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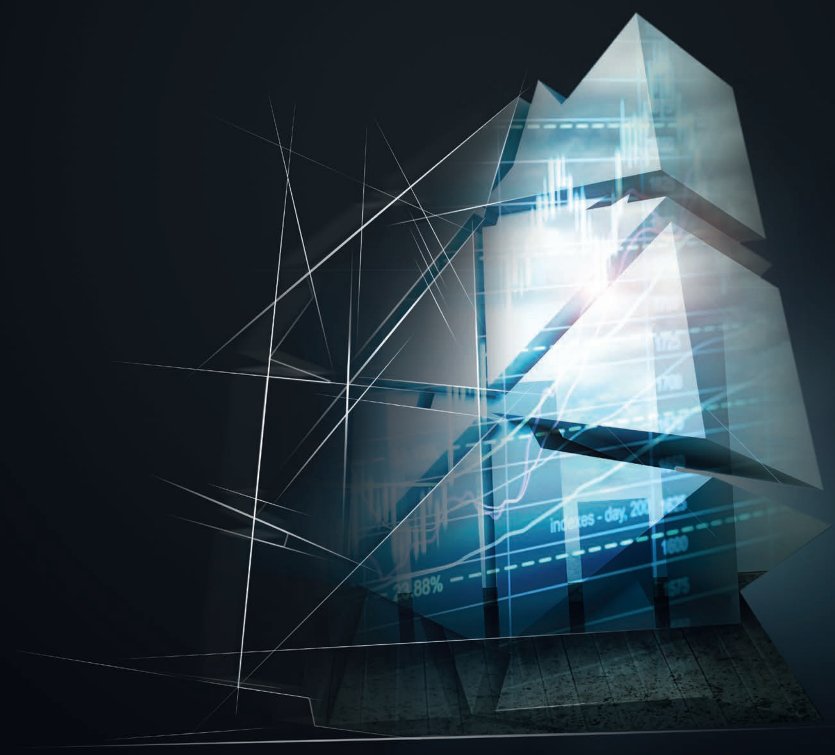

INTEGRATING THE UN SUSTAINABLE DEVELOPMENT GOALS INTO INVESTMENT PORTFOLIOS

April 2018

Executive summary

— The 17 United Nations Sustainable Development Goals (SDGs) set aspirations and targets for economic development, social inclusion and environmental sustainability – they are applicable in the developed and developing world.

— Reaching these Global Goals require governments, businesses, investors and civil society to join together to take action. Unlike their predecessors, the Millennium Development Goals, the SDG framework calls on the private sector to deliver solutions.

— Attention so far has largely focused on how businesses and investors can align their activities to specific SDGs. One mapping exercise has grouped the SDGs into five themes where companies have quantifiable business revenue (basic needs, empowerment, climate change, natural capital and governance)[1].

— Meanwhile the Business and Sustainable Development Commission has identified growth and investment opportunities around the SDGs[2]. The BSDC estimates the goals could be a key driver of economic growth and unlock opportunities worth up to $12tn per annum by 2030, or more than a tenth of global output. In addition, almost 400m jobs could be created across the food and agriculture, cities, energy and materials and health and well-being sectors.

— On the other hand, failing to achieve the SDGs could create macro financial risks. A range of major social issues as diverse as the loss of biodiversity, smoking, obesity, illiteracy and food waste are estimated to burden output growth by a fifth[2].

— Therefore the SDGs provide a roadmap for the likely path of public policy at an international, national and regional level. Consequently, investors are focusing on the SDGs not just to capture technological advances and associated business opportunities, but to ensure their investments are not in conflict with the likely path of public policy.

— In some quarters there is impatience as to when asset managers will start integrating and implementing an active SDG strategy into their investment process. This is important since a commitment to the SDGs as well as broader ESG factors are necessary conditions for the long-term economic success of a country.

— Up until now most attention has focused on private equity and debt funds such as China clean tech, US renewables or microfinance in emerging markets. But these investment opportunities can lack sufficient size for large institutions. Given investors want to scale-up their allocations, attention has turned to the fixed income and listed equity space for a solution.

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[1] MSCI 2016b
[2] BDSC September 2017
Forecasts are based on assumptions, estimates, opinions and hypothetical models or analysis which may prove to be incorrect.

— One such solution is sovereign bond funds that screen according to whether a country safeguards and enhances the political and civil rights of its citizens. For example, Deutsche Asset Management's ESG Engine ranks sovereigns incorporating, among other things, a country's human rights record, prevalence of the death duty, corruption, electoral democracies versus autocratic regimes, military spending and nuclear arms.

— Supporting open societies is a political SDG impact investment. The Indian economist and philosopher Amartya Sen (1999) concluded that "Expansion of freedom is viewed both as the primary end and as the principal means of development". Democratic governments have lower levels of corruption, better working conditions and are better at managing natural disasters.

— The development of a SDG focused sovereign bond funds could therefore bring investors into a more active role in promoting peaceful societies and building strong institutions, which aligns with SDG16 (peace, justice and strong institutions) and supports progress on all Global Goals. Sovereign bond investors could become more vocal in engaging Finance Ministries to support national SDG strategies.

— For listed equities and corporate bonds, Deutsche Asset Management now includes MSCI's ESG Sustainable Impact Metrics data into its broad ESG dataset. These measure the extent to which the products and services of specific companies support one or more of the SDGs. Currently, there is a small universe of companies with SDG related business revenue. However, some of these companies have poor rankings on some ESG issues, so investors need to have a broad perspective on business risks and opportunities.

