

Sustainability-themed investments

A practical guide for investors

- Why invest in line with a sustainability theme?
- How to find a suitable investment
- How to implement a sustainability-themed investment in your portfolio

#4

Introduction: Growing interest for thematic investments

Thematic investing aims to target opportunities that arise with global (mega) trends or similarly powerful seismic shifts before they become widely recognised. The themes covered can be anything from the emergence of disruptive new technology to the rise of a new middle class in emerging markets. Over the past years, the global sustainability challenges have emerged as a potentially profitable theme that is likely to unfold over the coming years. The possibility to combine a sustainable and a financial objective has attracted increasing interest among institutional and private investors. According to Global Sustainable Investments Alliance (2021), assets under management (AuM) in thematic strategies increased by 605% during 2016-2020: see Figure 1. The reason for this interest is most likely a combination of several factors. First, the intrinsic belief in the underlying investment opportunity. Second, the belief that solving the global challenges would ultimately be good for the global economy and therefore also for the long-term investment perspectives. Lastly, external pressure on the investors, for instance from the beneficiaries behind an institutional investor.

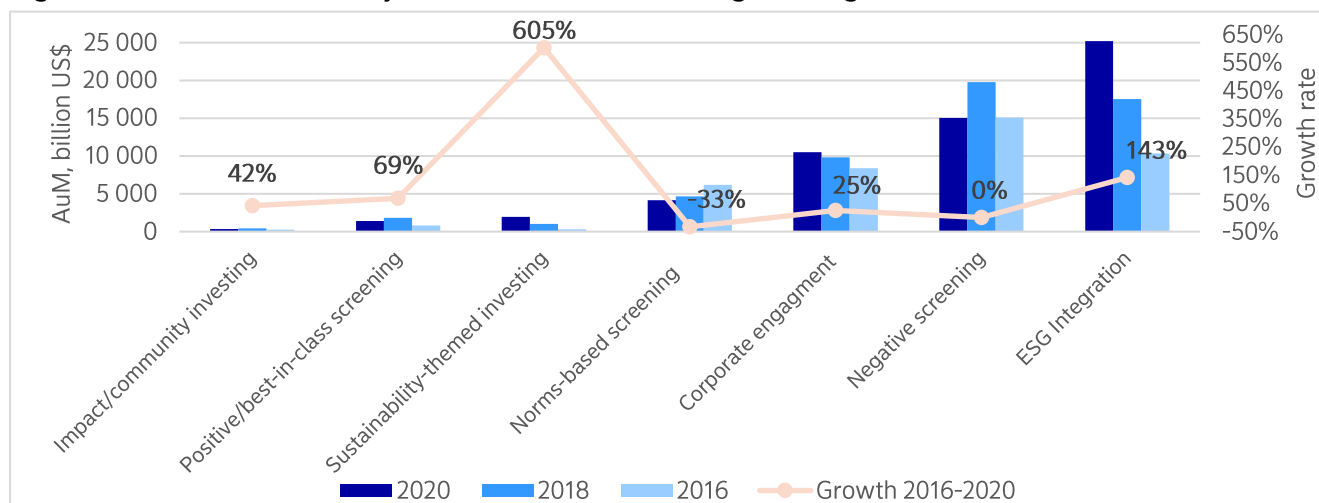
Apart from the appealing nature of pursuing future profitable investment opportunities, there are also more fundamental portfolio considerations to take into account in sustainability-themed investing. The traditional approach to investing usually emphasises the allocation to countries, regions and sectors, with the promise of delivering diversification and excess return to the portfolio. This approach has, however, left many investors disappointed after the great financial crisis. The reason

is that the expected protection of the portfolio from *international* diversification tends to disappear when it is most needed as financial markets often move in tandem. A thematic approach, on the other hand, is usually more *global* in nature with a more unconstrained approach to investing. It ignores geographical boundaries, style biases and traditional sector exposure as well as market capitalisation. Indeed, one of the fundamental propositions are to generate excess return for investors by *capturing opportunities in areas of abnormal growth*.

There are several ways to pursue sustainability-themed investing. Aligning the portfolio to the UN Sustainable Development Goals (SDGs) is *one* way to do it. The potential for a profitable trend behind the SDGs makes it relevant for all investors, not only those driven by a sustainability motive. However, a thematic approach to investing is clearly different from the way investors have traditionally invested, which leaves some obvious questions on how investors in practice should implement sustainability-themed investments in a portfolio context.

This is the topic of this paper where the 6th Sustainable Development Goal "Clean Water and Sanitation" (SDG6) is used extensively to make the exposition and choices clearer and tangible. We generally believe this is relevant for all investors, private and institutional, but not all might have the time and resources to apply all the steps outlined. The private investor may in some cases rely on their bank or asset manager to perform the more complex steps.

Figure 1 . AuM in sustainability-focused investment strategies and growth rate



Source: Global Sustainable Investments Alliance, 2021

Why invest in line with the UN Sustainable Development Goals?

