

## HELPING HANDS: HOW AI CAN LEAD TO BETTER ESG ANALYSIS AND IMPACT INVESTMENTS<sup>1</sup>

As more investors consider ESG data when managing portfolios, using artificial intelligence (AI) holds substantial appeal.

We are often asked “*how can Impact Cubed provide timely ESG and impact data on all listed companies and sovereign debt?*” Turning to an algorithm to process massive amounts of data and create objective ESG factors can have big efficiency benefits. But while AI gives our quant team a helping hand, we believe there are some things better left to the expertise of human portfolio managers.

Before diving in, it is worth engaging in a spot of jargon busting to level set on what a few of the most common terms mean and how they are being used in ESG analysis:

- **Natural language processing** – Abbreviated to NLP, this is the process of a computer ingesting and understanding human communication. It is the same technology that underpins smart speakers reliant on voice commands. For example, NLP can be used to scour companies’ quarterly reports to tally the number of times a CFO or CEO mentions an ESG issue to investors.
- **Machine learning** – Machine learning involves algorithms processing information, learning from commonalities and differences in the data, and making predictions based on this. A subset of machine learning, deep learning, takes this one step further by “layering” algorithms on top of each other to create an “artificial neural network.” For

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<sup>1</sup> We are grateful to Environmental Finance for the opportunity to present these insights in a webinar on *ESG investing and AI: Is Artificial Intelligence the Answer to Data Challenges* which aired May 2021, and can be viewed [here](#).

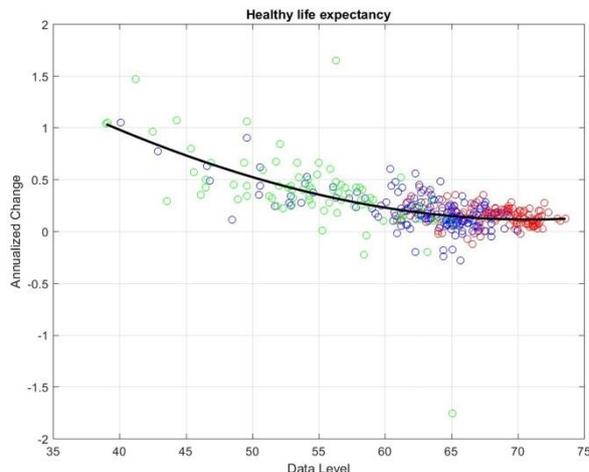
example, simple machine learning tools help ESG data scientists develop more precise estimates of carbon emissions, which the vast majority of companies don't yet disclose.

- **Sentiment analysis** – The above two processes can be combined to search for the opinions – or sentiment – expressed in a written communication to be analysed and interpreted. For example, some ESG data providers create scores based on how a company is mentioned in the media, rather than what the company discloses about itself.

So how can these processes enhance ESG investing? First, AI can help process and rake through extremely large data sets that “human power” alone would struggle with.

An example of using AI to process vast amounts of data is Impact Cubed's [ESG impact pathways](#) for fixed income portfolio managers. With these pathways we show which emerging markets are making ESG progress at a faster rate than the rest of world's experience. To do this, our quant team needed to analyse a vast dataset – 20 years' worth of information from 190 countries taking 29 ESG factors into account. The results show many countries that typically do not make the cut on ESG ranking tables progressing the best on ESG factors – something conventional analysis may not have uncovered. The figure below shows a pathway for one factor, healthy life expectancy, which the algorithms then aggregate and compare to a portfolio's benchmark.

### Healthy Life Expectancy Pathway (SDG 3)



There are, of course, many hurdles to overcome when using AI to process and interpret data. As with other areas of ESG analysis, the lack of uniform company disclosures creates problems. An asset manager using NLP to address water risk in a portfolio company's business model has to navigate words related to drought, water scarcity, emissions to water that cause water quality and potability problems, and distinguish among sea water, fresh water, or recycled water because reporting is not standardized.

Using AI for prediction also has its dangers. The most important shortcoming of AI for prediction is the reliance on a training dataset. Deep learning is deep data fitting. If there is a regime change in the future, the predictions will fail. If there are biases in the

training dataset, the predictions will be biased. Many have read reports of AI not recognising the faces of dark-skinned people or not recognising the voices of women. Some of the shortcomings will be overcome, but some are inherent.

Ultimately, AI should be viewed as a tool to process increasingly large data sets, providing a helping hand to human analysts who need to interpret ESG factors as part of the overall investment process.

## ABOUT IMPACT CUBED

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Impact Cubed provides ESG analytics and investment solutions for building more sustainable portfolios with greater impact. It combines an award-winning approach to integrating impact into risk and return with technology-enhanced portfolio design and management. The outcome is a seamless approach to customized sustainable investing.

You can find out more about our data and portfolio models at [www.impact-cubed.com](http://www.impact-cubed.com) and if you would like to contact us at [info@impact-cubed.com](mailto:info@impact-cubed.com) we would be happy to hear from you.

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