barisan Nasional (BN) coalition, which has ruled the country since its independence from Britain in 1957, lost control of government to an opposition party. Mahathir and his winning Pakatan Harapan alliance will face formidable challenges in trying to roll back authoritarianism and corruption that have become more widespread in the Najib era, especially during his second term that started in 2013.

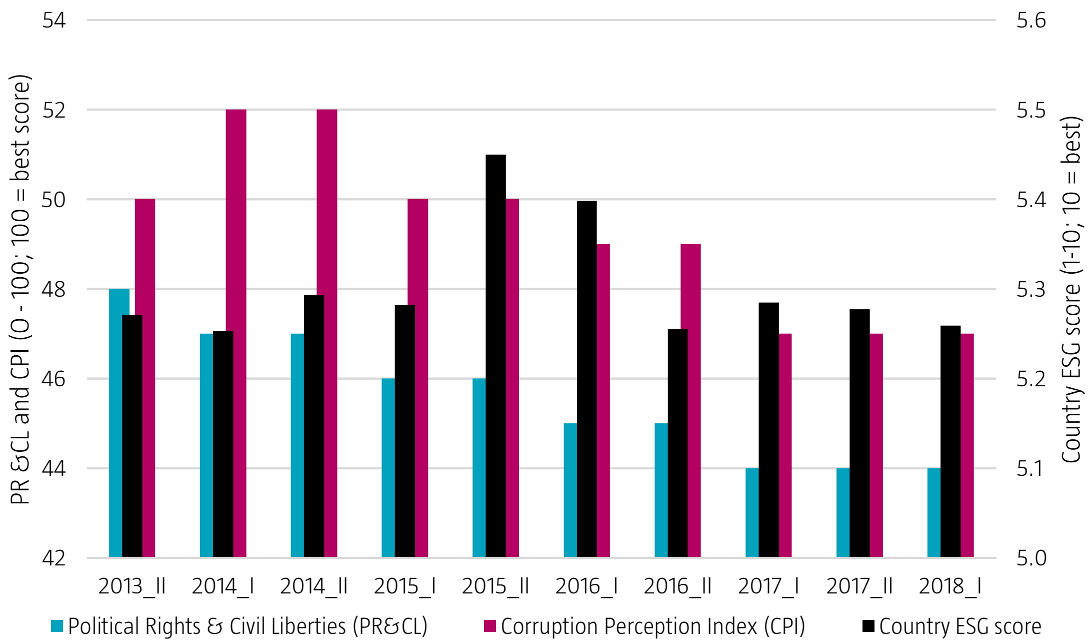
This is also visible from **Figure 9**, which shows that the country's overall ESG score started to slide back again from the second half of 2015 onwards after having been on a gradual upward trend since the start of our ranking in 2006. Given scores for the environmental and social dimensions have remained stable, the decline resulted from a weaker performance in the governance area, where the weakest scores can be found for the indicators voice & accountability, political stability, political rights & civil liberties and corruption. Popular outrage over corruption, especially PM Najib's own scandals involving the misappropriation of funds from the state investment fund known as 1MDB, has supposedly been the decisive factor for BN's s election defeat.

Mahathir and his winning Pakatan Harapan alliance will face formidable challenges in trying to roll back authoritarianism and corruption

Mahathir has already made several promises, above all to investigate the 1MDB scandal, fight corruption, strengthen the rule of law as well as state institutions, and to hand over power to his former rival and opposition leader Anwar Ibrahim—a popular political figure who has just been released from prison. In fact, this unprecedented power shift in Malaysian politics provides the country a good opportunity to transition to a more liberal and accountable rule, and to initiate the relevant economic and social reforms necessary to not only escape the "middle-income trap," but also to narrow the pronounced inter-regional development gap among Malaysian states.

What will also be important is to curb discriminatory pro-Malay policies that have predominated under Barisan Nasional which have adversely affected Malays of Indian origin and ethnic Chinese (who largely control the economy). This would be not only positive for the country's long-term economic development but also ease simmering ethnic tensions and foster political stability—a weak spot in Malaysia's ESG profile. However, despite legitimate hopes for a positive change it remains to be seen to what extent Mahathir, who himself ruled semi-autocratically as prime minister from 1981 to 2003, will be able to deliver on election pledges.