In 2015, all UN members agreed to adopt the 17 UN Sustainable Development Goals (SDGs). Unlike their predecessor, the Millennium Development Goals, the SDGs set standards not only for developing countries, but also for the industrialised countries. The SDGs are thus the closest thing the world has to a global strategy until 2030 for how to achieve peace and prosperity for people and the planet, now and into the future. In essence, the SDGs are about ensuring a basic standard of living for all human beings on earth without stepping outside our given planetary boundaries.

But why should investors align their investments with the UN Sustainable Development Goals? Several reasons deserve to be mentioned:

Align with personal values

The SDGs provide a framework that is easy to relate to personal values connected to sustainability. Targeting specific SDGs enable investors to clearly communicate their alignment with the world strategy and ensure that their investments support the global agenda for sustainable development. Achieving the SDGs will require investments estimated to total USD 5-7 trillion per year until 2030; see UN 2021. The current level of investments by governments and development agencies are not enough to cover this need so the private sector can play an instrumental role in closing the gap. Achieving the SDGs would not take more than mobilising 7.76% of globally managed assets each year (USD 6 trillion), which is less than the amount that changes hands every day in capital markets; see UNDP, 2021.

Presents investment opportunities

As the SDGs are the most globally agreed upon sustainability framework, they can support investors to understand the relevant sustainability trends and opportunities. To truly unlock the opportunities presented by the SDGs, it will be critical for investors to identify innovative companies that focus on products and services linked to the SDG agenda and actively direct their investments there. If investors believe that providing solutions to sustainability challenges offers attractive investment opportunities, they can implement investment strategies that explicitly target SDG themes and sectors.

Serves as a risk framework

According to the World Economic Forum's Global Risk Report (2021), the majority of the most probable and impactful global risks are environmental risks (e.g. climate action failure, biodiversity loss) and social risks (e.g. livelihood crises, social cohesion erosion). The SDGs address these risks. As governments have committed to achieve the SDGs by 2030, they will have to introduce new regulations and policies to internalise previously unaccounted costs and drive capital towards sustainable economic activities. These regulatory and policy changes can be financially material across industries, companies, regions and countries. A study published in Harvard Business Review covering 1,694 companies showed that 15% of the companies would lose all profitability if external impact costs were included, while 32% would see profitability reduced by 25% or more; see Cohen and Serafeim (2020). The uncertainty surrounding the timing and extent of this internalisation is a critical component of the overall risk landscape facing investors and SDGs can be a good framework to identify these risks.

Figure 2. UN SDGs



Source: un.org

Aligning your portfolio with a sustainability theme – a case study

To discuss how to align your portfolio with a sustainability theme in a tangible way, a case study is performed. In this case study, a selected SDG is implemented in a portfolio using the fund universe available to private investors on Nordea platforms. Figure 3 outlines the practical steps taken; each step will be further explained throughout the paper.

Figure 3. Practical steps to align with a sustainability goal or theme



Source: Nordea

Choose what theme or goal to align with

Once an investor has decided to implement a sustainability-themed investment, an initial consideration is which goal(s) to pursue where the number of potential themes go well beyond the UN Sustainable Development Goals. In practice, however, many investors are likely to align with one or more of these goals due to their global importance and because solutions offered by financial institutions are often aligned with the SDGs.

In this case study, an investor is assumed to pursue alignment with the 6th Sustainable Development Goal “Clean Water and Sanitation” (SDG6). The reason behind this goal is the increasing scarcity of clean water, the shortcomings of the water distribution network and the poor treatment of wastewater. These issues represent significant challenges for households, businesses and the environment in many parts of the world; see Sadoff et al (2015). The global challenge of clean water and sanitation will give rise to a trend or shift that may become an area with abnormal growth. The long-term investor could therefore combine a sustainability and a financial motive. By aligning their investments with personal sustainability-related values, many investors together can help to redirect capital to solutions to the global challenges. At the same time they could potentially harvest excess returns from this strategy.

Select relevant sources of data and metrics to evaluate

With a commitment and fundamental belief in an SDG, a more difficult, but crucial question is how to obtain exposure that is aligned with the SDG¹. The share of a company’s revenue generated from the theme is usually included to measure the exposure but it is often complemented with other measures as well. In the case of the SDGs, a company’s operational impact on sustainability could also be relevant to assess before a company’s net alignment to an SDG can be determined; see OECD/MSCI ESG Research (2018). The distinction between revenue generated from a theme and the operational impact is important. A company’s products and services could be aligned with a theme from a revenue perspective (e.g. it is generating revenue from producing solutions to provide access to clean water) while the company’s production at the same time is conducted using practices that are misaligned with the theme (e.g. if the production is very water-intensive or wasteful).

If identifying alignment to an SDG is done on a company-by-company level in a global investment universe, this identification process will most likely be fairly demanding in terms of resources, even for many institutional investors.

