

Sustainable Investing (SI) Portfolios: Investing for returns and for good

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Many investors express interest in sustainable investing, but do not have a clear idea of how they can achieve both sustainable/impact objectives and financial returns in diversified investment portfolios. Conventional portfolios focus exclusively on delivering risk-adjusted returns, but do not proactively consider the positive or negative social and environmental effects of underlying investments, and are not motivated by opportunities to drive positive change. Yet there is rapidly growing recognition by leading institutional and individual investors that environmental, social and governance (ESG) factors can materially impact investment fundamentals, valuations and long-term returns, both positively and negatively. Investors who understand this linkage and see these considerations as key objectives are working to integrate them into processes and portfolios by design. Differing preferences mean that investors do so in a range of ways, with some prioritizing risk mitigation, some focusing on long-term opportunities, and others seeking to actively drive specific societal and environmental outcomes.

To address this opportunity, we investigated how to design Sustainable Investing (SI) portfolios with 100% SI exposures (excluding cash) that also have expected volatility-adjusted returns comparable to traditional portfolios. While the sustainable investing product set has evolved over the years to meet increased demand, this universe still skews toward exclusion-based strategies. Our approach to incorporating non-financial objectives into portfolio construction focused on utilizing only asset class and strategy building blocks with explicit sustainable investing benefits that can be clearly articulated and demonstrated.

This research led the UBS Wealth Management US Asset Allocation Committee (AAC) to develop a new suite of SI Strategic Asset Allocations (SAAs) (see *Introducing the House View Sustainable Investing Strategic Asset Allocations*, dated 11 June 2018). Based on the UBS Capital Market Assumptions (CMAs) they have similar estimated total returns and total risks as the existing UBS House View SAAs. Each exposure selected for the SAAs contributes differently to impacting people and the planet, moving beyond simple avoidance of harmful effects and focusing instead on funding social and environmental leaders and projects, and in certain cases actively contributing to positive change. As the sustainable investing product universe expands over time to include more asset classes and outcomes-focused strategies, we expect to evolve these portfolios. We see this portfolio approach as compelling for investors who want to achieve their financial return objectives while also targeting social and environmental objectives.

Addressing Evolving Investor Priorities

Institutional and individual investors increasingly express the desire to incorporate sustainable and impact objectives into their investment decisions. Like financial goals, investors establish sustainable and impact objectives based on their personal preferences regarding the social and environmental issues they prioritize and their intentions about the type of effect they want to achieve in these areas through their investments. For example, an investor might want her capital to prioritize climate change as an objective. She may prefer a portfolio that tilts toward solutions that actively contribute to positive change on climate issues, or a portfolio that merely avoids exposure to significantly climate polluting companies or industries. The question for investors is how to address such objectives while meeting their core financial objectives of maximizing financial return for a given level of risk.

Investors need a framework to first identify the type of social/environmental impacts they want to achieve, and then determine how they can address these objectives while meeting their core financial goals. Traditional asset allocations are built to achieve financial goals, but typically fall short on sustainable and impact objectives because they are only focused on maximizing expected returns for a given level of risk. They therefore almost exclusively include strategy and asset-class building blocks that have no inherent impact goals. As a result, typical approaches to incorporating sustainability involve implementing conventional asset class categories with investments that target the same exposures (e.g. US large cap core), but use exclusion overlays or ESG ratings based methodology to inform security selection. These approaches improve on conventional strategies, but do not necessarily enable investors to describe how these investments contribute to achieving broader social or environmental goals.

Understanding and articulating impact objectives

Financial goals and the way we describe them – using risk, return and liquidity, among other elements – are generally well understood. No similar widely accepted convention exists when it comes to articulating the objectives we aim to achieve from a sustainability or impact perspective. The lack of standards or comparability of metrics across sectors, asset classes and strategies make it difficult to optimize diversified portfolios for impact as we do for risk and return.

Despite the challenges of optimizing for impact, asset owners, advisors, fund managers and others recognize the need for common convention to characterize how their investments contribute to social and environmental challenges. This has created the need for industry initiatives such as the Impact

Management Project, whose aim is to provide a shared framework and language that improve understanding and communication between these different participants. We find the Impact Management Project's high-level framework is useful for describing sustainable and impact objectives, so that various investment types can be effectively mapped against them. In brief, it frames the impact of any investment as a function of: 1) the impact objectives of the underlying fund or company receiving the investment; and 2) the contribution of the investor to help advance realization of these objectives.

In order to differentiate the varying levels of impact for different strategies, we need to be able to describe the underlying fund or company's sustainable and impact objectives with more granularity. The Project identifies five key dimensions for doing so: "what" (the outcomes targeted), "how much" (the extent of the effect targeted), "who" (the outcome's beneficiaries), "contribution" (the outcome's effect on the status quo, whether positive or negative), and "risk" (the chance that the effect achieved differs from what was expected).

The second dimension, the investor's contribution, describes how actively she desires to support the fund or business in achieving its targeted outcome. Potential investor strategies cover a wide range: at the more passive end of the spectrum, signaling that sustainability and impact matters; actively engaging with expertise to improve sustainable and impact performance; providing capital that grows new or undersupplied capital markets; and at the most active end of the spectrum, providing flexible capital willing to accept trade-offs like longer term or sub-commercial returns to achieve specific outcomes.

