

# BUILDING A CLIMATE TRANSITION PORTFOLIO

## Blending Mind and Machine to Navigate the Journey to a Lower Carbon World

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### Overview

Climate transition investing provides an opportunity to access the growth potential associated with the journey to a lower carbon world. This potential is found both in solution providers ('enablers') and those companies seeking to reduce their own carbon footprint ('mitigators'). The nature of the economic activities represented by these groups brings with it inherent biases across regions, industries and factors. By carefully constructing custom datasets and thematic definitions, we are able to fully leverage our suite of quantitative risk management tools to access the growth opportunity where reward potential compensates us for these risks. By doing so we ensure diversification and risk control across traditional and climate transition specific risk factors.

### Identifying Growth Potential In The Climate Transition

As discussed in the first [paper\\*](#) of this four-part series, climate investing can be viewed from two perspectives: mitigation and enabling the climate transition. Mitigators contribute to the transition to a low carbon economy through self-decarbonisation, while enablers provide decarbonisation solutions for sectors of the economy where GHG emissions are difficult to reduce. This two-pronged view is required to address the challenges posed by climate change: without enabling technologies, the economy will not be able to transition at a rate that is consistent with the goals of the Paris Agreement.

Recent global policy measures, such as the EU Action Plan on Sustainable Finance, aim to shift capital flows towards sustainable investments. At the same time, we are seeing demand-side shifts. The energy shock from the war in Ukraine was a wake-up call - a reminder of the urgent need to support the green transition and build sustainable and reliable energy supply. Thus, while the regulatory landscape of financial markets is rapidly evolving to support the transition, demand-side changes are also taking place, as demand for green financial instruments increases.



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### Key Points

1. Climate transition investing covers a broad array of sub-thematic investment opportunities
2. Unlocking the growth potential lies in understanding inherent biases, linking thematic activity to traditional risks
3. We propose a climate transition strategy that delivers strong alignment, ensuring thematic diversification and strong risk control.

### \*CLIMATE INVESTING SERIES 1/4

#### Finding the Leaders on a Path to a Low Carbon Future

##### Key Points

1. We define a framework to find the "champions" of the transition to a low carbon economy
2. Mitigators who are focused on mitigating the climate threat
3. Enablers who are providing solutions to combat it.

[> Read the full paper](#)





Climate investing involves addressing various commonly-known themes as identified by the International Energy Agency (IEA) and many other organisations; renewable energy, fuel switching, energy and production efficiency, carbon capture, utilisation and storage, as well as resource management.

In order to closely target investment opportunities, we have split these themes into sub-themes which allows us to study each vertically considering the value chain. We seek to identify companies best placed, in terms of scalability or offering technology, to have the most significant impact on the transition process.

**Sub-themes encompass both enablers and mitigators which include, but are not limited to, the list below:**

| Group Theme (IEA Classification) |  Renewable Energy  |  Fuel Switching  |  Efficiency  |  CCUS & Other  |  Resource Management   |
|----------------------------------|---|---|---|---|---|
| Sub Theme (UNG)                  | <ul style="list-style-type: none"> <li>▶ Wind</li> <li>▶ Solar</li> <li>▶ Hydro</li> <li>▶ Geothermal</li> <li>▶ Wave &amp; tidal</li> <li>▶ Energy storage</li> <li>▶ Nuclear*</li> <li>▶ Gas**</li> </ul> | <ul style="list-style-type: none"> <li>▶ Hydrogen</li> <li>▶ Biofuel &amp; alternative fuel</li> <li>▶ Green mobility</li> <li>▶ New energy vehicle</li> <li>▶ Air &amp; shipping low GHG</li> <li>▶</li> </ul> | <ul style="list-style-type: none"> <li>▶ Rail</li> <li>▶ Sharing economy</li> <li>▶ Machine ioT</li> <li>▶ Material sustainable, lightweight, recycled</li> <li>▶ Building net zero emission</li> <li>▶ Smart grid</li> </ul> | <ul style="list-style-type: none"> <li>▶ Carbon capture, utilisation and storage</li> <li>▶ Particle and emission reduction device</li> </ul> | <ul style="list-style-type: none"> <li>▶ Industrial metals</li> <li>▶ Agriculture productivity</li> <li>▶ Environmental consulting</li> <li>▶ Protein &amp; livestock low GHG</li> <li>▶ Nature-based solution</li> </ul> |