¹ SDG ratings are a snapshot related to the time of the review. The SDG ratings can therefore also change over time. This is important for investors to be aware of and potentially follow up on.

To avoid this, many investors in practice rely on information provided by data vendors within this field on how individual companies or funds are aligned with the theme of interest. This makes it considerably more feasible to align the portfolio with a theme, but it also introduces another issue to overcome. There is currently no unique approach to conclude if a company or investment product is net aligned with a theme.

Because of this, the rating of the net alignment will vary between data providers. That is, a company or an investment product can appear to be aligned with a sustainability theme based on information from one data provider, while it could appear misaligned based on data from another. This is an important obstacle for an investor where the alignment with a theme is of particular importance for the investment decision². Investors can try to mitigate this obstacle by choosing a data provider where the underlying methodology for rating is mostly aligned with the investor's own beliefs. At least for most retail investors, this approach is likely to become expensive in terms of time and resources as well because full insights into the different methodologies are rarely fully disclosed. A potential solution for these customers is simply to rely on the institutional investor that is managing the customers' assets. In this case study, data provided by MSCI is used to illustrate the example; see MSCI (2020). However, there are multiple relevant data providers available to investors but it is beyond the scope of this paper to evaluate which one is the most superior.

In addition to measuring SDG alignment, thematic investors may want to impose additional criteria to identify the appropriate exposure. However, the more criteria that are added, the more the investment universe will get limited, leaving potentially very few investment options. This implies that it is important to consider which criteria really matter for one's own purpose. Many investors who allocate a portion of their capital to sustainability-themed investing also tend to consider ESG ratings in their investment decisions. They do this to minimise risks while at the same time maximise returns by including financially relevant sustainability

factors when evaluating a company; hence they are not only considering the theme or goal of interest. By doing so, investors can better understand how well the companies are performing with respect to environmental, social and governance (ESG) issues. It is important to note that ESG ratings share the same challenges as the data on alignment with sustainability themes as the ratings may be inconsistent between providers due to methodology differences.

Identify a suitable investment vehicle to cover the need

Once the investor has decided what goal or theme to align with (in this case SDG6) and a metric for how to evaluate if an investment is actually aligned with SDG6, the next step is to identify the potential investment vehicles that could be used to take the thematic investment exposure. For this case study, the analysis considers a gross list of equity funds available on Nordea's platform in September 2021 within the "P" share class (i.e. available for private investors). In addition to this, the following selection criteria are applied³:

- i. Performance data is available for at least ten years (July 2011-August 2021).
- ii. Classified as Article 8 (a financial product that promotes environmental or social characteristics) or Article 9 (a financial product that has sustainable investment as its objective) funds according to the EU Sustainable Finance Disclosure Regulation ("SFDR"); see Regulation (EU) 2019/2088.
- iii. Labelled as a "Global Equity" fund or a "Global Theme – Water" fund.
- iv. Classified as "Aligned" with SDG6 in the MSCI database.

Criteria ii)-iv) reduce the gross list of mutual funds to 48 funds available on the Nordea platform. This fund universe is further reduced by criteria i), resulting in a list of 21 funds which are referred to as "broad SDG6-aligned funds".

² One example of this is the differences in ESG ratings from MSCI and Morningstar. While MSCI ratings are more absolute in nature, Morningstar ratings are relative to peers, which investors need to take into account. Even after adjusting for this, research conducted by Nordea Investments suggests that ratings do not necessarily point to similar conclusions although they are positively correlated.

³ Criterion i) is imposed to ensure sufficient information is available historically to perform the simulation analysis that will provide an estimate of how much to allocate to thematic investing in a portfolio. Other investors might be willing to select funds with a shorter performance history. The criterion narrows the universe substantially as many sustainable funds do not have a ten-year performance history. No restrictions are made on the AuM within the funds but they range from AuM of EUR 0.03 billion to EUR 7.95 billion with an average and median of EUR 1.42 billion and EUR 0.61 billion, respectively. The second criterion (ii) is included to ensure a minimum level of sustainability and criterion iii) is included to emphasise the important point that not only funds where "water" is included in the fund name are relevant for an investor to consider. The last criterion (iv) is included because only funds aligned with SDG6 are considered.

Next, ESG rating information from MSCI is added to the selection process. This reduces the fund universe from 21 broad SDG6-aligned funds to 7 funds, which in the following is called “ESG superior funds”.

The criteria applied are⁴:

- i. The SDG6-aligned funds should be rated as either “AAA” or “AA” (ESG fund rating).
- ii. The underlying companies that are ESG-rated as “AAA” or “AA” should constitute at least 45% of the fund.
- iii. A fund cannot hold an underlying company with a CCC rating.
- iv. No more than 9% of a fund’s underlying companies can be “non-rated”.

The general characteristics in terms of the ESG scores imposed by the different criteria described above are shown in Table 1. Applying the additional ESG criteria to the broad SDG6-aligned fund universe increases all the average ESG scores. Both the overall ESG scores as well as the underlying E, S and G scores are higher for the ESG superior fund universe.