Combining these two dimensions (objectives and investor contribution) to articulate the type of impact targeted by various investments enables investors to select the solutions likeliest to achieve their own objectives. Most portfolios, just as they are diversified by region, strategy, instrument, etc., will also be diversified from a sustainable and impact perspective with a mix of different solutions each delivering varying levels of intent, active contribution and impact. Mapping investments against these objectives provides investors with a clearer picture of what they expect from each exposure and in the aggregate, and enhances our understanding of the levels of impact delivered across SI portfolios. In the following section, we outline a number of key investment exposures that incorporate sustainable and impact objectives, and map them against traditional asset classes to support portfolio construction.

The Sustainable Investing Portfolios

The SI portfolio is an investment concept designed to allow SI-focused investors to generate market-rate returns using a diversified portfolio, while knowing that their investments incorporate an understanding of how they affect people and the planet. Our approach to constructing SI portfolios follows many of the core principles applied to create our existing House View strategic asset allocations (SAAs), with modifications to incorporate sustainable and impact objectives. Specifically, the SI portfolios are constructed entirely from asset classes and investment strategies with inherent sustainable and impact objectives. Creating these portfolios required evaluating a variety of asset classes and strategies on both SI attributes and their risk and return properties.

The building blocks: Identifying sustainable investing exposures

To achieve the dual obligations of financial return and sustainable / impact objectives, our first step is to identify the portfolio building blocks that satisfy these requirements by intent and design. We do so by taking traditional asset classes, such

as government bonds or global equities, and mapping all the investment strategies that incorporate sustainable and impact objectives against them. These strategies span the entire capital structure and come from issuer types that range from corporates to governments and supranational institutions. We consider a range of distinct equity styles that incorporate sustainable investing considerations differently, but all in an explicit manner. Within fixed income, we consider the full spectrum in terms of underlying instrument exposure, credit-worthiness (rating), location (developed and developing markets), complexity of structure, and liquidity.

A relatively wide range of asset classes with inherent sustainable and impact objectives already exists today, so we can construct portfolios suitable to any investor profile in terms of investment risk, liquidity constraints, and desired consequence. Fig. 1 shows examples of currently available asset classes and strategies with varying levels of social and environmental impact, each mapped to comparable traditional asset classes. The type of impact for a particular investment

Fig. 1: Mapping products to asset classes

Traditional asset class	Sustainable investing product	Examples
Government bonds	Bonds issued by development finance institutions (DFIs) / multilateral development banks (MDBs)	MDBs such as the World Bank are backed by multiple governments, and they issue bonds with the aim of financing sustainable economic development.
	Sustainable municipal bonds	Municipal bonds whose proceeds are designated to fund projects with specific social and environmental objectives.
Corporate bonds	Green bonds	Bonds that finance environmental projects. Issuers include corporations, municipalities, and development banks.
	Positively screened corporate bonds (Corporate bonds ESG leaders)	Bonds issued by companies that manage a range of critical ESG (environmental, social, governance) issues and seize ESG opportunities better than their competitors.
Equities	Positively screened equities (ESG leaders)	Equity shares in companies that manage a range of critical ESG issues and seize ESG opportunities better than their competitors.
	Improving ESG equities	Equity shares in companies that are getting better at managing a range of critical ESG issues and opportunities.
	ESG thematic equities	Equity shares in companies that sell products and services that tackle a particular environmental or social challenge, and/or whose businesses are particularly good at managing a single ESG factor, such as gender equality.
	ESG engagement equities	An approach where fund managers take active equity stakes in order to engage company management to improve their performance on ESG issues and opportunities. This approach has greatest potential with smaller companies.
Structured credit	Thematic structured debt product with medium liquidity	A structured debt fund screening for businesses that have a significant effect on specific important positive outcomes for underserved people and the planet
Private market investments	Positively screened infrastructure	An infrastructure fund screening for investments with positive ESG performance
	Positively screened real estate	A real estate fund screening for investments with positive ESG performance
	Thematic private equity / venture capital	A private equity fund for businesses that generate positive outcomes for underserved people and the planet
	Thematic private debt	A private debt fund lending to businesses that have positive outcomes for underserved people and the planet
	Thematic real estate	A real estate fund investing in businesses or assets that have positive outcomes for underserved people and the planet
	Thematic infrastructure	An infrastructure fund for investments that have positive outcomes for underserved people and the planet

Source: UBS CIO

can range from merely signaling the importance of these objectives to actively targeting specific outcomes or impact. This approach assures investors that their investment capital is being used to generate financial returns and social/environmental outcomes alike.

By categorizing these SI exposures according to standard financial drivers, such as expected cash flows, capital gain, principal payback potential and probability, liquidity (lock-up periods) and correlation to traditional asset classes, we can identify the most analogous traditional asset class or exposure. This enables us to use a traditional framework for portfolio construction to guide us in selecting investments with varying levels of impact. Appendix 1 provides additional detail on each of the SI building blocks used in the initial SI portfolio, including expected performance, social and environmental contribution, and similarities to traditional asset class exposures, which were essential in designing the strategic asset allocations.

Like the House View SAAs without non-traditional asset classes, the SI SAAs only have exposure to liquid asset classes, so they represent fully sustainable portfolios accessible to any investor. Many SI investment solutions available today apply exclusionary overlays or ESG factor integration onto

traditional investment strategies or approaches. As a result, there are more solutions in the “ESG leaders” equity category than in strategies such as global multilateral development bank (MDB) bonds or ESG engagement. The current lack of systematic integration of impact-oriented considerations in certain asset classes or sub-asset classes (hedge funds, high yield bonds) means that for now we do not use them as potential building blocks for the SI portfolios. However, we see no reason that they could not be included in the future as we continue to work with leading asset managers on ways to incorporate sustainable and impact objectives into approaches in these and other areas, which we expect will happen as investor interest grows.