— Such opportunities are concentrated in the affordable and clean energy (SDG7), climate action (SDG13) and good health and well-being (SDG3) sectors. Meanwhile sectors under-represented include education (SDG4), affordable housing (SDG11) and life below water (SDG14).

— Women's empowerment is both a pre-requisite and an outcome of achieving all of the SDGs. However, enabling women's leadership is needed, at all levels of society, to support progress on every Global Goal[1]. Such a focus on gender equality is much broader than SDG5, which prioritises the need to end all forms of discrimination against women and girls and their equal rights to employment, health, education and all types of decision-making.

— MSCI[2] and other reports have found that improved gender diversity can improve financial performance of large companies. MSCI[3] also found that 600 US companies with high gaps in pay between management and average workers were less profitable and had lower sales per employee. Beyond a financial rational, higher equality and more diversity is a necessary part of addressing societal mistrust and alienation with business and the financial sector.

— It is encouraging that more investors are asking companies to improve their internal diversity and reduce income inequality. However, such efforts should also focus on encouraging women leaders to influence their company's sustainable business agenda.

— We therefore suggest that a new frontier for investors is to combine data on gender diversity and income inequality with evaluation of the quality of companies' efforts to support the SDGs.

— Gender equality is not just needed in multi-national companies but also because 70 per cent of women-owned small and medium enterprises (SMEs) in developing countries lack access to financial services[4]. McKinsey estimates that a six per cent output boost in emerging markets could be created by 2025 by helping two billion adults gain access to financial services[5]. Large companies could have some influence with supply chain policies that support gender diversity and bottom of the pyramid business models. However, microfinance funds have a critical role to play in helping women-owned businesses to succeed, thus addressing some of the societal discrimination that still exists.

— In future we expect that SDG aligned investment strategies will gain traction across multiple asset classes such as private and listed equities, green bonds, green real estate and low-carbon infrastructure. Sector wise, an SDG approach will deepen into healthcare and renewables, while extending its reach into agriculture, transportation and water, among others

[1] BSDC September 2017
[2] MSCI November 2015
[3] April 2016
[4] IFC 2011
[5] McKinsey 2011

1 | What are the SDGs?

The UN Sustainable Development Goals (SDGs), or Global Goals, were signed by all 193 member countries of the United Nations in September 2015. Their ultimate objective is to achieve a more sustainable planet by 2030. Sustainability, in this context, can be defined as ensuring prosperity and environmental protection without compromising the ability of future generations to meet their needs. It therefore combines economic development with social inclusion and environmental sustainability.

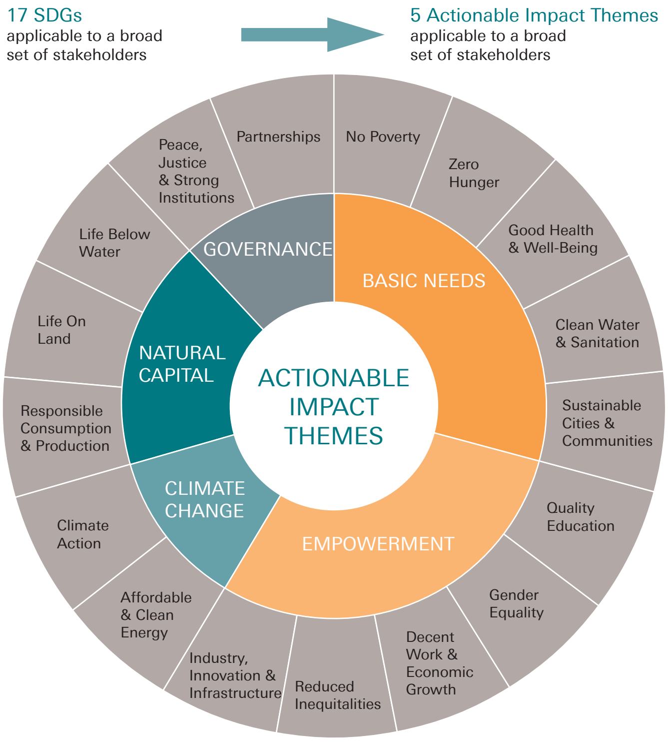
The SDGs are comprised of 17 non-binding goals and 169 targets that address key environmental and societal issues. These targets enable governments, companies and investors among others to monitor their own progress in achieving these goals, which include ending poverty, eliminating hunger, addressing gender equality and combating the effects of climate change, among others. The aim is to meet these targets by 2030. As a result the SDGs form a key part of the world's sustainable development agenda over the next decade and beyond. For the complete list of the SDGs and their descriptions please see Table 1 at the end of this report.

2 | How are the SDGs organised?

MSCI provides one way of classifying the SDGs for investors. It has grouped them into five categories: basic needs, empowerment, climate change, natural capital and governance[6] (Figure 1). This categorisation was developed to provide a framework for evaluating whether companies' business models and revenues relate to these five categories rather than 17 individual goals.

From a country perspective, assessing progress towards meeting the SDGs is, in certain cases, hampered by the availability of data. Analysis by Bizikova and Pinter[7] shows that countries are better at reporting on basic needs such as health, education, gender equality, infrastructure, decent work and economic growth, than reporting on environmental SDGs (12 to 15). This helps explain why countries find it hard to implement every SDG and monitor their progress relative to targets.