Are these funds then truly aligned with SDG6? Will a sustainability-motivated investor by allocating capital to these funds have a real sustainable impact?

This is likely to be the case but the impact might be less than the investor expects it to be. Table 2 illustrates this point by measuring how the underlying constituents in the funds are aligned (resp. neutral and misaligned) to SDG6. It turns out that a very high proportion of the underlying constituents in the funds, around 75%, are in fact “neutral” to this SDG. This means that the net alignment, after balancing the positive and negative impacts from revenues and operations, ends up being rated neutral for a large proportion of the underlying constituents within the funds. The investor therefore allocates capital to a large number of companies that are currently not effectively working to solve the challenges. Investors should be conscious about this but also be aware that this result is based on the data from MSCI; see MSCI (2020). A different data methodology may provide a contrasting insight, for example by capturing if some companies are actively working with for instance future technologies or engagements that would not make them neutral to the theme.

A final consideration to make is whether the funds would also be suitable from a financial perspective. Since the investor is assumed to have a sustainability *and* a financial motive, where the investor is not prepared to sacrifice any financial return for higher sustainability, the financial perspective is equally important. It is, however, beyond the scope of this publication to address this issue in detail.

Table 1. ESG ratings for the fund universe

	SDG6-aligned	ESG superior funds	SFDR Article 9 (RobecoSAM)
Average ESG fund score	7.277	7.95	7.89
Average E score	6.212	6.40	5.94
Average S score	5.213	5.49	5.81
Average G score	5.250	5.42	5.34

Source: MSCI, Nordea calculations. Note: MSCI ESG fund score range is 0-10.

Table 2. The degree of alignment of broad SDG6-aligned funds

Statistic	Alignment	Neutral	Misalignment
Average of funds	19.69	76.23	0.02
Median of funds	19.99	75.74	0.00
Minimum in funds	3.18	55.90	0.00
Maximum in funds	42.00	95.73	0.27

Source: MSCI, Nordea calculations

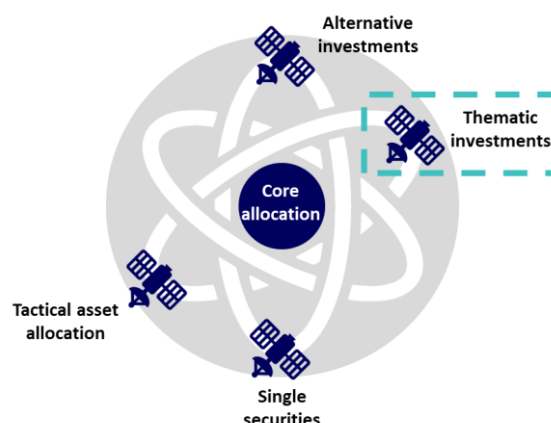
⁴ The criteria are somewhat artificial but both meaningful and illustrative. Criterion i) is used to select funds with high overall ESG ratings. Criterion ii) is imposed to ensure that also the ESG ratings of the underlying companies meet a high threshold and are within the best rating classes. Criteria iii)-iv) ensure that some minimum criteria for the underlying company ratings are met.

Determine size of allocation to the sustainability-themed investment

With the potential investment funds identified for taking exposure, a remaining question is how to implement the thematic investment into the portfolio. A core-satellite portfolio setup seems to be an obvious choice. In a core-satellite portfolio construction setup, the aim of the core is usually to harvest the market return (or “beta”) for the main asset classes (i.e. bonds and equities) and often with a fairly low tracking error to a predefined benchmark. The allocations made to satellites are made for other purposes. In some cases, the satellites are utilised for longer-term investments, e.g. an allocation to alternatives via private equity, infrastructure or hedge funds. Investments in satellites can also be for the shorter term as part of a tactical overlay. In either case, the purpose of satellites is to generate excess return to the market or to lower the portfolio risk (i.e. increase diversification within the portfolio). Because the objective of thematic investing is to create excess return by exploring areas of (excess) growth while improving diversification by making allocations that are transecting traditional geographical and sectorial boundaries, sustainability-themed investments fit well into a core-satellite portfolio setup for most investors as satellites to the core. Figure 4 graphically illustrate the core-satellite portfolio setup.

There are also other similarities to consider with respect to the inclusion of private equity and thematic investments as satellites. They are both covering an investment universe of companies that are not necessarily included in the traditional benchmark indices, e.g. the MSCI indices.