As explained in the second [paper\\*](#) of our climate investing series, we can rely on data available from public reports of the companies and scientific estimations when looking for investment opportunities among the mitigators. The expertise in data processing and management is quite valuable as there are quite a number of data dimensions to identify, collect and properly use from scopes 1, 2 and 3 of GHG emissions of companies and their progress, to their contributions to the Paris alignment objectives and the relevance of activities in light of regulatory definitions.

Identifying enabling opportunities is a different kind of challenge. These companies are mainly young and their purpose is developing new solutions and applying existing products to new problems. They are delivering growth opportunities in the most traditional sense: new products, new markets and new revenue streams. But finding them cannot be achieved in the same way.

To do so, we employ artificial intelligence (AI) and more specifically Natural Language Processing (NLP). NLP is a valuable new accessory in the analytical toolkit of investment managers, enabling us to analyse the news, financial filings or social media, look for associations within a certain topic of interest and conduct sentiment analysis. As such it can identify newer solutions that have strong potential but have not yet delivered significant revenue streams for companies.

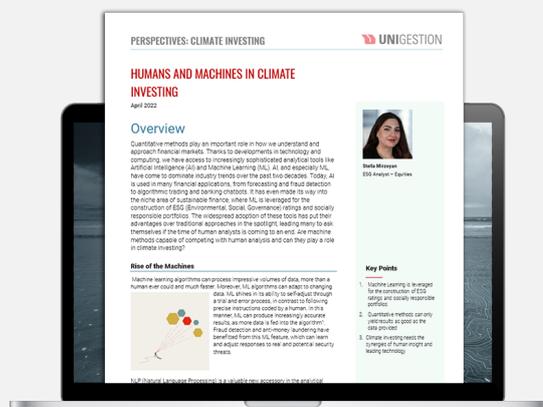
## \*CLIMATE INVESTING SERIES 2/4

### Humans and Machines in Climate Investing

#### Key Points

1. Machine Learning is leveraged for the construction of ESG ratings and socially responsible portfolios
2. Quantitative methods can only yield results as good as the data provided
3. Climate investing needs the synergies of human insight and leading technology

[▶ Read the paper](#)





## Natural Biases

Due to the nature of the activities represented by enablers and mitigators, we observe natural biases across region, industry and factor exposures. Many of these biases are intuitive and reflect the relative progress of climate transition in different parts of the world. Beyond the high level enabler/mitigator split we can see they vary considerably across and within sub-themes.

| Enablers               |  | Mitigators             |  |
|------------------------|--|------------------------|--|
| <b>Industrial Skew</b> | Industrials, IT  | <b>Industrial Skew</b> | Industrials, Utilities   |
| <b>Factor Skew</b>     | Growth, Expensive  | <b>Factor Skew</b>     | Cyclical, Defensive  |
| <b>Regional Skew</b>   | US/China/Nordic  | <b>Regional Skew</b>   | Europe   |
| <b>Case Studies</b>    | <ul style="list-style-type: none"> <li>▶ Plug Power: leading supplier of hydrogen fuel cell technology products and solutions. The company is well positioned to benefit from the large investments in hydrogen thanks to the Inflation Reduction Act (IRA) in the US but the business is not yet profitable.</li> <li>▶ Aker Carbon: sole listed pure-play on carbon capture technology. Currently, the company only has a target on orders it wants to win by 2025 and it will not make a profit in the next two years. Carbon capture is essential for the hard to abate emission industries such as cement, chemicals, etc.</li> </ul> | <b>Case Studies</b>    | <ul style="list-style-type: none"> <li>▶ Red Electrica: sole operator of the electricity grid in Spain</li> <li>▶ Getlink: operates the tunnel that links France to the UK. Rail is one of the most efficient way of transporting goods and people.</li> </ul> |