Figure 1: Mapping the SDGs to impact themes[8]



[6] MSCI 2016b
[7] 2017
[8] Source: MSCI ESG Research (April 2016) Toward Sustainable Impact Through Public Markets

3 | SDGs at a country level

Because of the challenges countries face in reporting accurate data across all SDGs, work by the Sustainable Development Solutions Network and Bertelsmann Stiftung (SDSN 2017) tries to help. The 2017 SDG index monitors 157 of the 193 UN member states by tracking a set of 99 different metrics covering all 17 SDGs. The aim of this work is to assess the degree to which a country meets the SDGs in their entirety.

For each of the SDGs a country is measured on a zero to 100 spectrum from the worst (0) to best (100). In this way, countries can focus on areas of the SDGs that need urgent action. In aggregate, if a country scores 75 it implies that it is on average 75 per cent of the way to the best possible outcome across all SDGs.

Figure 2 maps the world's 50 largest economies by output and ranks them according to their SDG country score. Not surprisingly poorer countries, and specifically sub-Saharan Africa, tend to perform badly on the SDG index. These countries and regions struggle to meet many of the SDGs particularly as they relate to basic needs such as ending poverty, zero hunger, health and well-being and quality education.

However, rich countries also have room for improvement. For example, the United States, the world's largest economy, scores relatively badly as a result of poor environmental standards, high levels of income inequality and weak social cohesion – highlighted by gun crime and prison numbers. Meanwhile Saudi Arabia and Nigeria – the world's 20th and 25th biggest economies respectively – are ranked number 101 and 145 out of 157 countries on a SDG basis, reflecting in the case of Saudi Arabia high levels of income and gender inequality.

The SDG Index and Dashboards Report 2017 (SDSN 2017) also reveals that while OECD countries meet many of the basic needs and empowerment categories of the SDGs, they often fall short on environment and natural capital, and as such should concentrate their efforts on encouraging sustainable consumption and production (SDG12), climate change (SDG13) clean energy (SDG7) and ecosystem conservation (SDG14 and 15).

However, even in developed markets improvements can be made to basic needs such as zero hunger (SDG2). Here, unsustainable nutrient and food production methods, most notably in Europe, as well as high obesity levels across North America and Europe are undermining scores in health and well-being (SDG3).

Such findings can be used in parallel with Deutsche Asset Management's proprietary ESG sovereign ratings. These incorporate, among other things, a country's human rights record, prevalence of the death penalty, corruption, electoral democracies versus autocratic regimes, military spending and nuclear arms. Deutsche Asset Management subscribes to the most relevant NGOs such as Amnesty International, Freedom House, German Watch and Transparency International. The development of sovereign bond funds along these lines would draw investors into a more active role in promoting peaceful societies and building strong institutions (SDG16).

Figure 2: Mapping the world's 50 largest economies[1] against the UN Sustainable Development Goals

SDG rank	Country	SDG score	GDP rank	SDG rank	Country	SDG score	GDP rank	SDG rank	Country	SDG score	GDP rank	SDG rank	Country	SDG score	GDP rank
1	Sweden	85.6	22	17	Canada	78.0	10	52	Israel	70.1	32	87	Egypt	64.9	31
2	Denmark	84.2	33	19	Ireland	77.9	35	54	Malaysia	69.7	37	88	Colombia	64.8	39
3	Finland	84.0	42	25	Spain	76.8	14	55	Thailand	69.5	25	89	Iran	64.7	27
4	Norway	83.9	29	26	Australia	75.9	13	56	Brazil	69.5	9	93	Philippines	64.3	34
5	Czech Rep.	81.9	47	27	Poland	75.8	23	58	Mexico	69.1	15	100	Indonesia	62.9	16
6	Germany	81.7	4	28	Portugal	75.6	45	61	Singapore	69.0	36	101	Saudi Arabia	62.7	20
7	Austria	81.4	28	30	Italy	75.5	8	62	Russia	68.9	12	108	South Africa	61.2	38
8	Switzerland	81.2	19	31	Korea	75.5	11	67	Turkey	68.5	17	116	India	58.1	7
10	France	80.3	6	35	Romania	74.1	50	68	Vietnam	67.9	46	120	Bangladesh	56.0	44
11	Japan	80.2	3	38	Greece	72.9	49	71	China	67.1	2	122	Pakistan	55.6	40
12	Belgium	80.0	24	41	Argentina	72.5	21	77	UAE	66.0	30	145	Nigeria	48.6	26
13	Netherlands	79.9	18	42	US	72.4	1	79	Peru	66.0	48				
16	UK	78.3	5	44	Chile	71.6	41	82	Venezuela	65.8	43				

[1] Country SDG ranking scores are not calculated for Hong Kong SAR and Taiwan, Province of China
Source: Bertelsmann Stiftung, Sustainable Development Solutions Network (July 2017). The SDG Index and Dashboards Report 2017

4 | The SDGs at a corporate level

Many companies around the world have been aiming to incorporate sustainability into their business activities for many years. One example, is the 9,000-plus companies that are signatories to the UN Global Compact, officially launched in July 2000. This initiative encourages businesses to follow ten principles in the areas of human rights, labour, the environment and anti-corruption.