Figure 4. Core-satellite setup (for illustrative purposes only)



Source: Nordea

To derive how much a portfolio at the most could allocate to sustainability-themed investments, the portfolio weights are found through simulations. The simulations allow investors to have different levels of risk aversion and a thematic investment aligned with SDG6 is represented as a satellite. The core of the portfolio consists of a typical core with allocations to global equities as well as government, investment grade and high yield bonds; see Appendix 1 for a detailed description of the simulation approach. Tables 3-4 show the average allocations for a series of different risk aversion levels, expressed as ρ , where a high ρ represents an investor with high risk aversion. Median allocations as well as results for more levels of risk aversion (ρ) are shown in Appendix 2. Table 3 is based on the 21 SDG6-aligned funds whereas Table 4 is based on the 7 ESG superior SDG6-aligned funds. In both cases the allocations are compared to a portfolio consisting of only the core part of the portfolio.

Table 3. Average allocations to the core-satellite with broad SDG6-aligned funds

ρ	No allocation to thematic investments				Allocation to broad SDG6-aligned funds				
	Global equities	Bonds	Thematic invest.	Equities total	Global equities	Bonds	Thematic invest.	Equities total	TI share of total EQ
10000	1.1%	98.9%	0.0%	1.1%	3.5%	96.2%	0.2%	3.8%	6.2%
10	30.5%	69.5%	0.0%	30.5%	19.9%	65.9%	14.2%	34.1%	41.6%
5	71.1%	28.9%	0.0%	71.1%	48.7%	29.5%	21.7%	70.5%	30.9%
1	100.0%	0.0%	0.0%	100.0%	81.4%	0.0%	18.6%	100.0%	18.6%

Source: Nordea calculations

Table 4. Average allocations to the core-satellite with ESG superior funds

ρ	No allocation to thematic investments				Allocation to ESG superior funds				
	Global equities	Bonds	Thematic invest.	Equities total	Global equities	Bonds	Thematic invest.	Equities total	TI share of total EQ
10000	1.1%	98.9%	0.0%	1.1%	3.0%	96.6%	0.3%	3.4%	9.4%
10	30.5%	69.5%	0.0%	30.5%	19.2%	65.0%	15.9%	35.0%	45.3%
5	71.1%	28.9%	0.0%	71.1%	39.0%	30.0%	31.0%	70.0%	44.2%
1	100.0%	0.0%	0.0%	100.0%	67.7%	0.0%	32.3%	100.0%	32.3%

Source: Nordea calculations

Several characteristics should be noted. The overall split between equities and bonds does not seem to change significantly with the inclusion of the sustainability-themed satellite. This is true for simulations based on both the broad and ESG superior SDG6-aligned funds. This implies that the exposure to sustainability-themed investments is essentially taken as a carve-out of the global equity exposure. This is not only because all the selected funds are global funds, the expected return is also assumed to be the same and the risk is fairly similar. This makes intuitive sense from an economic perspective because thematic and sustainability-focused investing is often more global in nature.

Secondly, the total size of the allocation to thematic investments depends on the underlying fund universe. With the broad set of SDG6-aligned funds, the allocation to thematic investments is slightly increasing with risk tolerance but appears to reach a maximum of around 20% of the portfolio. A similar pattern is found with the ESG superior SDG6-aligned funds, but in this case the exposure levels turn out a bit higher, around 30% of the portfolio. The difference between the two is likely to arise from the fact that the ESG superior funds are slightly more attractive compared to the broad SDG6-aligned funds because their historical levels of risk and tracking error against a global equity exposure are slightly better.

This feature becomes even more pronounced when the median exposure is considered. This is important to note as it suggests that investors could potentially use ESG ratings when selecting appropriate funds for sustainability-themed investing although these, in principle, do not necessarily share the same objective.

The expected return on the portfolio does not appear to improve with the inclusion of sustainability-themed investments because in this case study we are assuming equal expected returns on thematic investments and global stocks. This is a conservative assumption and in practice investors would expect a higher return on the sustainability-themed investments because they are believed to be an area of abnormal growth⁵. This is illustrated in Table 5, where also the portfolio risk is included for selected levels of risk aversion; see Appendix 2 for results for more levels of ρ . Improvements in diversification could still occur and indeed a potential reduction in risk is part of the reason why investors would also consider an allocation to thematic investments in the first place. However, a further reduction in risk does not appear to be the case here as is illustrated in Table 5. This is, again, most likely because funds in the universe are generally very similar to a global equity exposure represented by the MSCI AC Index. As illustrated in Table 6, the average correlation is about 0.9 and the annualised tracking error is low, around 5%.

Table 5. Portfolio expected risk and return (p.a.)

ρ	No thematic allocation		Allocation to broad SDG6		Allocation to ESG superior SDG6	
	Portfolio return	Portfolio risk	Portfolio return	Portfolio risk	Portfolio return	Portfolio risk
10000	0.23%	3.82%	0.36%	3.84%	0.34%	3.83%
10	1.64%	5.14%	1.81%	5.45%	1.85%	5.51%
5	3.58%	9.03%	3.55%	8.98%	3.53%	8.96%
1	4.96%	12.18%	4.96%	12.14%	4.96%	12.19%

Source: Nordea calculations

⁵ Note: This is driven by the assumption that thematic investments have no excess return to the global equity exposure although an investor would actually believe this when investing in thematic investments.