The SI Strategic Asset Allocations

Relying exclusively on the SI asset class building blocks (Fig. 1), we designed five portfolios corresponding to all five UBS WM-US risk profiles, along with all-equity and all-fixed income versions, for both taxable and non-taxable investors. The portfolios are well-diversified and look like a conventional balanced portfolio consisting of bonds and stocks, as evident in the taxable portfolios shown in Fig. 2 and non-taxable in Fig. 5. The portfolios contain differing asset class exposures depending on the risk profile, and thus their sustainability and impact potential varies.

Fig. 2: Tax-exempt Sustainable Investing Portfolios

	Conservative	Moderately Conservative	Moderate	Moderately Aggressive	Aggressive	All-Fixed Income (non-taxable)	All-Equity
Liquidity	5%	5%	5%	5%	5%	5%	5%
Cash	5%	5%	5%	5%	5%	5%	5%
Fixed Income	79%	57%	41%	22%	10%	95%	0%
MDB bonds	40%	21%	13%	8%	5%	30%	0%
Green bonds	14%	13%	10%	6%	0%	25%	0%
ESG leaders corporate bonds	25%	23%	18%	8%	5%	40%	0%
Equities	16%	38%	54%	73%	85%	0%	95%
ESG thematic equities	6%	12%	18%	23%	24%	0%	28%
ESG leaders equities (US)	5%	8%	11%	15%	19%	0%	20%
ESG leaders equities (ex-US)	5%	6%	9%	14%	17%	0%	18%
ESG improvers equities	0%	4%	6%	8%	9%	0%	9%
ESG engagement equities	0%	8%	10%	13%	16%	0%	20%
Total	100%	100%	100%	100%	100%	100%	100%
Estimated return	3.2%	4.5%	5.4%	6.4%	7.1%	2.4%	7.7%
Estimated risk	4.1%	6.5%	8.6%	11.4%	13.2%	3.9%	14.7%

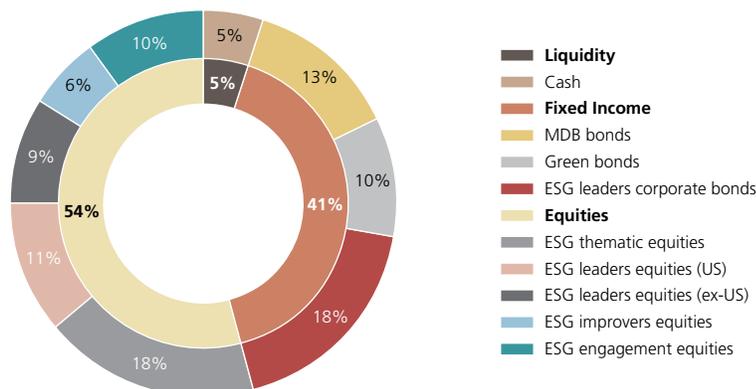
Note: Return and risk estimates are based on the UBS Capital Market Assumptions.
Source: UBS CIO

The allocations at the overall asset class level are similar to those for our House View portfolios at all risk levels. However, the total equity allocations are up to five percentage points higher because the fixed income allocation has lower total risk exposure, a consequence of excluding US high-yield corporate bonds and emerging market debt. With less risk in the fixed income portion, the higher equity allocation helps the portfolio achieve an estimated total return and total risk comparable to the House View portfolios.

Within the asset classes, the allocations are to the different SI-specific equity and fixed income sub-asset classes and styles: ESG thematic, ESG leaders, ESG improvers and ESG engagement within equities; and global multilateral development bank (MDB) bonds, sustainable municipal bonds, green bonds, and corporate bond ESG leaders within fixed income. The proportional allocations within equities are roughly similar across all risk profiles, with all allocations increasing with the risk profile. The total allocation to the thematic and engagement categories—the two with higher impact potential—is also close to the combined allocation to the ESG leaders and improvers categories for all profiles. In fixed income, the allocations for each category decrease as the risk profile increases. MDB bonds are considered to be the safest of all the fixed income sub-asset classes, and we retained a minimum amount to provide portfolio protection in the event of risk scenarios arising.

The allocations were determined using the UBS Capital Market Assumptions (CMAs) for each asset class. However, because the asset class categories were defined also using SI criteria, we currently do not have specific CMA estimates for them. Instead, we used the CMAs for the benchmarks that most closely match these SI asset classes. For example, the SI thematic equities category will translate to allocations to stocks around the world. Thus, the CMAs for global equities, reflected by the MSCI All Country World Index (MSCI ACWI), were used. The same approach was used for other line items. These risk and return assumptions may change as sustainable asset classes and strategies mature and find greater acceptance as a mainstream investment approach.

Fig. 3: Sustainable Investing SAA, moderate risk, tax-exempt



Source: UBS CIO

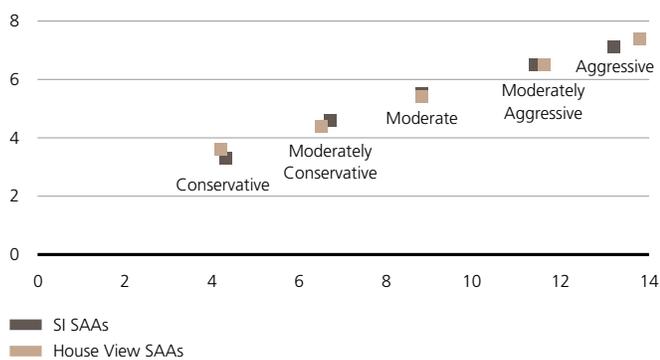
Different Exposures, Similar Risks and Returns

To demonstrate that the SI portfolios don't require investors to sacrifice financial performance, we assessed their forward-looking and historical risk and return characteristics relative to the UBS House View SAAs. Based on the UBS CMAs, Fig. 4 shows the total risk and total expected return for the five tax-exempt SI portfolios, whose characteristics mirror those of the House View portfolios. However, this comparison is complicated because many of these SI building blocks are still emerging sub-asset classes or investment strategies. As such, price histories are shorter and truly representative benchmarks have yet to be developed, so we currently use benchmarks for comparable traditional exposures as proxies for these investments. This may somewhat understate potential differences between the SI and House View portfolios.

