On the Road to Net-Zero: A Decarbonised Investable Universe

RAM AI Systematic Equity
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**Leave the herd behind.**

ram ai

Introduction.

According to the Sixth Assessment Report produced by the Intergovernmental Panel on Climate Change (IPCC), scientists are observing changes in the Earth's climate in every region and across the whole climate system.[1] Many of the changes are unprecedented, some irreversible over hundreds to thousands of years. However, strong and sustained reductions in greenhouse gases would limit climate change.

With that in mind, RAM AI joined the Net-Zero Asset Manager's initiative in 2021 and committed to meeting Net-Zero emissions by 2050.[2] We also committed to interim goals with a carbon emission intensity reduction of 33% by 2025 and 50% by 2030. Three complementary approaches have been deployed to meet those targets:

→ Climate risk mitigation through universe construction
→ Climate opportunity integration
→ Active ownership

Integration was discussed in the systematic equity team's previous papers, focusing on alpha inputs derived from structured[3] & unstructured[4] data sources and the use of machine learning for optimal implementation.[5]

In this paper, we will focus on universe construction and analyse how reducing the carbon footprint impacts financial performances and style biases.
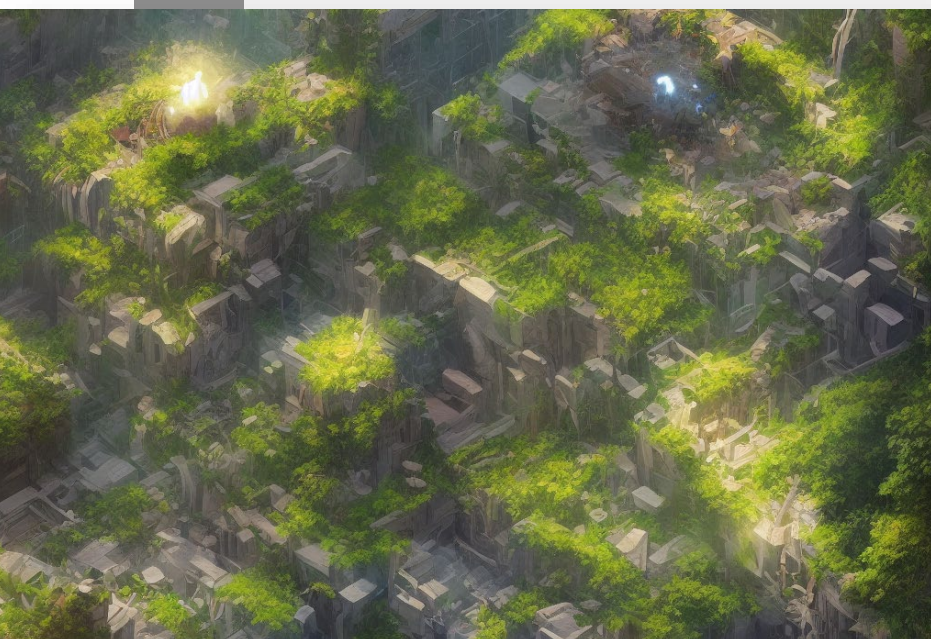
Source: AI generated with the Stable Diffusion Model on https://beta.dreamstudio.ai/dream

● Methodology

We present a quantitative Climate Impact assessment framework that integrates a wide range of climate related data, including greenhouse gas emissions (expressed in tons of CO2 equivalent), revenue breakdown, controversies, and environmental commitments. Our database is fed from various data sources such as third-party agencies, NGOs, and companies' financial and non-financial reports. The process also relies on an internally developed Natural Language Processing (NLP) infrastructure that analyses Environmental, Social and Governance (ESG) news flow. For each firm of the investable universe, the assessment results in three binary metrics (Yes or No):

1. Is the firm engaged in business practices that significantly impact global warming?

2. Does the firm derive a significant percentage of its revenue from the following controversial activities?

🔥 Coal Mining (metallurgical and thermal)

🔥 Thermal Coal Power Generation

🔥 Controversial fossil fuel (Shale & Oil Gas, Tars sands, Artic Drilling and Ultra Deep-Sea Drilling)

3. Does the firm perform badly on the following Principal Adverse Impact (PAIs) defined by the EU within the SFDR framework?[6]

🔥 Carbon Intensity, all scopes

🔥 Carbon Footprint, all scopes

🔥 Revenue derived from fossil fuel

If any of the metric is "YES", the company is systematically excluded from the investable universe. In the next section, we will analyse how those exclusions impact carbon, return and fundamental characteristics.