Table 6. Characteristics of the fund universe

Fund universe	Tracking error to MSCI AC		Correlation to MSCI AC		StDev returns	
	Average	Median	Average	Median	Average	Median
ESG superior	5.47%	5.10%	0.91	0.93	13.2%	13.2%
Broad SDG funds	6.16%	5.28%	0.89	0.92	13.6%	13.2%

MSCI AC StDev is 12.2% p.a. over the sample period. Source: Nordea calculations

It is important to emphasise that the results presented in this section will not necessarily extend to other cases of sustainability-themed investing. Nor can the conclusions necessarily be extended to cases with multiple satellites. They are based on a specific sustainability-themed investment aligned with SDG6 and on the specified list of funds.

Combining multiple sustainability themes

A typical investor with a sustainability-focused motive would often like to align at least part of the portfolio with multiple SDGs via different satellites. In this case the portfolio construction becomes more complex because it will now be important to evaluate how the portfolio makes an impact on several parameters at the same time. In principle, an investor could implement two satellites within the portfolio, which on an individual level are aligned with their intended SDG. However, each of the satellites might also be misaligned with the SDG of the other satellite at the same time. This will tend to dampen the net positive impact of the portfolio relative to the impact that the allocation to the individual satellites would otherwise suggest. The inclusion of multiple sustainability-themed investments requires a thorough evaluation to ensure a positive net alignment with each of the SDGs of interest at the overall portfolio level.

Table 7 is meant to illustrate this challenge conceptually. Suppose an investor would like to align with two SDGs – SDG6 (Clean Water & Sanitation) and SDG13 (Climate Action). Of the 21 SDG6-aligned funds in the analysis above, 6 are misaligned with SDG13 (Climate Action). This challenge is even more evident if the other SDG to pursue is SDG9 (Industry, Innovation and Infrastructure). In that case almost half of the funds aligned with SDG6 are not aligned with SDG9. On the other hand, if the second SDG to align with is SDG5 (Gender Equality), then all the 21 broad SDG6-aligned funds are aligned with it. Failure to include these types of considerations could mean that the investor is directing capital to pursue individual sustainable goals which, when measured at the portfolio level, have a much lower net impact on sustainability than expected.

Even if the exposure to satellites does not cause any internal inconsistencies between them and an alignment with the goals of interest, the overall portfolio could still suffer from not being aligned if the exposure of *the core part* of the portfolio is taken into account. Depending on the instruments used for the core, they also need to be analysed to understand how the portfolio at an overall level is net aligned with the SDGs of interest.

Table 7. Alignment of the 21 SDG6-aligned funds with other SDGs (in %)

SDGs	Name	No of mis-aligned funds	Alignment	Neutral	Misalignment
SDG5	Gender Equality	0.0	40.3	55.6	0.1
SDG9	Industry, Innovation and Infrastructure	47.6	16.8	65.5	13.7
SDG13	Climate Action	28.6	27.1	68.2	0.6

Source: MSCI, Nordea calculations

Conclusion: What are the most important points for investors to learn?

Aligning a share of the portfolio with sustainability themes and goals has gained popularity in recent years. It has become possible to have data on how individual securities and funds are aligned with the SDGs of interest, which makes it possible for investors to direct capital better and contribute to the solutions to global challenges. The cost of that convenience is that the impact may be less than the investor initially expected it to be. Nonetheless, the analysis above suggests that a carve-out of the global equity exposure could be allocated to thematic investments without the investor necessarily compromising on the risk and return properties.

In practice, investors interested in a sustainability-themed investment should consider the following steps to align their portfolio with one or several sustainability goals:

1. Decide what sustainability theme or goal to align with

Deciding what goal to pursue can be based on personal values or market opportunities the investor sees. The UN Sustainable Development Goals are a common international framework to have as a starting point.

2. Select relevant sources of data and metrics to evaluate

Knowing what goal to pursue, the investors need to decide how to measure alignment with the goal. Relevant metrics to evaluate and what source of data to use are important considerations. This analysis used MSCI data to identify funds that are aligned with the chosen SDG, but alternative open sources could also be used to inform this decision. For example, some asset managers provide this information in their product fact sheets. However, one should note that the methodology behind the information might differ between providers. In addition to information on SDG alignment, investors should also consider what other criteria the product should fulfil. Our analysis suggests that ESG ratings appear to be helpful in selecting the appropriate exposure to sustainability-themed investments.

3. Identify a suitable investment vehicle, e.g. a mutual fund, to cover the need

Different investment vehicles, such as mutual funds in our case, can now be evaluated based on the chosen data sources and metrics. After identifying investment products that fulfil the established criteria, investors should investigate the magnitude of sustainability goal alignment of the different alternatives.

Behind a positive net alignment score might be a large share of underlying holdings that are in fact neutral with respect to their alignment with the goal.