In fact, given the relatively short track records of many sustainable investing strategies, investors are often skeptical that investments with SI characteristics can generate returns that match those of traditional asset classes. But there are good reasons why this concern is misplaced in our view, and why investors should confidently expect SI portfolios to perform comparably to traditional portfolios with similar allocations at the overall asset class level.

Fig. 4: The SI SAAs have similar risk and return properties to "traditional" SAAs

Expected risk and return by risk profile, tax-exempt SI SAAs and House View SAAs, in %



Source: UBS, as of 4 June 2018

First, ESG leaders tend to skew towards larger, high quality companies because they have the resources to implement the processes necessary to meet the criteria threshold. This creates a self-selection bias such that ESG leaders usually score well on accounting metrics, which in turn have been associated with a positive factor excess return. There is also evidence that a company's ESG exposure is a systematic risk factor, like value or momentum, which is rewarded with a risk premium. A study by Dunn, Fitzgibbons, and Pomorski (listed in Appendix 2) found a strong positive relationship between ESG exposure, excess returns, and stock-specific risk.

Second, approaches that incorporate material ESG factors in general are likely to reduce portfolio risk, even if it isn't necessarily rewarded with higher absolute returns. Companies that score well on ESG criteria may have proactively reduced their carbon footprint or implemented superior governance structures, and thus are less likely to be adversely affected by unexpected shocks. The result is lower exposure to idiosyncratic tail risks and systematic risk factors (see Giese, et al). This risk reduction can also be enhanced through active fund manager engagement.

Third, fund managers striving to achieve impact objectives, or at least relying on ESG criteria to screen possible investments, are still loosely bound by conventional asset class benchmarks. Given the intense industry focus on performance relative to well known benchmarks, we expect that SI fund managers will closely monitor tracking error and thereby reduce the possibility of significant return underperformance. Consequently, large performance differences between SI and non-SI investments are unlikely to emerge.

Much of this is supported by a growing body of research. Academic studies have found a positive relationship between financial performance and how well companies score on ESG issues (see Khan, Serafeim, and Yoon, and Clark, Feiner, and Viehs). Furthermore, corporate management teams are giving increasing credence to the idea that companies that perform well on ESG metrics represent more sustainable and potentially more profitable models in the long run. We believe markets should recognize this over time and reward these companies. For our SI SAAs we currently assume comparable, rather than better, expected long-term returns.

Fig. 5: Taxable Sustainable Investing Portfolios

	Conservative	Moderately Conservative	Moderate	Moderately Aggressive	Aggressive	All-Fixed Income (taxable)
Liquidity	5%	5%	5%	5%	5%	5%
Cash	5%	5%	5%	5%	5%	5%
Fixed Income	79%	57%	41%	22%	10%	95%
MDB bonds	25%	10%	10%	8%	5%	25%
Sustainable munis	40%	31%	21%	9%	5%	45%
Green bonds	4%	6%	4%	2%	0%	10%
ESG leaders corporate bonds	10%	10%	6%	3%	0%	15%
Equities	16%	38%	54%	73%	85%	0%
ESG thematic equities	6%	12%	18%	23%	24%	0%
ESG leaders equities (US)	5%	8%	11%	15%	19%	0%
ESG leaders equities (ex-US)	5%	6%	9%	14%	17%	0%
ESG improvers equities	0%	4%	6%	8%	9%	0%
ESG engagement equities	0%	8%	10%	13%	16%	0%
Total	100%	100%	100%	100%	100%	100%
Estimated return	3.0%	4.3%	5.2%	6.4%	7.0%	2.1%
Estimated risk	3.7%	6.4%	8.6%	11.3%	13.1%	3.1%

Note: Return and risk estimates are based on the UBS Capital Market Assumptions.

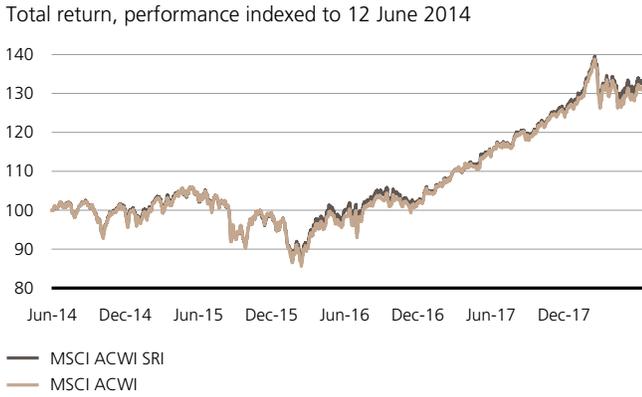
Source: UBS CIO

We expect SI portfolios' overall long-term risk and return to resemble traditional SAAs'. For example, two relatively new SI-focused indexes for equities and green bonds closely tracked the performance of standard global equity and fixed income benchmarks over the past four years (see Figs. 6 and 7). In addition, MDB bonds have tracked the performance of US Treasury bonds fairly closely over the past six years (see Fig. 8). However, the paths of SI and traditional SAAs' may diverge in the short to medium term due to the different characteristics of the SI building blocks. Moreover, we acknowledge that sustainable and impact investing is still in the very early stages of development, and that forward-looking projections and historical simulations of performance have limitations. Even so, a meta-analysis of 2,000 studies demonstrates growing evidence that investing sustainably doesn't require compromising on returns (see Friede, Busch, and Bassen).