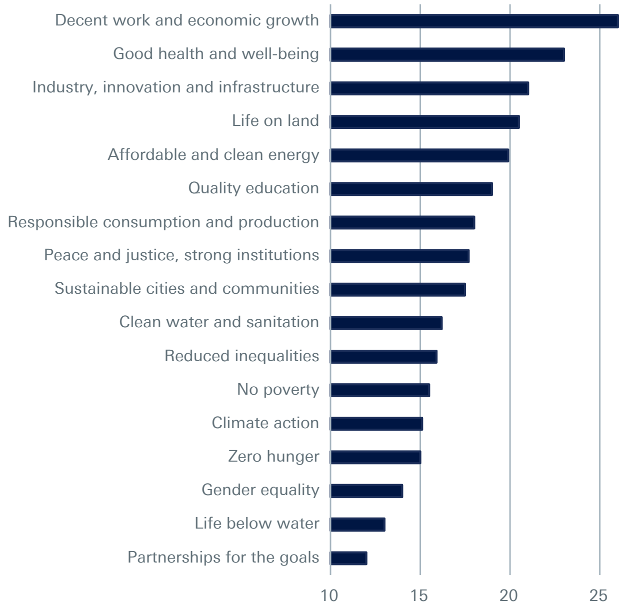
The SDGs take this commitment further, calling on companies to incorporate the SDGs into their business models, innovations and investments. In its 2017 Better Business, Better World report, the 35 chief executives and civil society members of the Business and Sustainable Development Commission identified 60 major market opportunities across the food and agriculture, cities, energy and materials, and health and well-being sectors. The economic upside was estimated to be worth up to $12tn, or roughly a tenth of global output, with employment potentially boosted by almost 400m by 2030 (BSDC 2017). Examples of business opportunities are reducing food waste, new farm technologies, affordable housing, energy efficient buildings and public transport, developing circular business models in big sectors, insurance risk pooling, tele-health and advanced genomics.

Over recent years a number of surveys have been conducted to assess where companies see the best business opportunities among the SDGs. One was a 2017 report published by the Norwegian energy and shipping advisory firm DNV GL, the Danish advisory group Sustainia, and the United Nations Global Compact (2017).

This particular survey polled 5,500 business people, asking them to select the three SDGs with the most business potential. The top five choices among those polled were decent work and economic growth (SDG8), health and well-being (SDG3), industry, innovation and infrastructure (SDG9), life on land (SDG15) and affordable and clean energy (SDG7). (Figure 3)

Meanwhile, a PwC survey (2015) found that certain sectors have a natural alignment to certain goals. For example, companies in the energy, mining and utilities sector identified affordable and clean energy (SDG7) as offering the greatest business opportunity. Similarly, the healthcare sector focused on health and well-being (SDG3), while the chemicals sector identified zero hunger (SDG2), a sign of the sector's important role in the agribusiness.

Figure 3: SDGs ranked according to which represent a business opportunity[2]



Percent of respondents ranking the SDGs by business investment opportunity

Both the DNV GL and the PwC surveys also revealed where business involvement could fall short in addressing specific SDGs. Of particularly concern are the low scores for addressing life below water, gender equality and zero hunger. However, these low rankings may simply reflect that companies have still to assess how their business activities are relevant to the SDGs and the degree to which many of the SDGs are interconnected.

For example, every company ranked promoting decent work and economic growth (SDG8) highly in terms of a business opportunity, yet this goal will also support efforts to eliminate poverty, address hunger and reduce inequalities. Likewise, the deterioration in marine life is largely due to business activity and specifically agricultural run-off, sewage and plastic, yet is overlooked as a business opportunity.

It is also worth remembering that the focus of companies will not just be on delivering more sustainable business practices, for example under the UN Global Compact, but delivering sustainable products and services that support the SDGs. In this regard, improving corporate reporting as it relates to the SDGs is an obvious next step. To assist in enhancing corporate SDG performance, a new benchmarking tool is being developed by the World Benchmarking Alliance (WBA). Its aim is to develop an international league table that identifies business leaders and laggards in terms of SDG best practise. This may help to avoid the

[2] Source: Sustainia, DNV GL United Nations Global Compact (January 2017). Global Opportunity Report 2017

risk of SDG-washing, and introduce a more robust level of scrutiny on company behaviour.

Benchmarking may also encourage businesses to develop common indicators that measure their impact on the SDGs. The WBA would then be able to provide comparable rankings of companies' performance toward achieving the SDGs. Given the increasing evidence of the materiality of ESG factors, such a benchmarking tool is likely to prove useful to investors given the trend to incorporate more extra-financial information into their investment process. Indeed, from a listed equity perspective, the challenge currently is data availability and then identifying companies that are driving change.

5 | The SDGs at a investor level

According to the United National Conference on Trade and Development, achieving the SDGs may require up to $7tn in investment each year from 2015 to 2030 – of which up to $6tn is reliant on the private sector (UNCTAD 2014). To put these numbers into perspective, the size of the global economy was $80tn last year (IMF 2017) and signatories to the Principles for Responsible Investment (PRI) held a combined $70tn in assets under management as of April 2017 (PRI 2017a).

However, the PRI reports that only 17 per cent of PRI signatories report an allocation to environmental and socially themed investments such as microfinance, renewable energy, clean tech and affordable housing, and that these investments amount to approximately $2tn in total (PRI 2017b). As a result, significant scaling-up of allocations to impact investments by the investor community will be required to make achieving the SDGs a reality by 2030.