Even within prominent sub-themes, the exact position in the value chain can be significant in determining natural biases. Electric Vehicles (EV) provide a good example of how focusing on different elements of this sector can dramatically change the nature of the economics exposure. **Key components**, such as batteries or power management systems, already enjoy a supply side that is consolidated, has good profitability and benefits from the growing penetration of EV. By contrast, **Assembly**, while the post-covid period provided something of a tailwind for automakers, the business model will remain volatile and low-margin while EVs are cannibalising internal combustion engine vehicles.

## Battery Electric Vehicle Supply Chain

|   |  |
|---|--|
|  <b>Raw Materials</b>                  | <ul style="list-style-type: none"> <li>▶ <b>Basic resources:</b> rare earth, cobalt, lithium, nickel               <ul style="list-style-type: none"> <li>- MP Materials, Lynas Rare Earths</li> </ul> </li> <li>▶ <b>Processed materials:</b> steel, aluminum, carbon fiber               <ul style="list-style-type: none"> <li>- Nippon steel, Toray Industries</li> </ul> </li> </ul>  |
|  <b>Key Components</b>                 | <ul style="list-style-type: none"> <li>▶ <b>Battery:</b> technology and scale business, high-growth phase, Asian players are leaders               <ul style="list-style-type: none"> <li>- CATL, LG Chem, Panasonic</li> </ul> </li> <li>▶ <b>Electric motors:</b> high-end vehicles has OEM motors but mass market is outsourcing, high-growth phase               <ul style="list-style-type: none"> <li>- Nidec, Bosch</li> </ul> </li> <li>▶ <b>Power &amp; information mgt:</b> growing faster than units thanks to increasing penetration, mid-teen margin:               <ul style="list-style-type: none"> <li>- Delta, Murata</li> </ul> </li> </ul> |
|  <b>Assembly</b>                       | <ul style="list-style-type: none"> <li>▶ <b>Automakers:</b> majors are lagging the leader Tesla, automakers have generated volatile and low margin historically               <ul style="list-style-type: none"> <li>- Tesla, BYD, Hyundai, Volkswagen, General Motors, Hon Hai (new comer, assembly)</li> </ul> </li> </ul>   |
|  <b>Software</b>                       | <ul style="list-style-type: none"> <li>▶ <b>Autonomous driving technology</b> <ul style="list-style-type: none"> <li>- Waymo, Cruise, Argo</li> </ul> </li> </ul>  |
|  <b>Distribution &amp; Maintenance</b> | <ul style="list-style-type: none"> <li>▶ <b>Maintenance/service centers</b> <ul style="list-style-type: none"> <li>- AutoZone</li> </ul> </li> </ul>   |
|  <b>Fuel</b>                           | <ul style="list-style-type: none"> <li>▶ <b>Electricity transmission &amp; distribution:</b> the growing fleet of EV will put pressure on the electric infrastructure and will require high investment in the grid               <ul style="list-style-type: none"> <li>- Schneider Electric, Legrand, ABB, LEM</li> </ul> </li> </ul>   |
|  <b>End Cycle</b>                      | <ul style="list-style-type: none"> <li>▶ <b>Recycling (battery)</b> <ul style="list-style-type: none"> <li>- Umicore SA, Johnson Matthey, Li-Cycle Corp.</li> </ul> </li> </ul>  |



The inherent differences between the enabler and mitigator groups already help us achieve some form of natural diversification and we can tilt exposure between the two to manage the exposure of the portfolio overall. However, as highlighted above, there are more dimensions to consider between and within sub-themes and we can use our existing suite of quantitative tools to better manage portfolio exposures.