Trade-off between liquidity and impact

While investors shouldn't have to accept a trade-off between expected financial returns and expected impact from their SI investments, there could be a more meaningful trade-off between investment liquidity and expected impact. Thus far, the vast majority of investment opportunities with intentional, measurable and verifiable impact investing exposure tend to be illiquid, like private equity, private debt and infrastructure funds. These approaches lend themselves well to impact investing. They provide fund managers with the influence and ability to ensure that social/environmental objectives are a clear priority, and enable measurement and verification of progress toward these goals.

Fig. 6: Sustainable global equities have kept pace with broad market performance

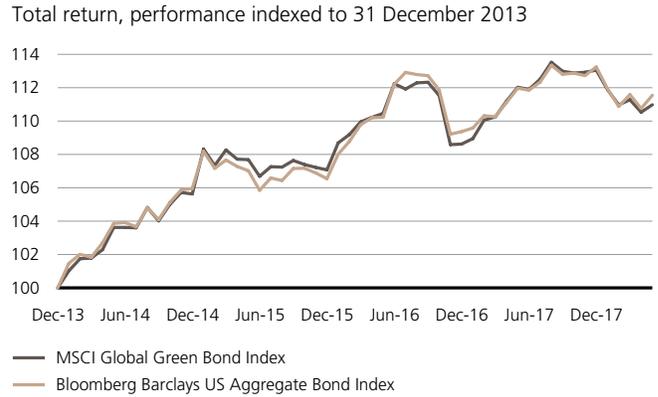


Source: UBS, Bloomberg, as of 4 June 2018

Consequently, investors who prefer to increase their sustainability footprint and overall impact will likely have to accept a higher degree of illiquidity. By adding an allocation to private equity, private debt, infrastructure or real estate investments with a clear impact focus, they can further increase their contribution to positive impact on people and the planet. These allocations need not come at the expense of returns, but investors must take into account the requisite illiquidity and long lock-up periods.

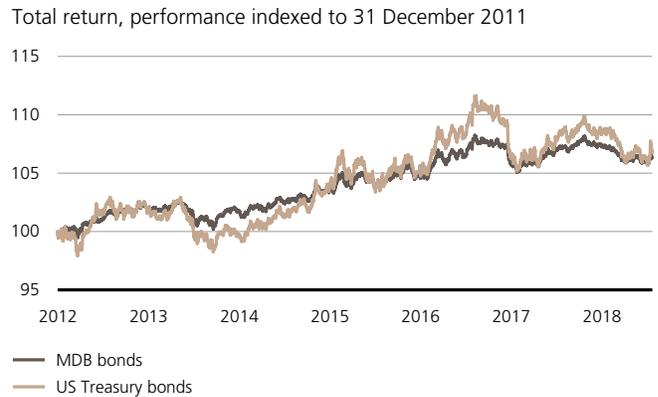
To be clear, the UBS SI portfolios are designed for a typical investor without the inclination or ability to take on private market exposure, and thus only include investments in relatively liquid public securities. We plan to design an illiquid version of the portfolio that includes private investments.

Fig. 7: Green bonds have provided similar returns as the broad fixed income market



Source: UBS, Bloomberg, as of 4 June 2018

Fig. 8: MDB bond risk and return characteristics are similar to US Treasuries



Note: We are using the Solactive UBS Global Multilateral Development Bank Bond USD Total Return Index and the Bloomberg Barclays US Treasury Index
Source: UBS, Bloomberg, as of 4 June 2018

Final Thoughts

Conventional wisdom has long held that investors can't simultaneously do well on financial performance while doing good for society and the planet. If this were true, it would create a dilemma for the increasing number of institutional and individual investors who express the desire to incorporate sustainable and impact objectives into their investment decisions. Fortunately, it has also become increasingly apparent that investors don't actually have to make this trade-off, with the availability of more data points suggesting that impact and sustainable investing need not negatively impact returns nor introduce additional risks to the portfolio. Yet it has also been difficult for investors to take full advantage of this reality. Individual investment opportunities may have enabled investors to achieve specific ESG goals, but complete portfolio solutions targeting sustainable and impact across asset classes have been less available.

We think our SI portfolios offer investors a full portfolio solution that can provide returns comparable to a traditional strategic asset allocation, with an increased understanding of the effect of their capital on people and the planet. This should appeal to investors who understand that their capital can have consequences, positive and negative, on society and the environment, and increasingly seek ways to take these considerations into account. By their nature, many SI-focused asset classes or exposures, such as thematic equities, are long-term in nature. These portfolios are designed to be liquid, which can be at odds with a truly long-term perspective. Clients who are interested in the most intentional impact strategies and who have the ability to take a long-term view, can supplement these liquid portfolios with private market impact investments, where investor contribution to catalyze impact can be much greater.

We expect that the sustainable investing solutions universe will grow significantly in the coming years, as we and others continue to work to expand the list of asset classes and investments that can demonstrate contribution to sustainable and impact outcomes. We also commit to continue working on index development and support ongoing impact measurement and management efforts. Our expectation is that we will actively evolve these SI portfolios over time to reflect the changes in the available solution set.