● Analysis

Preparing the analysis

To measure the impact of decarbonisation and climate risk mitigation on our investment process, we compare two investable universes:

→   All-Cap European universe (Full Universe)

→   Low Climate Impact All-Cap European universe (Low Impact Universe), comprised of stocks that have passed the Climate Impact assessment

The universes are dynamic, and the criteria are reassessed on a monthly basis. The simulation covers the period from January 2011 to October 2022, on which data coverage was large enough to derive representative statistics. Also, positions are market cap weighted.

The purpose of the analysis is to illustrate the characteristics of the two groups and not to present an actual strategy. Therefore, we do not consider any implementation constraint regarding liquidity, market impact, transaction cost and financing cost.

First, we will analyse the Carbon profiles of the two universes. As observed on Figure 1, the Low Impact Universe displays significantly lower carbon intensities (TCO2 /MSales) than the Full Universe across all scopes.

Carbon Intensity
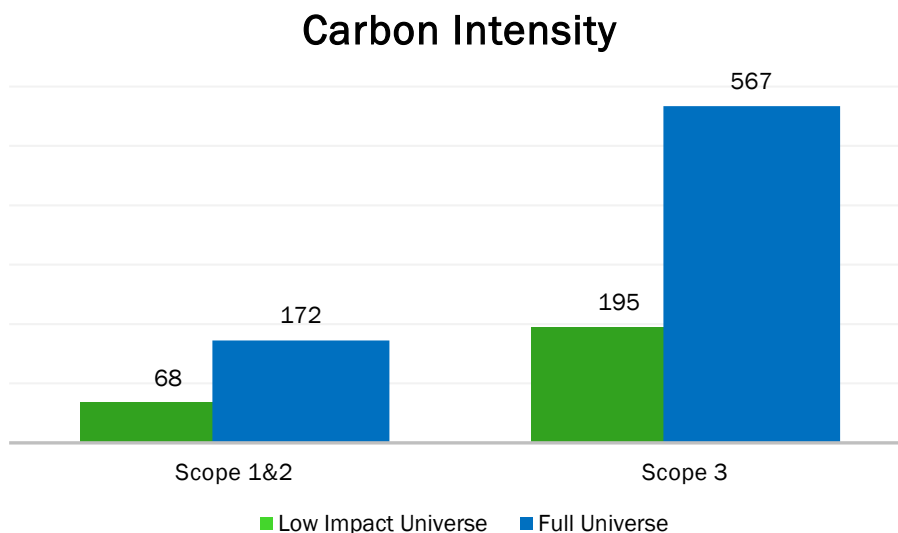
Figure 1: Source: MSCI ESG Research, CDP, FactSet, RAM AI, simulation from January 2011 to October 2022