To assist in this process the PRI has detailed the relevance of the SDGs to institutional investors' investment strategy, asset allocation and active ownership activities (PRI 2017c) (Figure 4). This has been accompanied by certain asset owners and managers examining how to incorporate the SDGs into their investment approach. Work published in May 2017 by the Dutch pension managers APG and PGGM identified investment opportunities linked to 15 of the 17 SDGs, or so-called Sustainable Development Investments (PGGM, APG 2017).

These efforts suggest that investment decision making is likely to become increasingly thematic and impact focused – an area of the ESG investment universe still in its infancy. However, we expect that more well-established ESG investment styles such as ESG integration and corporate engagement may focus on the SDG agenda.

Blended finance, that is blending public and private investment, is also likely to become an important mechanism to mobilise private sector investments that support the SDGs. Indeed a large proportion of the SDG financing gap relates to sustainable infrastructure projects in the developing world. As these type of investments can carry high levels of macro, credit and currency risk, many public and private investors are developing and expanding risk sharing mechanisms. Expanding the blended finance market could help to bridge this financing gap with the aim of improving risk-return characteristics for private sector investors.

In its recent report Better Finance, Better World (2016), the Blended Finance Taskforce estimated the size of the blended finance market at about $50bn, with the expectation that this could double by 2020 as more development capital from governments, development banks and/or foundations is made available for blending. The aim is to de-risk SDG-related investments, such as sustainable infrastructure, healthcare, education and sustainable land use, in order to crowd in private investor capital. Examples of institutions that are developing blended finance for climate projects include the Green Climate Fund and the International Finance Corporation.

Figure 4: Investment risks and opportunities around the SDGs[1]

	Risks	Opportunities
Macro	Failing to achieve the SDGs will create macro financial risks for large institutional, universal owner investors	Achieving the SDGs will be a key driver of global GDP growth over the next decade and beyond
Micro	The SDGs provide a future looking risk framework for specific industries, companies and countries i.e. the SDGs forecast future government policy making and stakeholder requirements	Companies and assets moving towards sustainable business models are a clear investment opportunity

[1] Source: Adapted from PRI – The SDG Investment Case (October 2017)
Forecasts are based on assumptions, estimates, opinions and hypothetical models or analysis which may prove to be incorrect.

6 | Capturing SDG exposure

The UN Sustainable Development Goals provide an important framework for governments, companies and investors. Asset managers should be particularly interested in the risks and opportunities the SDGs present to their existing holdings and how the SDGs will open up new investment opportunities.

Look at China for example, to see the strong political will and incentives to support clean and affordable energy (SDG7) as well as climate action (SDG13). Last year, Chinese clean energy investment hit $130bn, more than double the investment of the US – its nearest rival – and representing 40 per cent of global clean energy investment (BNEF 2018).

The major opportunities of this transformation are taking place across the clean energy sectors such as solar, wind, biofuels, compressed natural gas technologies, power storage and electric vehicles. In addition, efforts to improve energy efficiency and reduce energy and carbon intensity are delivering investment opportunities for the lighting, power distribution and building materials sector, as well as real estate assets. Meanwhile environmental resource management will affect the water, waste management, soil reclamation and clean agricultural sectors.

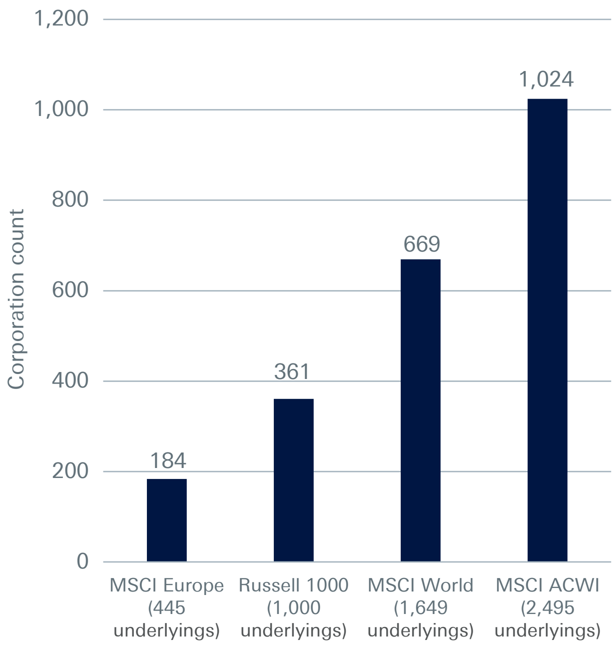
Such opportunities are not just restricted to Asia. In the US, a transformation is also underway in the power generating sector and specifically in the distributed utility-scale solar and wind sectors. These investment opportunities are timely since they are appearing as more global asset owners are establishing low carbon commitments and seeking to increase their allocations that are aligned to specific SDGs.

However, the available investment instruments to support specific SDGs are often limited to private equity or debt. This is typically true with SDG goals focused on basic needs such as ending poverty and hunger. Currently investments aligned to these goals are mostly served by microfinance institutions and development banks. While this market is growing, with microfinance investment vehicles (MIVs) assets under management of $14bn at the end of 2016 and institutional investors representing half of all capital outstanding in MIVs, the relatively small size of the microfinance market presents limitations in terms of allocations for large institutional investors (Symbiotics 2017).

This is perhaps why institutional investors are increasingly focusing their gaze on the listed equity and bond universe, which in certain sectors offers alignment to a number of SDGs. These include health and well-being (SDG3), affordable and clean energy (SDG7), decent work and economic growth (SDG8), industry, innovation and infrastructure (SDG9) and responsible consumption and production (SDG12).