Figure 9: Malaysia: sluggish ESG performance under PM Najib's second term



Source: Freedom House, Transparency International, RobecoSAM

Changing fortunes in Argentina and South Africa

Since the last country sustainability update in autumn 2017 the winds have changed for Argentina and South Africa and prospects for the two countries now point in somewhat different directiony. As recently as October, Argentine President Macri had been able to celebrate the victory of his "Cambiemos" coalition in the midterm legislative election, a result that was widely seen as a much-needed popular approval for his economic reform agenda.

Argentina finds itself once again in turmoil [while South Africa's Ramaphosa] is bringing new hope for change to the country

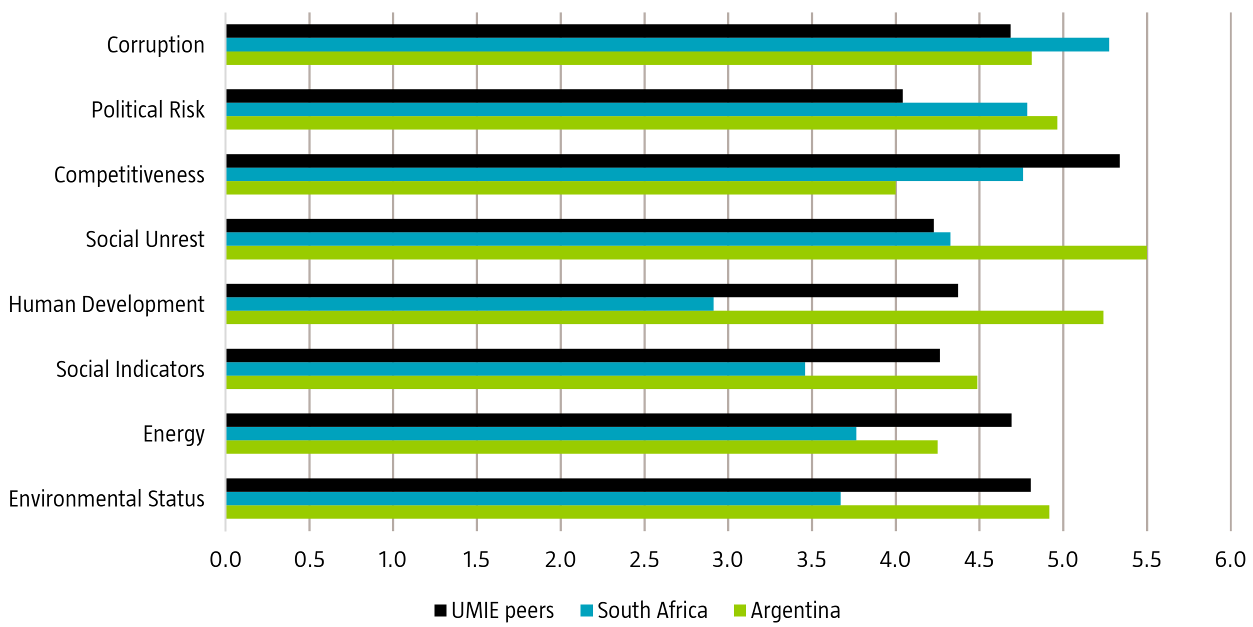
Meanwhile, however, Argentina finds itself once again in turmoil. After days of financial volatility and a rapid fall of the peso, the government announced on May 8th it was seeking IMF assistance to avoid a full-fledged crisis. The prospect of a new IMF loan will likely come with economic policy conditions and might test the country's patience with Macri's economic programme. It also represents a setback for President Macri and his re-election bid next year.

Only three months into his presidency, South Africa's Cyril Ramaphosa has already gained some respect for his economic and political reform initiatives. He is bringing new hope for change to the country, which during the nine years of rule by former president Jacob Zuma, became a deficient democracy, characterized by increasing exclusion and corruption. The new president is faced with a number of daunting challenges, not least to maintain the momentum in view of next year's general election. Today, the education system, health care, energy and transportation infrastructure are in poor condition, which is also reflected in the relevant indicators in **Figure 10**. These shortcomings adversely affect competitiveness, economic growth and inclusion.