## Harnessing the quantitative toolkit

From one perspective, quantitative investing is the exercise of balancing the exposure you desire for return purposes, with the risks associated with those exposures. An important task is to map the exposures to ensure you understand the risk factors they present.

For the traditional consideration of risk – such as regional, sector and factor exposure - this has become a relatively simple exercise, with a plethora of high quality data sources available. The task is more complex for climate transition investing given the recent European regulation taxonomy has introduced two new definitions: taxonomy compliance and thematic alignment. In order to make full use of the quantitative toolkit, you need to be able to link these desired exposures to the traditional risk factors.

To tackle this problem, we have created two datasets to map our investment universe to taxonomy activities, and our own definition of sub-theme exposure:

1. Taxonomy-consistent investment relies on high quality data which is in short supply from third parties. As a result, we need to create internal datasets and rely on human validation.
2. Analysing across new and existing risk dimensions – i.e. specific industrial themes (e.g. solar) not just traditional definitions (e.g. NLP).

This mapping unlocks our wider suite of risk management and portfolio construction tooling. Our approach can then consider balancing thematic exposure with investment risk.

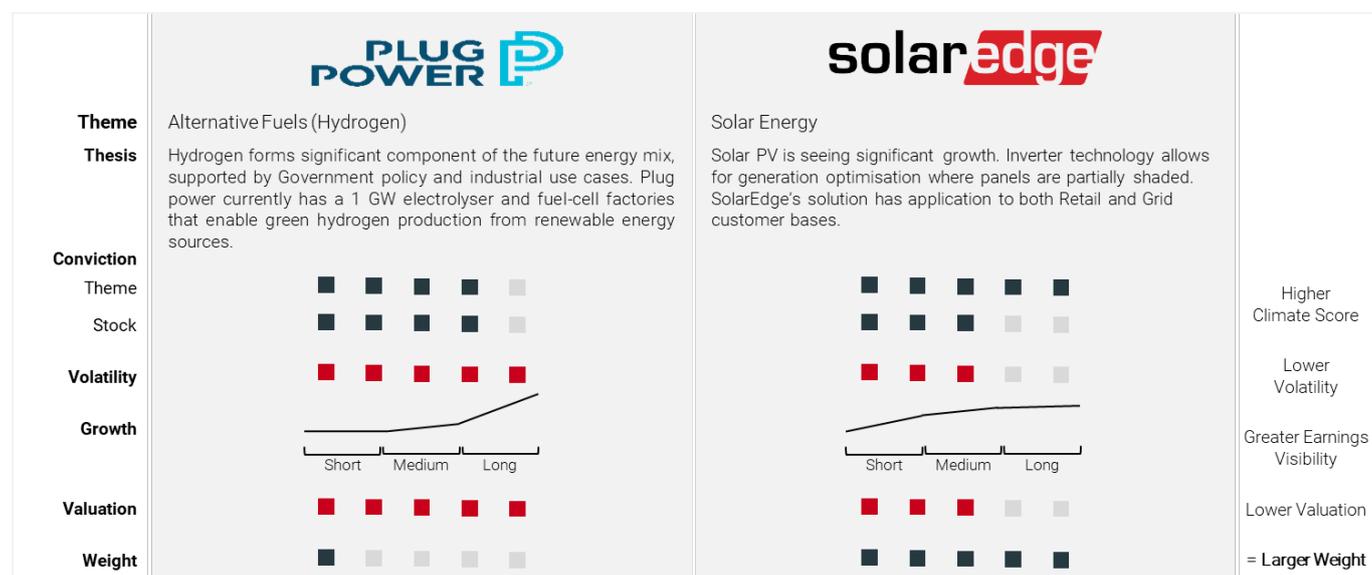
The EU Taxonomy is a **green classification system** that translates the EU's climate and environmental objectives into criteria for specific economic activities for investment purposes. It recognises as green, or 'environmentally sustainable', those economic activities which make a **substantial contribution** to at least one of the EU's climate and environmental objectives, while at the same time not significantly harming any of these objectives and meeting minimum social safeguards.