4. Investigate how large a share of the portfolio can be invested in thematic funds

If investors want to preserve the current portfolio risk and return characteristics, it is important to implement the thematic investment in the portfolio in the right way. Our analysis suggests that the sustainability-themed equity fund can replace a portion of the global equity exposure. With regard to size, Nordea suggests allocating a maximum of 20-30% of the portfolio to thematic investments depending on the investor's target risk level and the fund universe available.

5. Combining several sustainability themes or goals

An investor wanting to pursue several sustainability goals needs to consider the total portfolio alignment with the chosen themes/goals. When combining several themes in the same portfolio, there is a risk that a fund contributing positively to one SDG at the same time has a negative impact on another theme. Investors may also want to investigate how the core part of the portfolio is aligned with the themes or goals of interest.

Appendix 1

To determine the appropriate and maximum allocation to a sustainability-themed investment in a core-satellite portfolio setup we use the Markowitz model. The core of the portfolio is constructed with four asset classes that are all typical in a (core part of a) portfolio. The asset classes are global equities, global government bonds, investment grade bonds and high yield bonds which in the analysis are represented by the MSCI ACWI Index, the ICE BofA Global Government Index (W0G1 index), the ICE BofA Global Corporate Index (GOBC Index) and the ICE BofA Global High Yield Index (HW00 Index). All return series are in euro. A comparison of the returns of the asset classes with those of the thematic funds ignores the fact that the asset classes cannot be implemented without any costs. This tends to favour the performance of the asset classes.

We take a random sampling approach to generate the return series that the simulations are based upon. The simulation is done by generating 1000 random return time series, i.e. for each month observed in the sample period from July 2011 through August 2021, and a random draw among one of the 21 broad SDG6-aligned funds is done. This process is repeated 1000 times to generate 1000 return series. This process requires *no* selection skills and therefore also underestimates a further potential upside if the investor possesses

some selection skills. The approach is primarily chosen because it mimics the typical investment decision where the investors are unable to judge which thematic funds (in this case SDG6-aligned funds) that are likely to perform best in the future. The performance of the SDG6-aligned thematic investment funds are all “P” share classes, net of fees and measured in euro. The performance data on the funds are obtained from Bloomberg.

For the simulations, a covariance matrix is constructed for each randomly drawn return series and the return series on the four asset classes. Forward-looking expected return estimates for the asset classes to be used in the simulations are obtained from Nordea’s proprietary forecast model and illustrated in Table A1. The expected return on the sustainability-themed investments is assumed to equal the expected return for the global equity asset class. By assuming this, no excess return is assumed for the sustainability-themed investments in the simulations. This is a bit conservative since an excess return relative to the broad equity market is exactly what investors in sustainability-themed investments would likely expect. With a fully specified covariance matrix and expected return estimates, a standard Markowitz procedure can be applied and averages/medians of the 1000 simulated outcomes can be generated.

Table A1. Expected 10Y return on asset classes

Assets	Exp return	Risk hedged	Duration	Risk unhedged
Global stocks	4.96%	17.7%	0.0	16.3%
50% government + 50% mortgage bonds Denmark	-0.34%	3.8%	5.1	3.8%
Investment grade bonds global	0.07%	4.8%	5.6	4.8%
High yield bonds global (Dev Mkt)	1.22%	11.1%	4.1	11.1%

Source: Nordea

Appendix 2

Table A2. Median allocations to the core-satellite with broad SDG6-aligned funds

p	No allocation to thematic investments				Allocation to broad SDG6-aligned funds				
	Global equities	Bonds	Thematic invest.	Equities total	Global equities	Bonds	Thematic invest.	Equities total	TI share of total EQ
10000	1.1%	98.9%	0.0%	1.1%	3.5%	96.3%	0.0%	3.5%	0.0%
10	30.5%	69.5%	0.0%	30.5%	19.7%	66.0%	14.2%	33.9%	41.8%
9	39.9%	60.1%	0.0%	39.9%	21.8%	62.7%	15.6%	37.4%	41.8%
8	44.8%	55.2%	0.0%	44.8%	23.4%	53.3%	23.3%	46.7%	49.9%
7	51.0%	49.0%	0.0%	51.0%	23.4%	53.1%	23.4%	46.8%	49.9%
6	59.4%	40.6%	0.0%	59.4%	32.9%	40.6%	25.7%	58.6%	43.8%
5	71.1%	28.9%	0.0%	71.1%	37.7%	29.0%	31.2%	68.8%	45.3%
4	88.6%	11.4%	0.0%	88.6%	76.3%	11.5%	12.6%	88.9%	14.2%
3	100.0%	0.0%	0.0%	100.0%	93.4%	0.0%	6.6%	100.0%	6.6%
2	100.0%	0.0%	0.0%	100.0%	93.4%	0.0%	6.6%	100.0%	6.6%
1	100.0%	0.0%	0.0%	100.0%	93.5%	0.0%	6.5%	100.0%	6.5%