A key task ahead is the issue of land reform, which also relates to the broader issue of inequality. According to the latest World Bank data, South Africa has a GINI index of 0.63, earning it the disturbing distinction as the country with the highest income inequality in the world. Significant improvements in most of these areas will only be achievable in the longer run, while promoting more basic needs such as access to clean water and electricity are more easily attainable in the near term.

It will take some time before for we see visible progress in Ramaphosa's reform efforts across diverse ESG criteria. However, positive, initial signals are already emanating from the PRS Group's political risk rating, which has improved by 4 points to 66.5 (on a scale from 0-100) since 2017's autumn update.

Figure 10: Selected ESG indicators in comparison – Argentina & South Africa vs peers



Source: RobecoSAM

Mexico—in the wake of populism?

On July 1, 2018, Mexico will have its general election and may well elect leftist Andrés Manuel López Obrador (popularly known as AMLO), leader of the populist Morena party, as its new president. AMLO who currently leads the polls by a comfortable margin, faces a weakening ruling Institutional Revolutionary Party (PRI) and a disunited National Action Party (PAN). That Mexico may be ready for more extremist policies following the populist route already forged by other recent examples is mainly due to the fact the two parties that have ruled the country in the past have grossly failed to successfully tackle Mexico's most serious problems—problems that are at the root of the downward slide in the country's overall sustainability score from #40 to #47 from 2006 to present (4.79 to 4.37 in data points). Large parts of the population are fed up with the ever-increasing crime rate, appalling violence of drug cartels, endemic corruption, worrisome social unrest in some southern states, ongoing political uncertainty, persistent regional disparities and worsening living conditions.

Indeed, the latest OCED figures show that income inequality in Mexico is the highest among OECD members (with a GINI coefficient of 0.46 after taxes and transfers) and poverty is still widespread (with 7 of every 10 Mexicans living in poverty). Pronounced shortcomings in the country's ESG profile (obvious from **Figure 11)**, reveals that Mexico is lagging behind the upper-middle income economies with regard to respective social and governance indicators.

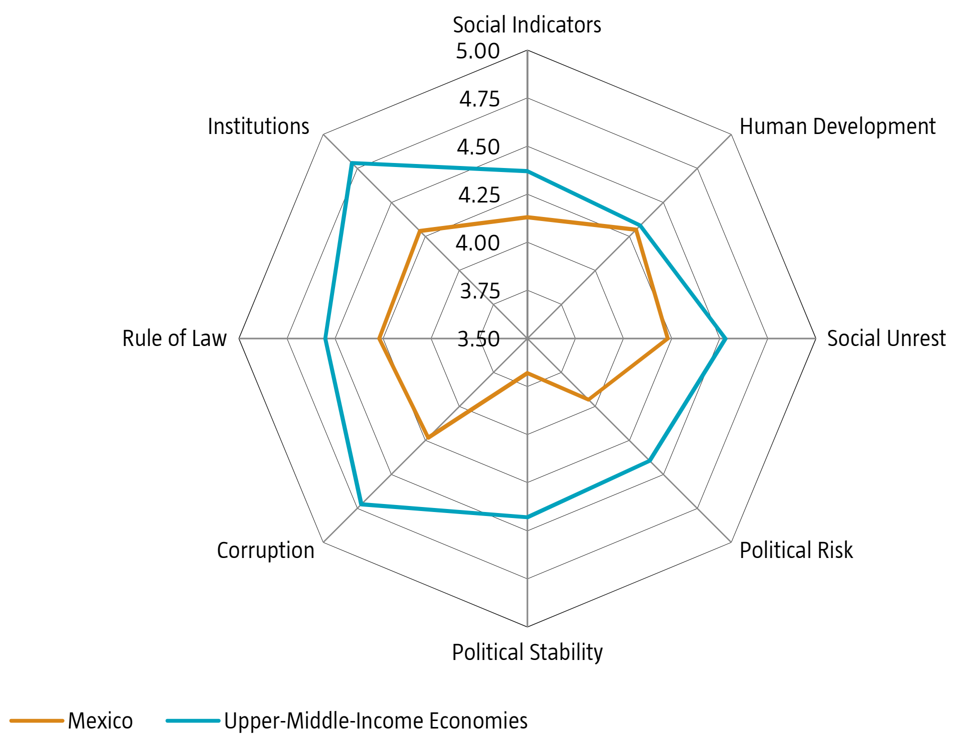
..the two parties that have ruled the country...have grossly failed to successfully tackle Mexico's most serious problems