Some investors have specific goals they seek to achieve, while others may be motivated more by a desire to mitigate risks. Investors should assess the exact nature of their sustainable and impact objectives and decide how active the role that they themselves or the fund managers they select intend to play. These choices will determine what investment strategies and approaches can be used in portfolio construction to achieve these objectives. Please contact your UBS Financial Advisor to discuss whether these SI portfolios can be useful as a tool in meeting your family's impact and sustainability objectives, as well as financial goals.

Appendix 1: The SI building blocks

As described earlier, a key principle behind the SI SAA is using only asset classes or strategies that exhibit explicit SI characteristics. To build liquid SI portfolios, we have selected eight key SI asset classes and strategies, each replacing or filling a traditional asset class equivalent by delivering comparable risk/return characteristics.

As mentioned, the SI SAA does not include several key asset classes and investment strategies used in traditional portfolios, specifically hedge funds and high yield bonds. Hedge funds as an overall investment strategy, or even subsets thereof, do not currently prioritize impact on people and planet as a primary objective, so for the moment we do not include them in a portfolio framework even though some managers are now exploring ways to incorporate ESG factors into their investment process. As the solutions universe evolves, we see scope for these and other strategies and sub-asset classes to be included as asset managers explore how to incorporate real sustainable and impact objectives into their investment approaches and processes.

We summarize key characteristics of the SI asset classes and strategies below. Expected returns below are in USD. We plan to publish an SI education primer series to provide more detailed discussion on each of these exposures.

1. Global multilateral development bank (MDB) bonds

Expected return p.a.	1.9%
Expected volatility p.a.	4.0%
Comparable to	US government bonds

Expected return and volatility come from the UBS Capital Market Assumptions for the comparable asset class.

Multilateral development banks (MDB) are institutions which have been created and are backed by multiple sovereign member countries, with the mandate to support development. MDBs accomplish this by providing financial and technical assistance to achieve the overall goal of improving living standards through sustainable economic development and growth. Due to their backing and ownership by multiple member nations, MDBs are also known as “supranational” institutions.

Each MDB has a distinct focus. There are seven global MDBs which count all G7 nations among their members. These are: the International Bank for Reconstruction and Development, the International Finance Corporation and the International Development Association (IBRD, IFC and IDA, all members of the World Bank Group), the Asia Development Bank (ADB), the Inter-American Development Bank (IADB), the European Board for Reconstruction and Development (EBRD), and the African Development Bank (AfDB).

Comparable traditional asset class exposure

MDB bonds’ closest traditional equivalents are high-quality US government bonds, which represent the safest portion of investment portfolios, providing some yield but with a high degree of safety. Each of the global MDBs as a supranational backed by multiple member governments represents a similar credit profile to major sovereign issuers such as the US government.

Performance

MDB bonds are expected to deliver comparable risk and return to US Treasuries of similar duration and tenor. For bond tenors with sufficient market liquidity, the historical tracking error of a MDB bond index against the relevant US Treasury index is low. Bonds issued by the global MDB peer group currently trade at an approximate 20bp premium over US Treasuries for tenors between four and seven years.

Social and environmental contribution

As mentioned above, multilateral development banks are formed by their member states with explicit mandates to provide financial and technical assistance to improve overall living standards through sustainable economic development and growth. The World Bank (WB), which was formed more than 70 years ago with this mandate, is a good example. Each World Bank entity helps to fulfill the mandate in different ways. IBRD bond issuance has helped to open up bond markets in emerging market currencies for international investors, contributing to economic expansion in these regions. Meanwhile, the International Finance Corporation (IFC), another WB affiliate, has worked since 1956 to combat extreme poverty and support shared prosperity in developing countries by strengthening the private sector, leveraging USD 2.6bn in capital to provide approximately USD 265bn in financing for private businesses in these regions.

The global MDBs deliver in-depth monitoring and reporting on sustainability issues and the impact of their activities, as well as comprehensive project and lending reviews, providing investors with transparency matched by few or any other issuers. Therefore investors in MDB bonds can be confident that their capital is being used exclusively for projects that improve the state of the developing world and create tangible development impact in a variety of areas.

2. Sustainable municipal bonds

Expected return p.a.	1.8%
Expected volatility p.a.	4.1%
Comparable to	US municipal bonds

Expected return and volatility come from the UBS Capital Market Assumptions for the comparable asset class.

Sustainable municipal bonds are conventional fixed income instruments whose proceeds are designated for projects that target a specific social or environmental impact. The criteria for considering an instrument as a sustainable bond are not formalized and no qualifications have emerged yet as market standard. The key sustainable investing categories that we focus on are those related to (1) climate change, (2) community and social change, and (3) resources-related change. These categories are meant to capture a broad range of issues that are aligned with sustainable merits and below we outline the categories we consider. Issuers consist of state and local governments, and the market includes municipal green bonds (those with proceeds specifically focused on environment-related projects) which have driven overall growth in the US green bond market since first issuance in 2013.

Comparable traditional asset class exposure

Sustainable municipal bonds are identical to traditional municipal bonds, with the exception that the proceeds from these issues are intended to fund specific social or environment related projects. Despite the differentiated use of proceeds, the credit quality of each issuer is the same when looking at sustainable or traditional municipal bond offerings from the same obligor.

Performance

A portfolio of sustainable municipal bonds is expected to deliver comparable returns to a traditional municipal with matching duration and tenor. To date, we have not been able to identify any pricing or spread benefit to municipal issues that are viewed as sustainable credit. Given the ongoing development of this market, the set of opportunities is more limited and many issues may lack significant scale which could impact investors' ability to purchase in size. This differentiation in addressable market may cause deviations in performance from traditional municipal bonds.