Source: Sustainable finance taxonomy FAQ.

## Portfolio construction from mixed underlying sources

Portfolio construction needs to account for three key components: the uncertainty associated with earlier stage investments; the desire to retain broad thematic diversification; and controlling traditional risk factors such as region, sector and factor concentration.

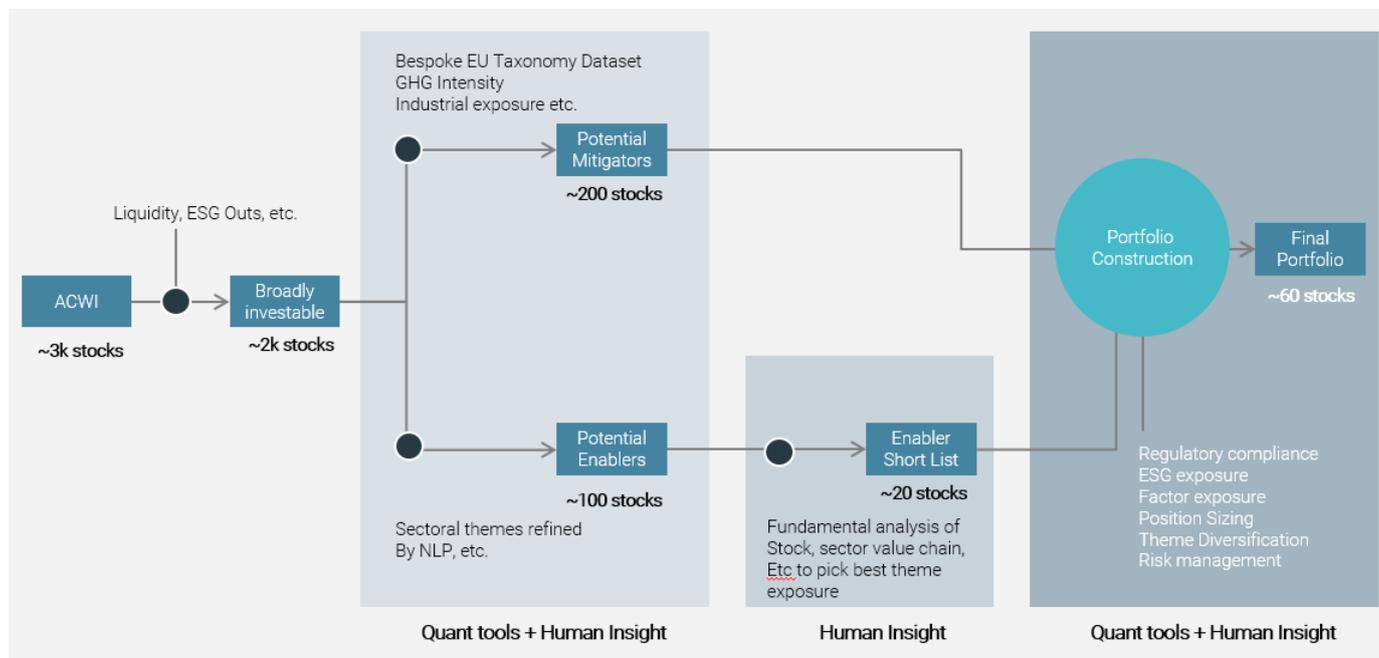
Capturing uncertainty is a key topic due to the early stage the world is at in its transition to a lower carbon economy. When considering the enabling sub-themes in particular, certain of these technologies and services are either entirely novel or novel-in-application. The potential for growth is considerable but the timing and certainty of that growth is less obvious. To address this we consider our position size as a function of the visibility to future growth for these stocks. This visibility is itself a function of market volatility (higher is worse); valuation (more expensive is worse); and growth trajectory (longer dated is worse).