In view of Mexico's deficiencies, any major improvement in its ESG profile will primarily require reforms, a strengthening of its institutional framework, a functioning rule of law, a serious anti-corruption strategy, and an amelioration of the precarious security situation. Given AMLO is often characterized as a leftist, nationalist and populist agitator, it is questionable whether one could expect policy shifts that would create the necessary force and momentum needed to initiate change in these areas.

In fact, many fear he would rather wrest control of the judiciary, change electoral laws, restrict press freedom, propose constitutional changes and withdraw from NAFTA—moves that would hurt sustainability performance.

True, under a potential AMLO administration it is likely to see some slowdown in the implementation of reforms, in particular in the energy sector, and a (partial) reorientation of economic policies towards more state intervention and higher fiscal spending. It remains to be seen, however, whether AMLO would turn out as radical as perceived during the election campaign and whether Mexico's institutions would prove strong enough to prevent the country from adopting a radical ideological policy shift and a drift into authoritarianism.

Figure 11: Key social & governance indicators – Mexico lagging behind



Source: RobecoSAM

Air pollution causing significant welfare costs for BRIICS

According to the 2018 Environmental Performance Index, air pollution is currently the biggest environmental threat to public health. Air pollution is particularly acute in rapidly urbanizing and industrializing nations like China and India, which rank 177th and 178th respectively with regard to this specific performance indicator in the 2018 EPI. This finding is also confirmed by recently released WHO figures showing 9 out of 10 people breathe air containing high levels of pollutants and that an estimated 7 million people die every year from exposure to polluted air. While all regions of the world are affected, populations in low-income cities are the most impacted.

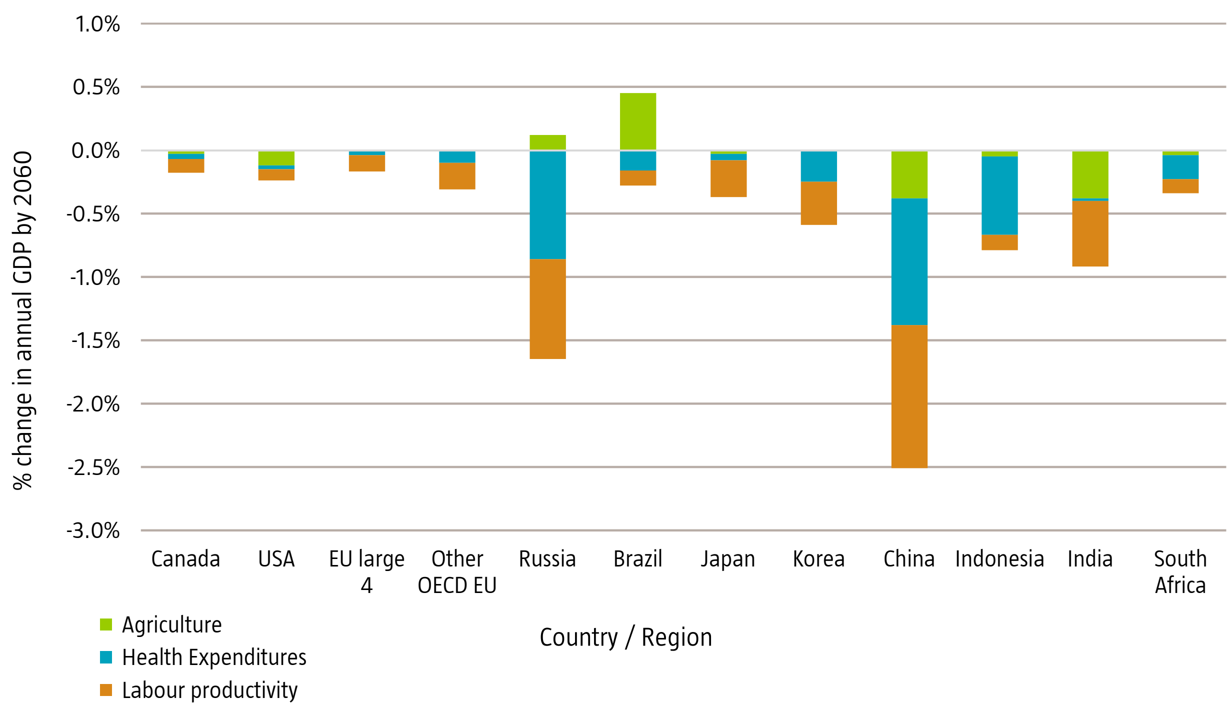
Moreover, a 2018 WHO report on global ambient air quality, revealed that 14 of the most polluted cities worldwide are in India, with the Chinese city of Baoding following on rank 15 (ranking based on the latest available 2016 figures)[4]. In view of the significant death toll and adverse economic impacts, efforts to reduce air pollution can no longer be neglected.