Data from MSCI provide investors with the tools to assess whether corporations in the listed equity universe are supporting one or a number of the SDGs. DWS analysed a range of benchmark equity indices to assess the degree to which the respective investment universe made a meaningful contribution, defined as deriving at least some revenues from SDG related products. The result was that in all the indices under investigation less than half of the underlying companies make a positive SDG contribution (Figure 5).

Figure 5: Number of corporations within respective equity index benchmark making positive contribution to the SDGs by products and services[2]



Further analysis reveals that only 300 corporations have a considerable SDG impact – that is, where sales supporting the goals are in excess of 50 per cent of their total revenues. In contrast, around 55 per cent of all globally listed companies, have a SDG revenue share of less than 10 per cent. When the SDG revenue hurdle is lowered to a quarter of sales around 560 corporations are captured. These corporations are typically concentrated in the alternative energy, energy efficiency and healthcare sectors (Figure 6).

[2] Source: MSCI, DWS (February 2018)

Figure 6: The number of companies classified according to their SDG revenue size[1]

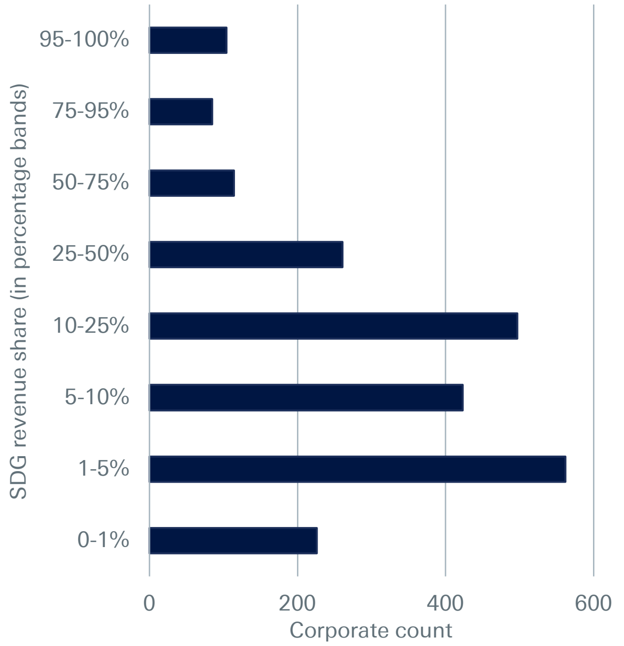
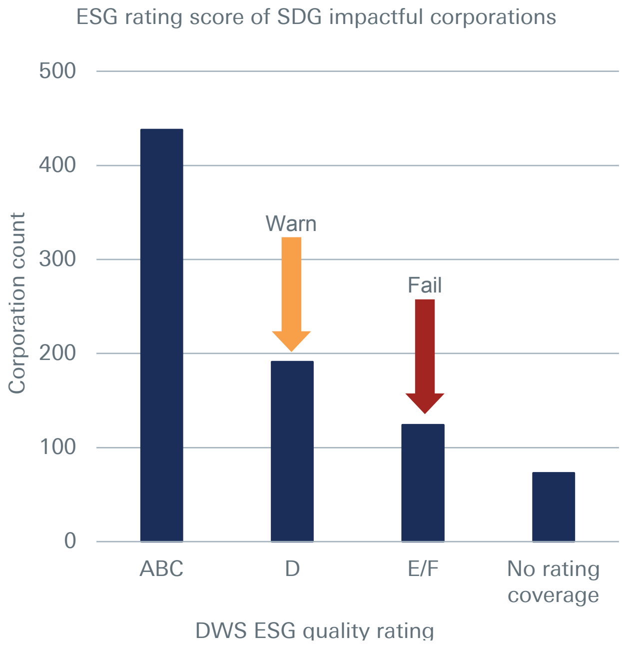


Figure 7: Evaluating the ESG rating of a company whose revenues supporting the SDGs are in excess of 25 per cent[1]



We examine the listed universe of 2,272 companies.

While a company may be reporting a large and increasing share of revenue streams making an SDG contribution, it may not comply with broader ESG quality and norm tests. To assess this risk we examined those companies where revenues supporting the SDGs were in excess of 25 per cent of their top lines and mapped those companies against DWS's proprietary ESG rating scores.

These scores are derived from the ESG data vendors MSCI, Oekom and Sustainalytics, as well as information on a company's involvement in controversial sectors and compliance with norms covered by the UN Global Compact in the areas of human rights, labour, the environment and anti-corruption. Ratings are classified from A (leaders) to F (laggards). ESG investors usually seek to avoid companies rated E and F with increased scrutiny on D rated securities.

This mapping of SDG revenues to ESG quality score reveals that approximately 15 per cent of companies with a SDG revenue stream in excess of 25 per cent fail a standard ESG quality test, while an additional quarter of companies are flagged with a D rating (Figure 7).

7 | Conclusion

We believe the UN Sustainable Development Goals are providing investors with valuable signals as to the likely investment decisions of corporations and the direction of government policy around the world.

Already, considerable time and energy is being spent on incorporating ESG as a risk management tool that builds resilience into investment portfolios. While such a risk-based approach is important – and has been given a new boost recently by the emergence of tools that help to embed physical climate risk resilience into portfolios – the SDGs are delivering more positive motivations for responsible investing that not only seek financial returns, but also attempt to measure environmental and social outcomes.