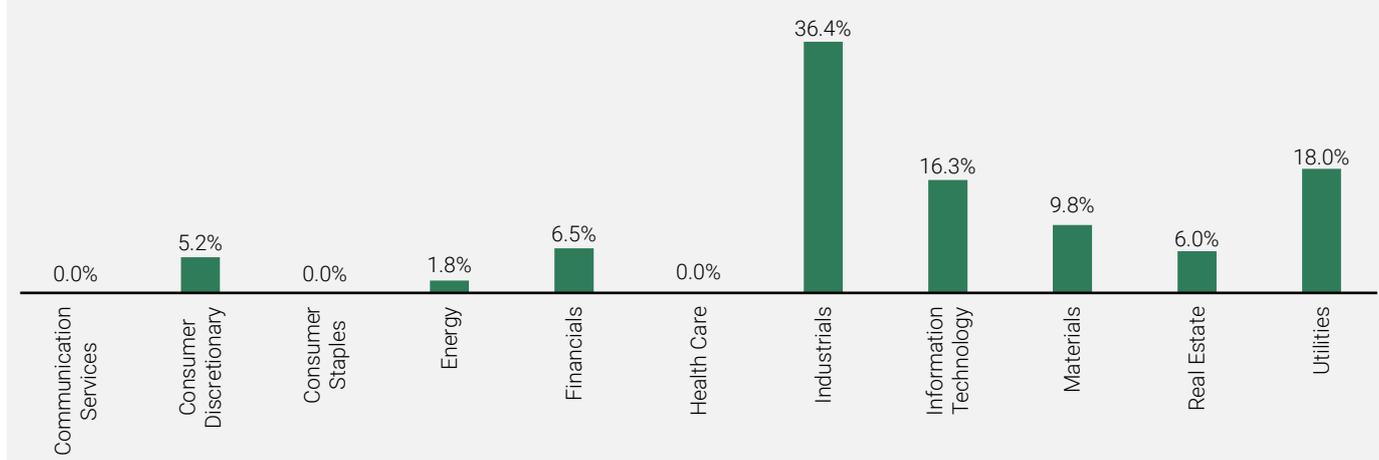
The temptation when building a climate transition portfolio is to focus on pure-play sub-themes such as renewable energy. However, as highlighted above, this neither covers the full breadth of carbon reduction opportunities nor provides suitable levels of diversification to the thematic drivers and natural biases. By holding associated stocks with taxonomy activities and sub-themes, we are able to control directly the level of portfolio exposure to sub-themes. This control can be used as an active, return-seeking mechanism by varying exposure to certain themes over time; as well as a risk management tool, ensuring there is not over exposure to a given sub-theme. By insisting on diversification we are able to chart a smooth course in the journey to a lower carbon future, by balancing and varying exposure.

## Portfolio Construction



Identifying thematic exposure is key to ensuring the portfolio is well aligned with the goal of supporting climate transition. Balancing this alignment with traditional risk management becomes an important portfolio construction task. Relying once more on our datasets associating activity and thematic exposure, we are able to better understand traditional risk factors. To some extent, control of traditional risk exposures will be achieved by combining the differing natural biases of the sub-themes. The quantification of those risks allows the full suite of quantitative investment tools to be utilised. This is not to say the final portfolio is without biases – indeed, properly pursuing climate transition should come with intuitive sector biases toward Industrials and Utilities and factor biases towards Growth. However, understanding and moderating those biases where they are not rewarded by alignment with the climate transition objective remains key.

## Climate Conviction Sector Allocation





## Climate transition can be adapted to risk appetite

Despite the importance of climate transition for the majority of investors, the current processes and rules in place for many can make it difficult for them to consider pure climate investments. This is due to higher tracking errors and being inherently benchmark agnostic due to lack of proper and purely-built indices in the market. Many investors still judge their investments against current global indices which are not suitable when thinking of a future low carbon economy. Moreover, investing in themes would mean focusing on certain activities while not considering others, which differs from the current all-inclusive nature of indices. Finally, current market indices are based on current market capitalisation and do not reflect the future shift required to align them with a low carbon future.