According to a 2017 OECD study, ambient (outside) air pollution caused 3.2 million deaths and imposed an estimated welfare cost – due to premature deaths - of USD 5.06 trillion in the 41 analyzed countries (35 OECD and 6 BRIICS) as at 2015. The 6 BRIICS (Brazil, Russia, India, Indonesia, China & South Africa) accounted for the bulk of the cost (USD 3.18 trillion). China (USD 1.6 trillion or 8.4% of GDP), India (USD 883 billion or 11.6% of GDP) and Russia (USD 447 billion or 12.5% of GDP) showed by far the highest welfare costs and were also much more strongly affected than the other 35 OECD countries included in the analysis who, in contrast, averaged costs equivalent to 3.7% of GDP[5].

In view of the significant death toll and adverse economic impacts, efforts to reduce air pollution can no longer be neglected.

An earlier report released by the OECD in 2016, reported that premature deaths caused by outdoor air pollution amounted to nearly 3 million globally in the reference year 2010 and could reach 6 to 9 million in 2060. Associated welfare costs are projected to rise from USD 3 trillion in 2015 to USD 18-25 trillion in 2060. Apart from the welfare costs resulting from higher mortality, there are other economic costs, which include impacts on labor productivity, health expenditures and agricultural crop yields. Taken together, the total annual costs from this combined economic impact are projected to gradually increase from 0.3% of global GDP in 2015 to 1% by 2060[6]. Policies to limit air pollution are therefore becoming more urgent to improve air quality, fight climate change and reduce health risks.

Figure 12: The Economic Toll—air pollution's combined market impacts projected to have a negative impact on future GDP