It is important to note that the universe remains highly diversified in sectors, given that none are fully excluded. Six sectors are, on average reduced but are still investable. The highest impact is on Energy Minerals, which sees a decrease from 2.3% to 0.7% of companies in the universe.
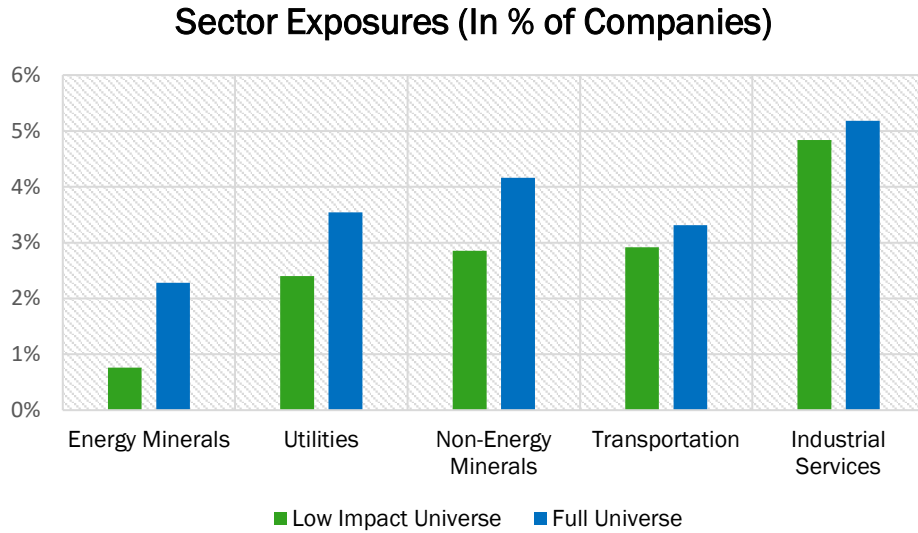
Sector Exposures (In % of Companies)

Figure 2: Source: FactSet, RAM AI, simulation from January 2011 to October 2022

Figure 3 presents the performance charateristics of the universes. Despite a recent underperformance following a strong pressure on energy prices, the Low Impact Universe, that represents around 90% of the Full Universe, exhibits a higher long-term Sharpe ratio, as a result of lower volatility and slightly higher returns. We also observe a lower maximum drawdown characteristic.

	Low Impact Universe	Full Universe
Book Size	1192	1323
Return	8.50%	8.14%
Volatility	17.24	17.61
Sharpe	0.49	0.46
Max Drawdown	-32.37%	-33.63%

Figure 3. Source: Factset, RAM AI, simulation from January 2011 to October 2022

Figure 4 displays the cumulative spread of returns (Low Impact Universe minus the Full Universe).

Cumulative Spread of Returns
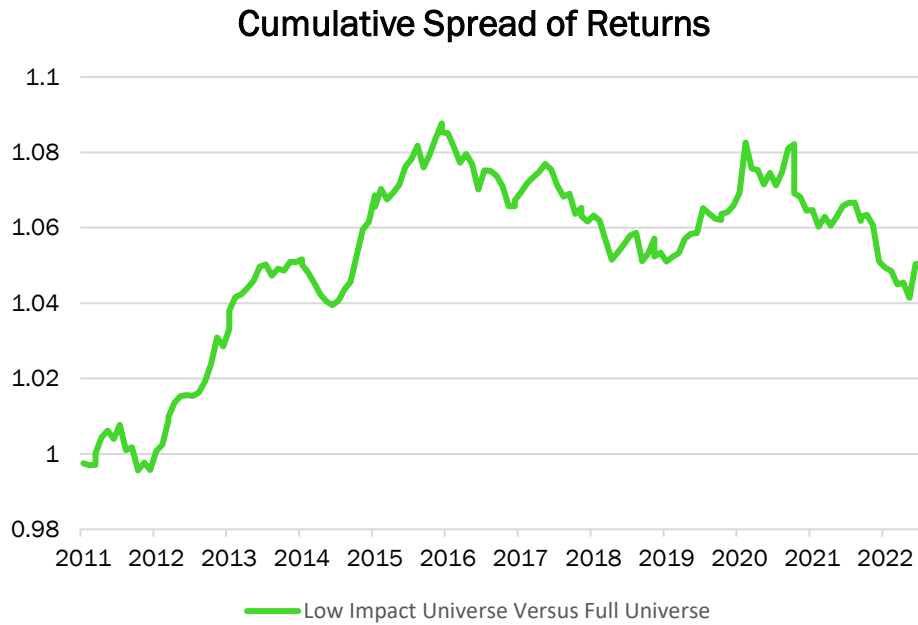
Figure 4. Source: Factset, RAM AI, simulation from January 2011 to October 2022

Finally, we analyse how decarbonisation impacts style biases. Figure 5 shows that the average factor percentile changes over the simulation period. The figures represent the mean percentile spreads on each style, between the Low Impact Universe and the Full Universe. A positive number indicates that, on average, the low climate impact universe scores higher on the factor.