Investors have an important role to play in engaging companies to strengthen their SDG business strategies. The outcome of such engagement would be more companies that are seizing the $12trn investment opportunity of the SDGs with more revenue attributable to SDG related businesses. Investors allocating to equity and bond funds that prioritise companies with SDG revenue could have an important signalling effect for companies to strengthen their SDG business strategies in the areas of food and agriculture, cities, energy, materials, health and other sectors.

[1] MSCI, DWS (February 2018)

Table 1: An overview of the UN Sustainable Development Goals

End poverty in all its forms everywhere
- Since 1990 the number of people living in extreme poverty, that is people living on less than USD1.90 a day, has fallen from 1.7 billion to 767 million in 2013, with approximately half of the world's poor living in sub-Saharan Africa
- Many of the extreme poor live in rural areas and work in agriculture and are vulnerable given the lack of social protection systems
- In 2016, only 45% of the world's population were covered by at least one social protection cash benefit

End hunger, achieve food security and improved nutrition and promote sustainable agriculture
- Globally around 793 million people were under-nourished in 2014-16, down from 930 million in 2000-02. Southern Asia and sub-Saharan Africa accounted for 63% of under-nourished people worldwide
- Approximately one-third of food produced for human consumption gets lost or wated globally, equivalent to 1.3 billion tons per annum[1]

Ensure healthy lives and promote well-being for all at all ages
- The risk of dying between the ages of 30 and 70 from one of four main non-communicable diseases – cardiovascular disease, cancer, diabetes or chronic respiratory disease fell from 23% to 19% between 2000 and 2015
- 303,000 women died during pregnancy or childbirth and 5.9 million children under 5 years old died worldwide in 2015. Most of these deaths from preventable causes
- Globally in 2012, household air pollution from cooking with unclean fuels and inefficient technologies led to an estimated 4.3 million deaths

Ensure inclusive and equitable quality eduction and promote lifelong learning opportunities for all
- Worldwide, around 57 million children of primary school age did not attend school in 2014
- The economic cost of out-of-school children range from 1% - 10% of GDP with educational underperformance contributing to economic inequality
- Data for 2011 indicate that only about one quarter of schools in sub-Saharan Africa had electricity, less than half had access to drinking water, and only 69% had toilets

Achieve gender equality and empower all women
- Women's participation in single or lower houses of national parliaments worldwide reached only 23.4% in 2017
- In the majority of the 67 countries with data from 2009 to 2015, fewer than a third of senior- and middle- management positions were held by women
- On average, women spent almost triple the amount of time on unpaid domestic and care work as men, based on data from 2000 to 2016

Ensure availability and sustainable management of water and sanitation for all
- Open defecation, practised by 892 million people or 12% of the global population in 2015 continues to pose serious health risks
- In 2015, 5.2 billion people (71% of the global population) used a safely managed drinking water service. In the same year, 2.9 billion or 39% of global population used a safely managed sanitation service, which safely disposes of human waste
- More than 2 billion people are living in countries with excess water stress, which occurs when the ratio of fresh water withdrawn to total renewable freshwater resources is above a 25% threshold. North Africa and Asia are most at risk with water stress levels at 60%

[1] United Nations, Food and Agricultural Organization (September 2013) Food wastage footprint: Impacts on natural resources

7 AFFORDABLE AND CLEAN ENERGY

Ensure access to affordable, reliable, sustainable and modern energy for all

– 1.06 billion or 14.7% of the global population in 2014 had no access to electricity with a disproportionate number of these people in rural areas
– 3 billion people mostly in Asia and sub-Saharan Africa lack access to clean cooking fuels and technologies and are exposed to high levels of household air pollution
– The share of renewable energy in final energy consumption grew from 17.5% to 18.3% between 2010 and 2014 with water, solar and wind accounting for most of the increase and largely concentrated in the power generating sector

8 DECENT WORK AND ECONOMIC GROWTH

Promote inclusive and sustainable economic growth, full and productive employment and decent work for all

– Since the 2009 financial crisis, the growth in labour productivity, measured by GDP per worker, has slowed to 1.9%. This compares to 2.9% between 2000 and 2008
– Around 1 in 10 children (aged between 5 and 17) worldwide or 168 million children in 2012 were engaged in child labour with more than half of them exposed to hazardous forms of work
– In 2016, those aged between 15 and 24 years old were nearly three times more likely than adults to be without a job

9 INDUSTRY, INNOVATION AND INFRASTRUCTURE

Build resilient infrastructure, promote inclusive and sustainable industrialisation and foster innovation

– According to the United National Conference on Trade and Development, achieving the SDGs may require up to USD7 trillion in investment each year from 2015 to 2030 of which up to USD6 trillion is reliant on the private sector[2]
– Estimates for total investment needs in developing countries alone range from USD3.3 trillion to USD4.5 trillion per year for basic infrastructure[2]

10 REDUCED INEQUALITIES

Reduce inequality within and among countries

– On average, income inequality increased by 11% in developing countries between 1990 and 2010
– In developing countries, more than 75% of the population are living today in societies where income is more unequally distributed than it was in the 1990s[3]