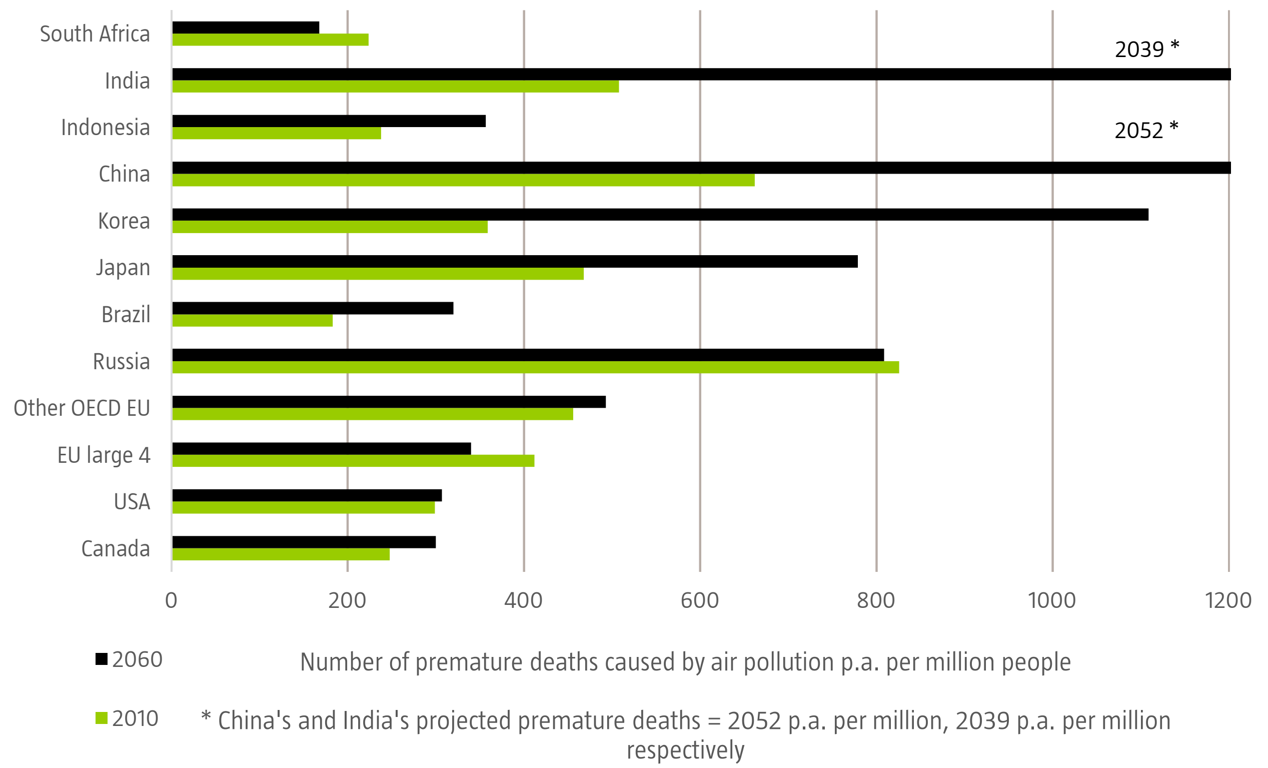


Source: OECD

[4] WHO Global Ambient Air Quality Database, World Health Organization, Update 2018, May 2018
[5] Roy, R. and N. Braathen: "The Rising cost of Ambient Air Pollution thus far in the 21st Century": Results from the BRIICS and the OECD Countries", OECD Environment Working Papers, No 124, OECD, Paris, 2017
[6] " The economic consequences of outdoor air pollution", OECD, June 2016

At a regional and country level, projected losses differ considerably. **Figure 12** shows the regional change in GDP from crop yield losses, increased health expenditures and lower labor productivity for selected OECD countries and the 6 BRIICS. According to this analysis, projected GDP losses will again be biggest in China, Russia and India, whereby the output will generally be hit most by lower labor productivity and rising health costs. China's population structure will be more vulnerable to dirty air in the coming decades whereas, in contrast, knock-on effects of higher health care spending will be cushioned in India thanks to its younger population.

Figure 13: The Human Toll—Premature deaths resulting from dirty air



Source: OECD

Another somewhat unexpected difference emerges when looking at farming output. While most countries will be suffering from a reduction in crop yields as a result of air pollution, a few, such as Brazil and Russia, will be less affected with respect to this specific impact criteria as is visible from **Figure 12**. The social costs of air pollution can be found in **Figure 13**. Apart from Russia, Asian countries are suffering most from poor air quality with regards to the number of premature deaths—a trend that will amplify further in the coming decades.

Results like these powerfully illustrate the potentially significant economic and social implications stemming from air pollution and why many of the larger emerging market economies perform poorly across environmental criteria.

Max Schieler
Senior SI Country Analyst

"A proper country sustainability assessment provides additional information and valuable insights into a country's underlying risk drivers that we believe are critical to making balanced investment decisions".

Endnotes

About this report

1) There has been no change in the set of indicators, data sources or ranking approach in this update, except for a change in the methodology for the Environmental Performance Index (EPI), which required to replace all previous original EPI input scores by the newly calculated EPI benchmark score. This was necessary as the methodology change did not permit a direct comparison of the newly calculated EPI 2018 scores with previous EPI scores. Comparisons with past scores are always based on re-calculated previous scores. The latter can differ from the originally published scores as they take potential changes in data sources, methodologies and/or data revisions into account.