Social and environmental contribution

Sustainable municipal bonds are often issued in conjunction with projects having environmental and social objectives, or are aligned with sustainable interests. Within the climate change, community and social change, and resources-related change are a range of applications that provide depth to the asset class.

- The climate change category includes, but is not limited to, projects related to renewable energy, energy efficiency, clean fuel transportation, power generation and green buildings and infrastructure.
- The community and social change category includes, but is not limited to, projects and lending related to affordable housing, community redevelopment and revitalization, and community services including schools and hospitals.
- The resources-related change category includes, but is not limited to, projects related to sustainable and clean water, sewer and waste management services, as well as conservation of open space / public lands, preservation of natural resources and rehabilitation of contaminated sites.

Investors need to perform additional due diligence to ensure that the bonds' proceeds go toward achieving the explicit social and environmental objectives described ex-ante.

3. Green bonds

Expected return p.a.	2.1%
Expected volatility p.a.	4.0%
Comparable to	Investment grade (quasi-) government and corporate bonds

Expected return and volatility come from the UBS Capital Market Assumptions for the comparable asset class.

Green bonds are conventional fixed income instruments whose proceeds are earmarked specifically for projects with environmental value. They are typically issued by supranational entities (MDBs including the WB and others), governments, national development banks and corporations, among others.

Comparable traditional asset class exposure

Depending on the issuer, they represent sustainable alternatives to (quasi-) government (from supranational and many government issuers, with the highest credit ratings) and investment grade corporate bonds (corporate issuers, with mid-high credit ratings).

Performance

Green bonds are effectively conventional bonds with a specified use of proceeds, so they should perform in line with equivalent bonds and offer the same yield. Their credit risk is defined by the issuer's overall credit risk and not tied to the specific project that is financed by the bond.

Four notable published indexes have been developed to track the green bond universe so far. They are: the ICE BofAML Green Bond Index, the Barclays MSCI Green Bond Index, the S&P Green Bond Index and the Solactive Green Bond Index.

The Barclays MSCI Green Bond Index provides insight on general characteristics of the relevant universe. A full 90% of bond proceeds fund projects in the key thematic areas of alternative energy, energy efficiency, green building, pollution prevention and control, sustainable water and climate adaptation. The current duration of this index is seven years, with credit quality of AA-/A+ and an approximate 80% / 20% split between (quasi-) government and corporate bonds. We expect this ratio to tilt in the coming years in favor of corporate bonds, whose issuance continues to increase.

Social and environmental contribution

Green bond proceeds are explicitly designated for use in projects with clear environmental objectives. Although the criteria for labeling an instrument a green bond are not regulated, the International Capital Markets Association (ICMA) has developed a set of Green Bond Principles that lay out seven broad environmentally beneficial categories that projects should fall into: renewable energy, energy efficiency, sustainable waste management, sustainable land use, biodiversity conservation, clean transportation and clean water / drinking water.

Standards for the green bond space are still being developed. Since the bonds are all self-labeled at this point, with only some issuers providing third-party verification, investors may need to do additional due diligence to ensure that the bonds' proceeds go toward achieving explicit environmental objectives.

4. Corporate bond ESG leaders

Expected return p.a.	3.1%
Expected volatility p.a.	3.8%
Comparable to	Investment grade corporate bonds

Expected return and volatility come from the UBS Capital Market Assumptions for the comparable asset class.

Corporate bond ESG leaders are conventional investment grade (IG) corporate bonds issued by companies that perform well on material ESG criteria.

Comparable traditional asset class exposure

The distinction for corporate bond ESG leaders is made at the issuer level, so the eligible universe of issuers comprises only companies that perform well on core ESG criteria. The instruments themselves are conventional IG corporate bonds.

Performance

A portfolio of corporate bonds issued by ESG leaders should deliver returns at least analogous to one selected by more conventional methods. We base this expectation on the growing body of academic research that finds a positive correlation between performance on material ESG metrics and corporate financial performance.

Social and environmental contribution

These bonds are conventional securities, with no designations for use of their proceeds. They do not have any inherent special sustainability features like green bonds. They do offer investors the opportunity to align their fixed income exposure with their values and expectations, and ensure that the issuers in their portfolio evidence leadership on ESG issues. Furthermore, the selection criteria signal to corporations the increasing importance of leadership on ESG factors to fixed income as well as equity investors.

5. ESG thematic equities

Expected return p.a.	7.9%
Expected volatility p.a.	15.4%
Comparable to	Global equities

Expected return and volatility come from the UBS Capital Market Assumptions for the comparable asset class.

ESG thematic equities represent a stock-investing strategy that aims to identify specific social and environmental themes, determine which industries and companies benefit from or directly address them, and construct portfolios of their stocks according to this thematic framework. This strategy can be implemented using different approaches, but all share the motivation of achieving explicit exposure to certain themes through ownership of underlying companies.

Comparable traditional asset class exposure

This strategy is differentiated by the thematic approach employed by investors or fund managers. Most, if not all, global companies can address global challenges by aligning their products and services with one or more long-term environmental or social themes, although certain sectors may be more relevant than others. So the most comparable traditional asset class exposure is broad global equities, which represents the full universe of potential candidates that contribute to thematic sustainable outcomes.

Performance

Generalized statements about the performance of sustainable investing thematic approaches are difficult to make given the various approaches and potential themes. Just as with non-sustainable thematic equity approaches, sustainable investing thematic strategies are typically not explicitly managed against a benchmark, though investors often gauge performance relative to global equity indexes such as MSCI World that represents the eligible securities universe.