11 SUSTAINABLE CITIES AND COMMUNITIES

Make cities and human settlements inclusive, safe, resilient and sustainable

– From 2000 to 2015, in all regions of the world, the expansion of urban land outpaced the growth of urban populations, resulting in urban sprawl
– The proportion of the urban population living in slums worldwide fell from 28% in 2000 to 23% in 2014. However, in sub-Saharan Africa, 56% of urban dwellers live in slum conditions
– Nine out of 10 city dwellers are living in cities where air pollution is a health hazard, that is levels of PM2.5 in breach of World Health Organisation safety levels

12 RESPONSIBLE CONSUMPTION AND PRODUCTION

Ensure sustainable production and consumption patterns

– Globally, the material footprint of human beings increased from 48.5 billion tonnes in 2000 to 69.3 billion tonnes in 2010
– Australia and New Zealand had the highest material footprint per capita followed by Europe and North America
– The proportion of countries reporting data on multilateral agreements, such as the Parties to the Stockholm and Rotterdam Conventions, continues to disappoint

[2] UNCTAD World Investment Report 2014 (June 2014). Investing in the SDGs: An Action Plan
[3] The UN Sustainable Development Goals, United Nations Sustainable Development Knowledge Platform
[4] The Economics of Ecosystems and Biodiversity, TEEB for Agriculture & Food Interim Report (December 2015)

Take urgent action to combat climate change and its impacts
– Close to 40% of the world's population live in coastal communities and about 61% of the world's GNP is produced within 100 kilometres of oceans making people and economic assets vulnerable to extreme weather events
– Economic losses from natural hazards ae now estimated to amount to USD250–300 billion per annum, with a disproportionate impact on small and vulnerable countries
– From 1990 to 2015, more than 1.6 million people died in internationally reported natural hazards and this trend is moving upwards over time

Conserve and sustainably use the oceans, seas and marine resources for sustainable development
– In 2013, 31% of marine fish stocks were overfished, that is are at biologically unsustainable levels, compared to 10% in 1974
– As atmospheric CO2 levels increase, estimates indicate that oceans could be nearly 150% more acidic by 2100, which weakens the shells and skeletons of many marine species
– Coastal euthrophication is set to increase by 21% in the world's large marine ecosystems by 2050 causing dense plant growth and the death of animal life from lack of oxygen

Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, reverse land degradation and halt biodiversity loss
– The proportion of the world's land area covered by forests has decreased from 31.6% in 1990 to 30.8% in 2010 and 30.6% in 2015 implying the rate of loss is slowing
– 2.6 billion people depend directly on agriculture, but, the sector is thought to cause around 70% of the projected loss of terrestrial biodiversity[4]
– In 2013, elephant ivory, rosewood, rhinoceros horn and reptiles comprised 70% of total wildlife seizures

Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels
– War, violence and persecution worldwide led to the displacement of 65.6 million people by the end of 2016, an increase of around 300,000 since 2015 and a new multi-decade high
– In 2015, the intentional homicide rate in countries with high income inequality was nine times that of countries with low income inequality
– Globally, the proportion of people held in detention without being tried or sentenced for a crime was 31% in 2013-2015
– In 2014, 71% of identified trafficking victims were women and girls

Strengthen the means of implementation and revitalise the global partnership for sustainable development
– Official development assistance reached USD135.2 billion in 2014, the highest level ever recorded[3]
– 79% of imports from developing countries enter developed countries duty-free[3]
– Four billion people do not use the Internet, and 90% of them are from the developing world[3]

[3] The UN Sustainable Development Goals, United Nations Sustainable Development Knowledge Platform
[4] The Economics of Ecosystems and Biodiversity, TEEB for Agriculture & Food Interim Report (December 2015)
Source icons: http://www.undp.org/content/undp/en/home/sustainable-development-goals.html

References 1 / 2

Amartya Sen (1999) Development as Freedom

Ban Ki-moon, former Secretary General of the United Nations

Bertelsmann Stiftung (2017), Sustainable Development Solutions Network (July 2017). The SDG Index and Dashboards Report

Bizikova and Pinter (June 2017). Indicator Preferences in National Reporting of Progress Toward the Sustainable Development Goals

Blended Finance Taskforce (January 2018). Better Finance, Better World

Business and Sustainable Development Commission (January 2017). Better Business, Better World

Clean Energy Investment Trends, 2017 (January 2018). Bloomberg New Energy Finance

DNV GL, UN Global Compact, Sustainia (January 2017). Global Opportunity Report 2017

IFC (October 2011). Strengthening access to finance for women-owned SMEs in developing countries

IMF/WB World Economic Outlook Database (October 2017). Gross domestic product, current prices in US dollars

McKinsey Global Institute (September 2016). How digital finance could boost growth in emerging economies

MSCI ESG Research (November 2015). Women on Boards

MSCI ESG Research (April 2016a). Income inequality and the intracorporate pay gap

MSCI ESG Research (April 2016b). Toward Sustainable Impact Through Public Markets

PRI database (April 2017a).

PRI (October 2017b). Aligning Responsible Investment with the US Sustainable Development Goals

PRI (October 2017c). The SDG Investment Case

PGGM, APG (May 2017) Sustainable Development Investments (SDIs) Taxonomies

PwC (October 2015), Make it your business: Engaging with the Sustainable Development Goals

Symbiotics (September 2017). MIV Survey

Schramade W. Erasus University, NN Investment Partners (May 2017). Investing in the UN Sustainable Development Goals: Opportunities for Companies and Investors

UNCTAD World Investment Report 2014 (June 2014). Investing in the SDGs: An Action Plan

References (2/2)

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