2 "Measuring Country Intangibles," June 2015, is available on the RobecoSAM website: http://www.robecosam.com/en/sustainability-insights/about-sustainability/country-sustainability-ranking.jsp

Appendix

Environmental Status	Yale; Environmental Performance Index
	http://epi.yale.edu/
Energy	World Energy Council/Oliver Wyman; Energy Trilemma Index
	https://trilemma.worldenergy.org/
	International Energy Agency; World Energy Balances 2017
	http://www.iea.org/bookshop/753-World_Energy_Balances_2017
Environmental Risk	Bündnis Entwicklung Hilft; World Risk Report
	http://www.entwicklung-hilft.de/home.html
	Germanwatch; Global Climate Risk Index
	https://germanwatch.org/en/cri
Social Indicators	Social Progress Imperative; Social Progress Index
	https://www.socialprogressindex.com/
	UNDP; Gender Inequality Index
	http://hdr.undp.org/en/data
	UNICEF; Child Labour
	https://data.unicef.org/
	World Bank; World Development Indicators – GINI Index
	http://databank.worldbank.org/data/
	OECD; Income Distribution Database
	http://www.oecd.org/social/income-distribution-database.htm
Human Development	UNDP; Human Development Report
	http://hdr.undp.org/en
Social Unrest	Fund for Peace; Fragile States Index
	http://fsi.fundforpeace.org/
Liberty & Inequality	Freedom House; Political Rights & Civil Liberties
	https://freedomhouse.org/reports
Competitiveness	World Economic Forum; The Global Competitiveness Report 2017-2018, WEF, Switzerland, 2017
	https://www.weforum.org/reports/the-global-competitiveness-report-2017-2018
Political Risk	PRS Group; Political Risk Services (PRS)
	http://www.prsgroup.com/
Accountability	World Bank; Worldwide Governance Indicators
	http://info.worldbank.org/governance/wgi/index.aspx#home
Stability	World Bank; Worldwide Governance Indicators
	http://info.worldbank.org/governance/wgi/index.aspx#home
Effectiveness	World Bank; Worldwide Governance Indicators
	http://info.worldbank.org/governance/wgi/index.aspx#home
Regulatory Quality	World Bank; Worldwide Governance Indicators
	http://info.worldbank.org/governance/wgi/index.aspx#home
Rule of Law	World Bank; Worldwide Governance Indicators
	http://info.worldbank.org/governance/wgi/index.aspx#home
Corruption	World Bank; Worldwide Governance Indicators
	http://info.worldbank.org/governance/wgi/index.aspx#home
Aging	IMF - Fiscal Monitor; NPV of Pension & Health Care Spending Change 2015-50
	http://www.imf.org/external/
	UN – Population Division; Old Dependency Ratio & Old Dependency Ratio 2050
	https://esa.un.org/unpd/wpp/
	World Bank – Women, Business and the Law; Retirement Age
	http://wbl.worldbank.org/
Institutions	World Economic Forum; The Global Competitiveness Report 2017-2018, WEF, Switzerland, 2018
	https://www.weforum.org/reports/the-global-competitiveness-report-2017-2018

About RobecoSAM

Founded in 1995, RobecoSAM is an investment specialist focused exclusively on Sustainability Investing. It offers asset management, indices, impact analysis and investment, sustainability assessments, and benchmarking services. Together with S&P Dow Jones Indices, RobecoSAM publishes the globally recognized Dow Jones Sustainability Indices (DJSI) as well as the S&P ESG Factor Weighted Index Series, the first index family to treat ESG as a standalone performance factor using the RobecoSAM Smart ESG methodology. As of December 31, 2017, RobecoSAM had client assets under management, advice and/or license of approximately USD 20 billion.

RobecoSAM | Josefstrasse 218 | 8005 Zurich | Switzerland | T +41 44 653 10 10 | F + 41 44 653 10 80 | www.robecosam.com |
info@robecosam.com