To strike the balance between strong alignment with climate transition opportunities while capturing the wider economic drivers represented by the index, we propose a framework which seeks to focus active risk on thematic alignment. This splits economic and industrial exposures into high impact potential activities (i.e., those covered by the enabler and mitigator definitions) and low impact potential activities. Areas of high impact potential are used to gain exposure to climate transition themes while those with low impact potential are judged on broader ESG considerations.

Energy provides a good example of a High Impact Sector. As discussed in the [third](#) paper in this series\*, energy transition is a core element of the climate transition story. The journey progresses through less emitting fuel options – such as natural gas and bio-fuels – to support the increased use of renewables while large-scale storage solutions remain elusive. In allocating to these transition sources, we retain robust exposure to the overall economics of the sector.

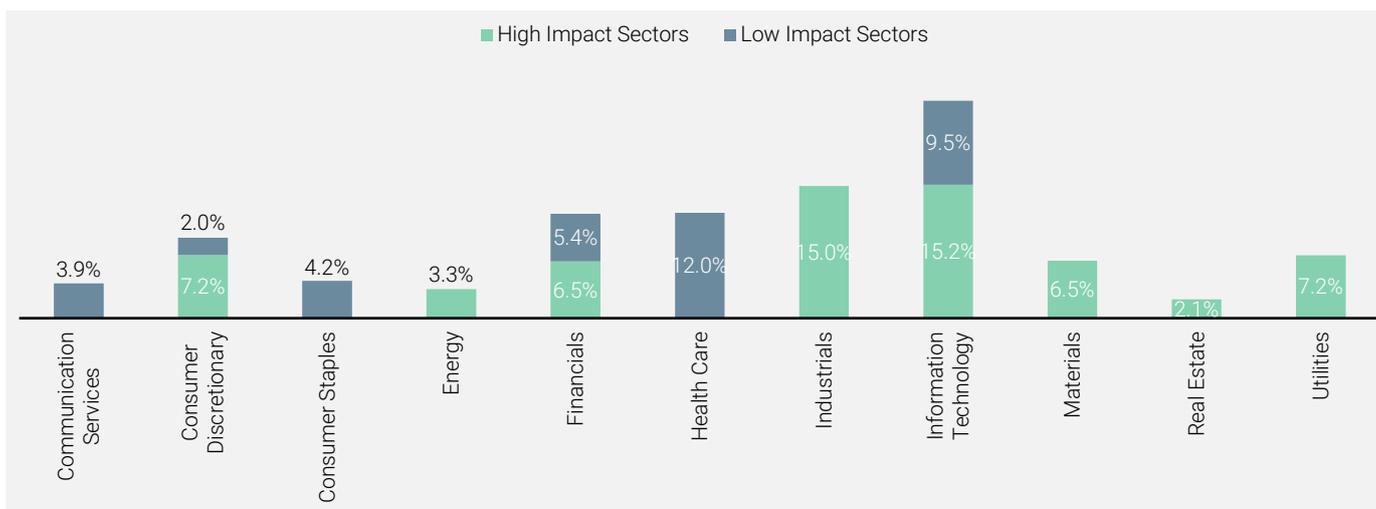
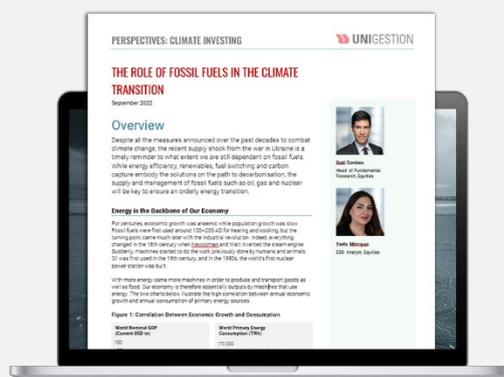
### \*CLIMATE INVESTING SERIES 3/4