We expect risk and return for this strategy to be comparable with that of non-sustainable thematic equity approaches, although exposure to long-term trends with generally above-average growth prospects suggests the potential for long-term outperformance. There is scope for higher tracking error and deviation from index weights since thematic concentration may result in overweights or underweights in certain sectors, and a greater cyclicity of specific themes.

Analysis of historical performance suggests that approaches focused on a single theme are likely to experience greater volatility than approaches selecting multiple themes. Diversification across themes can mitigate the cyclical and structural properties of individual themes.

Social and environmental contribution

ESG thematic strategies enable investors to invest a portion of the equity allocation in their liquid portfolio in companies whose products, services and approaches target specific themes that address the social and environmental challenges important to them. Although thematic approaches short of meeting the intent, measurement and verification criteria required for impact investing, it enables investors to signal to companies the importance of aligning their products, services and approach in ways that contribute to specific social and environmental themes and outcomes.

6. ESG leaders – US and ex-US equities

Expected return p.a.	7.1% (US) / 9.0% (ex-US)
Expected volatility p.a.	15.7% (US) / 16.8% (ex-US)
Comparable to	US large-cap equities / International equities

Expected return and volatility come from the UBS Capital Market Assumptions for the comparable asset class.

The ESG leaders strategy favors the stocks of companies that demonstrate superior performance on ESG criteria.

Comparable traditional asset class exposure

All global companies can demonstrate leadership on core ESG criteria, regardless of their size, sector or regional focus. So the most comparable traditional asset class exposure is broad global equities, which represents the full universe of potential candidates for demonstrating superior performance on ESG criteria.

Performance

We expect a portfolio of ESG leaders equities to deliver returns in line with a portfolio selected by more traditional methods. We base this expectation on expected positive correlation between performance on material ESG metrics and corporate financial performance.

Social and environmental contribution

These equities are conventional securities. Focusing on leaders in this segment enables investors to signal to corporations the increasing importance of leadership in the ESG area, and assures them that the companies they own are already performing well on these issues. However, the potential to intentionally drive or measure impact through the liquid underlying securities owned is limited.

7. ESG improvers equities

Expected return p.a.	7.9%
Expected volatility p.a.	15.4%
Comparable to	Global equities

Expected return and volatility come from the UBS Capital Market Assumptions for the comparable asset class.

Improving ESG equities represents an equity investing strategy that seeks to identify and invest in the equity of listed companies which are improving their performance on material ESG issues and that are likely to continue doing so. Investors receive exposure to the incremental positive change on ESG issues these companies are achieving as well as to the potential financial performance benefit that can result from these improvements.

Comparable traditional asset class exposure

Most, if not all, global companies can improve their performance on core ESG criteria, although the clearest improvements are typically achieved from low or medium performance levels. So the most comparable traditional asset class exposure is broad global equities, which represents the full universe of potential candidates for showing concrete improvement on material ESG issues.

Performance

A key assumption of the ESG improvement strategy is that stock price performance is correlated with changes in the ESG performance of a company. An MSCI ESG Research study showed that an “ESG Momentum” strategy can lead to financial outperformance over the standard benchmark, while improving the ESG profile of the overall portfolio. We expect improving ESG equity strategies to perform in line with traditional global equity strategies.

Social and environmental contribution

This strategy offers investors exposure to companies making material improvements on ESG issues that can lead to greater potential positive incremental social/environmental change than companies already demonstrating high performance in these areas. Owning these securities enables investors to signal to corporations the importance of continually improving their ESG performance. Just as with ESG leaders equities, the potential to intentionally drive or measure impact through the liquid underlying securities owned is limited.

8. ESG engagement equities

Expected return p.a.	7.9%
Expected volatility p.a.	15.4%
Comparable to	Global equities

ESG engagement equities represents an equity investing strategy utilized by active fund managers who engage with the companies they invest in as a core element of their approach to achieving an incremental social and environmental impact and addressing the challenges outlined by the United Nations' Sustainable Development Goals (SDGs)*. These strategies typically focus on concentrated portfolios of smaller and medium-sized companies, which typically present more opportunities to engage with management and suggest changes that result in incremental positive impact. An active and targeted engagement strategy focused on identifying and catalyzing specific ESG and impact outcomes is the primary avenue for investors to achieve impact delta in listed equities.

Comparable traditional asset class exposures

Small and medium-sized companies typically present greater opportunities for incremental positive social or environmental change, and greater opportunities to engage with management teams about it. The most comparable exposure is therefore found in the global small and medium-sized equities index, which represents the universe of candidates best suited for engagement on these issues.

Performance

Although engagement and activism are well-known ways of changing corporate behavior generally, employing these strategies to target ESG issues is a relatively recent phenomenon. Furthermore, engagement that targets specific corporate behavior change to drive measurable positive impact and proactively address social and environmental challenges is quite new, so there is little available evidence about its historical performance. We expect such strategies to perform in line with traditional active equity strategies focused on companies of the same size, though higher volatility is likely due to typically greater portfolio concentration.

Social and environmental contribution

ESG engagement equities enables investors to pursue active, targeted, verifiable impact by investing in listed equities and having their proxies engage in dialogue with company management or activism if necessary. Investors in this strategy know that their fund managers are investing their capital to produce changes in SDG and ESG-related performance and catalyze incremental social and environmental impact.

*In September 2015, the United Nations adopted a set of 17 goals to end poverty, protect the planet and ensure prosperity for all as part of a new sustainable development agenda. Each of these goals has specific targets to be achieved by the year 2030.

Appendix 2: References and related reading

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