The decarbonised universe exhibits higher Quality, higher Profitability, and lower Risk characteristics than the full universe. Price Momentum, Growth and Analyst revisions are also improved. However, it is slightly more expensive and distributes less income.

Factor Style - Average Percentile Spreads
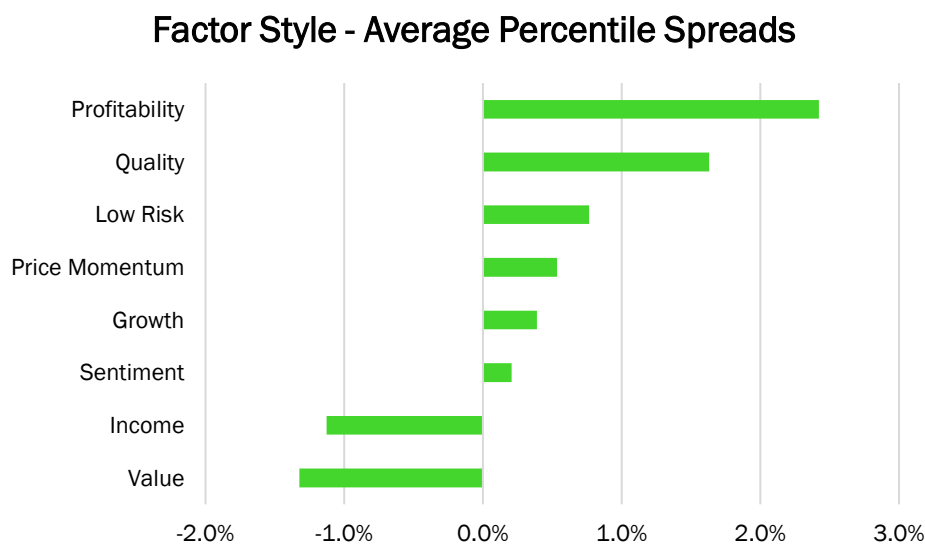
Figure 5. Source: Factset, RAM AI, simulation from January 2011 to October 2022

● Conclusion

In line with RAM AI's commitment to the Net-Zero initiative, we propose a Climate Risk assessment that relies on Business Practices, Controversial Revenues and Principal Adverse Impact Indicators. Despite recent underperformance on the back of a strong uptrend in energy prices, a low climate impact European all-cap universe exhibits a higher Sharpe ratio over the long term than a full European all-cap universe, mainly driven by its less volatile profile. The resulting universe displays stronger fundamentals in terms of Quality and Profitability but slightly less attractive valuations. Finally, we show that implementing the assessment leads to a strong decarbonisation of the investable universe without any full sector exclusion.

References

1. The Intergovernmental Panel on Climate Change (IPCC) is the United Nations body for assessing the science related to climate change. Three Working Groups released the Sixth Assessment Report (AR6) from August 2021 to April 2022. https://www.ipcc.ch/assessment-report/ar6/

2. The Net Zero Asset Managers initiative is an international group of asset managers committed to supporting the goal of net zero greenhouse gas emissions by 2050 or sooner, in line with global efforts to limit warming to 1.5 degrees Celsius; and to supporting investing aligned with net zero emissions by 2050 or sooner https://www.netzeroassetmanagers.org/

3. Jamet, Nicolas. "A leading approach to ESG Integration", 2019.

4. Guo, Tian, et al. "ESG2Risk: A deep learning framework from ESG news to stock volatility prediction." arXiv preprint arXiv:2005.02527. 2020.

5. Jamet, Nicolas. " AI for ESG Integration, Training machines to predict sustainable alpha", 2022

6. The Sustainable Finance Disclosure Regulation (SFDR) is a European regulation introduced to improve transparency in the market for sustainable investment products, to prevent greenwashing and to increase transparency around sustainability claims made by financial market participants. https://www.eurosif.org/policies/sfdr/

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