#### The Role of Fossil Fuels in the Climate Transition

##### Key Points

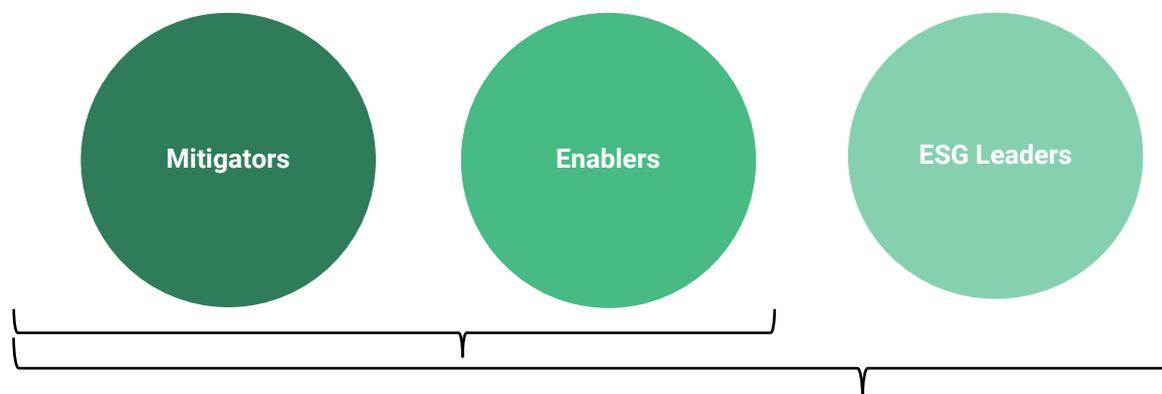
1. Despite the recent push into renewables, our energy mix is still dominated by fossil fuels.
2. Falling investment in oil & gas production has increased the risk of supply shocks.
3. The energy transition is inflationary by nature.

[> Read the paper](#)





This approach allows investors to address their climate transition investment targets while remaining within their required risk budget. It would enable them to remain almost neutral with respect to certain biases such as sector allocations and factor biases. Given the significance of the decarbonisation story in reshaping the world economy, the result could be considered the expected future shape of the index.



|  | Climate Transition Strategy | Climate Conscious ESG Solution | MSCI ACWI Index |
|--|-----------------------------|--------------------------------|-----------------|
| # of holdings  | <100                        | 100–300                        | >2800           |
| Ex Ante Tracking Error                                 | 4–8%                        | 2–4%                           | -               |
| High Climate Exposure Allocation (Enablers/Mitigators) | >90%                        | Index +/- 20%                  | ~35%            |
| Low Climate Exposure Allocation (Pure ESG Selection)   | 0%                          | Index +/- 20%                  | ~65%            |
| TE Methodology   | Medium/Controlled           | Low TE by construction         | -               |
| Style Biases   | +/-0.2                      | +/-0.2                         | -               |
| Decarbonisation  | Sector-based                | Sector-based                   | none            |
| Well below 2° Alignment                                | ✓                           | ✓                              | none            |
| SFDR Classification                                    | Art.9                       | Art.8                          | -               |

## Conclusion

Climate transition investing gives access to a broad swathe of sub-themes, each representing a set of natural biases across the dimensions of sector, region and factors. Portfolio construction becomes an exercise in balancing these biases so as to achieve high thematic alignment while controlling excessive risk exposures. We combine mind and machine to select the most attractive investments, leveraging a bespoke activity dataset to unlock our existing suite to quantitative tools. With this approach we are able to analyse the portfolio across thematic and traditional risk dimensions. This understanding also provides portability, allowing investor risk appetite to dictate the level of thematic intensity in the investment solution.



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