Source: Nordea calculations

Table A3. Average allocations to the core-satellite with broad SDG6-aligned funds, additional levels of p

p	No allocation to thematic investments				Allocation to broad SDG6-aligned funds				
	Global equities	Bonds	Thematic invest.	Equities total	Global equities	Bonds	Thematic invest.	Equities total	TI share of total EQ
10000	1.1%	98.9%	0.0%	1.1%	3.5%	96.2%	0.2%	3.8%	6.2%
10	30.5%	69.5%	0.0%	30.5%	19.9%	65.9%	14.2%	34.1%	41.6%
9	39.9%	60.1%	0.0%	39.9%	22.2%	61.6%	16.2%	38.4%	42.1%
8	44.8%	55.2%	0.0%	44.8%	24.9%	56.5%	18.5%	43.5%	42.6%
7	50.9%	49.1%	0.0%	50.9%	28.2%	52.2%	19.6%	47.8%	41.0%
6	59.2%	40.8%	0.0%	59.2%	40.2%	40.6%	19.2%	59.4%	32.3%
5	71.1%	28.9%	0.0%	71.1%	48.7%	29.5%	21.7%	70.5%	30.9%
4	88.6%	11.4%	0.0%	88.6%	67.1%	11.7%	21.2%	88.3%	24.1%
3	100.0%	0.0%	0.0%	100.0%	81.1%	0.0%	18.9%	100.0%	18.9%
2	100.0%	0.0%	0.0%	100.0%	81.2%	0.0%	18.8%	100.0%	18.8%
1	100.0%	0.0%	0.0%	100.0%	81.4%	0.0%	18.6%	100.0%	18.6%

Source: Nordea calculations

Table A4. Median allocations to the core-satellite with ESG superior funds

No allocation to thematic investments					Allocation to ESG superior funds SDG6				
ρ	Global equities	Bonds	Thematic invest.	Equities total	Global equities	Bonds	Thematic invest.	Equities total	TI share of total EQ
10000	1.1%	98.9%	0.0%	1.1%	3.0%	97.0%	0.0%	3.0%	0.0%
10	30.5%	69.5%	0.0%	30.5%	19.1%	65.1%	15.8%	34.9%	45.2%
9	39.9%	60.1%	0.0%	39.9%	21.3%	61.5%	17.5%	38.7%	45.1%
8	44.8%	55.2%	0.0%	44.8%	23.4%	53.2%	23.4%	46.8%	50.0%
7	51.0%	49.0%	0.0%	51.0%	23.4%	53.1%	23.4%	46.9%	50.0%
6	59.4%	40.6%	0.0%	59.4%	31.1%	41.3%	27.3%	58.4%	46.7%
5	71.1%	28.9%	0.0%	71.1%	36.6%	30.2%	32.8%	69.4%	47.3%
4	88.6%	11.4%	0.0%	88.6%	45.1%	12.3%	41.2%	86.3%	47.7%
3	100.0%	0.0%	0.0%	100.0%	51.5%	0.0%	48.5%	100.0%	48.5%
2	100.0%	0.0%	0.0%	100.0%	50.8%	0.0%	49.2%	100.0%	49.2%
1	100.0%	0.0%	0.0%	100.0%	50.4%	0.0%	49.6%	100.0%	49.6%

Source: Nordea calculations

Table A5. Average allocations to the core-satellite with ESG superior funds , additional levels of ρ

No allocation to thematic investments					Allocation to ESG superior funds				
ρ	Global equities	Bonds	Thematic invest.	Equities total	Global equities	Bonds	Thematic invest.	Equities total	TI share of total EQ
10000	1.1%	98.9%	0.0%	1.1%	3.0%	96.6%	0.3%	3.4%	9.4%
10	30.5%	69.5%	0.0%	30.5%	19.2%	65.0%	15.9%	35.0%	45.3%
9	39.9%	60.1%	0.0%	39.9%	21.8%	59.7%	18.5%	40.3%	45.9%
8	44.8%	55.2%	0.0%	44.8%	23.5%	54.5%	22.0%	45.5%	48.4%
7	50.9%	49.1%	0.0%	50.9%	23.8%	52.9%	23.3%	47.1%	49.5%
6	59.2%	40.8%	0.0%	59.2%	32.9%	41.0%	26.1%	59.0%	44.2%
5	71.1%	28.9%	0.0%	71.1%	39.0%	30.0%	31.0%	70.0%	44.2%
4	88.6%	11.4%	0.0%	88.6%	52.9%	12.5%	34.6%	87.5%	39.6%
3	100.0%	0.0%	0.0%	100.0%	67.0%	0.0%	33.0%	100.0%	33.0%
2	100.0%	0.0%	0.0%	100.0%	67.2%	0.0%	32.8%	100.0%	32.8%
1	100.0%	0.0%	0.0%	100.0%	67.7%	0.0%	32.3%	100.0%	32.3%

Source: Nordea calculations

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