

In focus

Our carbon framework for sustainable investing

Part two – the asset market pillars

May 2022

The urgent need for action on climate change and likely policy responses means that investors need to think about carbon in their portfolios. And they need to do so from multiple perspectives.

To help investors do this, we have developed a *carbon framework*.

In this second article of a two-part series, we revisit the four pillars of the framework and focus on the second two pillars that investors can use to directly gain access to carbon-related exposure in their portfolios.

Introducing the carbon framework

We have focused on four pillars of activity in the investment economics of carbon. The first two pillars represent policy research pillars; an understanding of these first two pillars helps investors assess the risks and opportunities that face their



Lesley-Ann Morgan
Head of Multi-asset Strategy

Ben Popatlal
Multi-asset Strategist

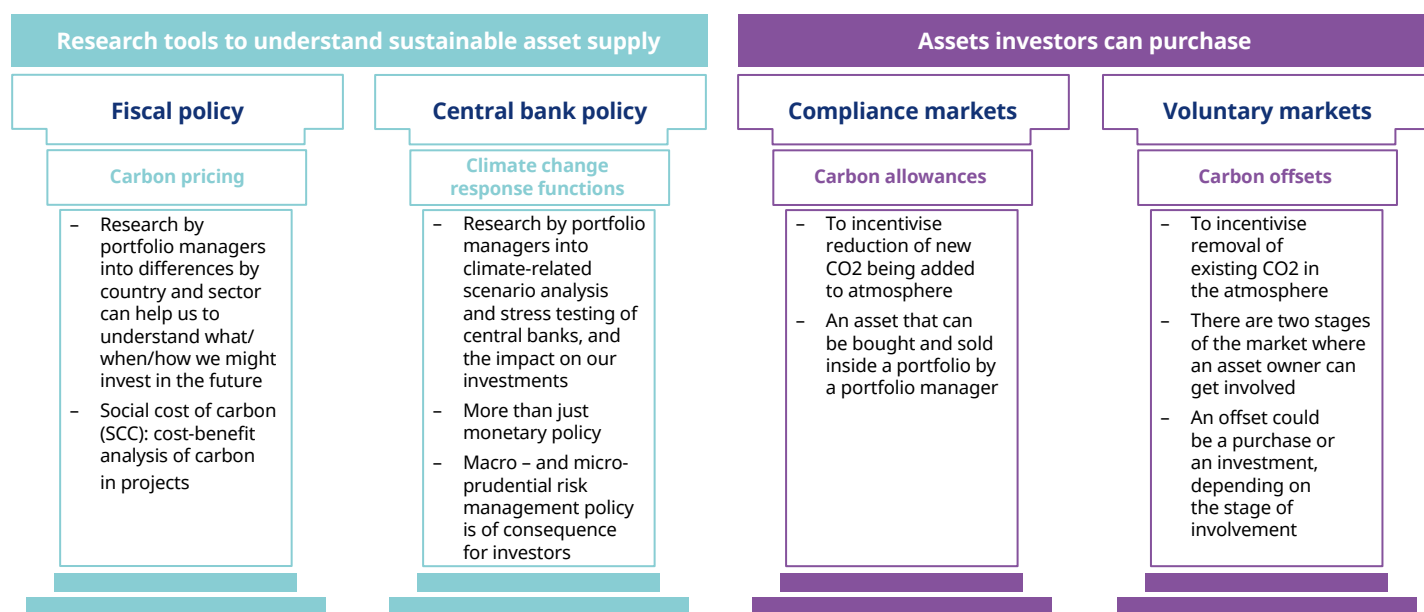
Charlotte Smith
Graduate Trainee

portfolios. A misunderstanding of the policy, corporate and consumer landscape could cause investors to fall behind in their understanding of the evolution of the sustainable investment landscape, exposing them to greater sustainability risks¹.

The second two pillars represent the asset market pillars. Investors can buy and sell tangible assets associated directly with carbon. However, the investment and sustainability rationales for investing in these carbon-related assets differs markedly for the two pillars.

¹ Net zero and multi-asset: what the transition means for portfolios, Schroders, October 2021.

Figure 1: We have focused on four main pillars in the investment economics of carbon



Source: Schroders, February 2022.

Pillar 3: Compliance markets for carbon, or carbon allowances

To reduce the amount of CO₂ added to the atmosphere, we need to reduce the CO₂ emissions from existing activities. One way to do this is through the use of carbon allowances to incentivise emissions reductions. Markets for carbon allowances, otherwise known as *compliance markets* for carbon or *emissions trading systems*, are growing rapidly as attempts to incentivise companies to decarbonise intensify.

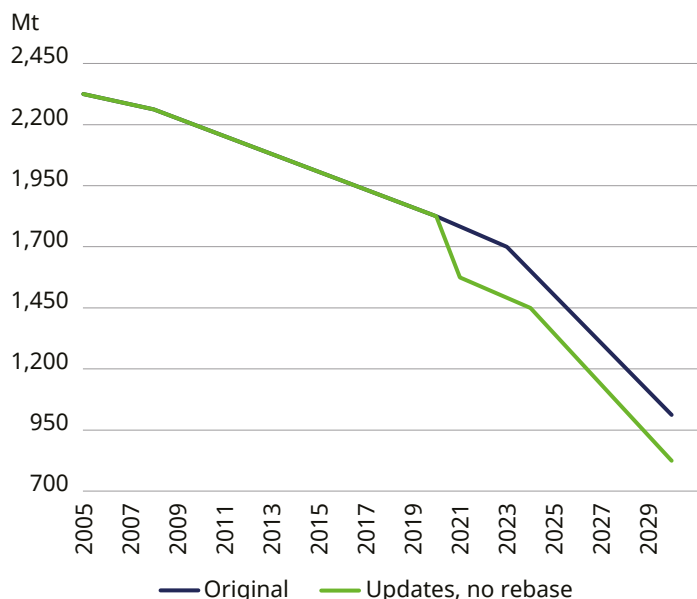
Typically with emissions trading systems (ETS), policymakers decide to cap certain sectors' emissions (typically energy intensive industries, e.g. the UK ETS applies to the power generation sector and aviation) by auctioning or giving out allowances. Each year companies must hold sufficient allowances to cover their emissions, either by using free allowances that are handed out, by buying them in the market or, even better, by reducing their emissions. There is a growing market for such allowances, and they can be traded by investors through futures and ETFs. The ability to trade allowances incentivises companies to emit less, since their excess allowances can be sold.

If a company has too many or not enough carbon allowances, they can be traded on the open market. For example, in April 2021 it was announced that VW in China would buy carbon allowances from Tesla.

The largest system today is the European Union's Emission Trading System (EU ETS), which was launched in 2005, but there are now over 30 others, the largest of those being California and the Regional Greenhouse Gas Initiative (RGGI) which applies to the east coast of America. Today 16% of global greenhouse gas emissions are covered by emissions trading systems, with an additional 8% covered by carbon taxes.

The proceeds from carbon compliance markets go to individual governments that operate them. In the EU, 50% of the proceeds must be spent on sustainable/green projects, according to EU law. The overall system has an annual emissions cap that limits the number of emission allowances given out each year, which is centrally controlled. This cap falls over time in order to reduce global emissions. Figure 2 shows the expected EU emissions trading system cap assuming the new legislation to reduce the cap further comes in by 2024. Currently the

Figure 2: Expected EU ETS emissions cap



Source: Schroders, KraneShares, Citi Estimates, July 2021.

EU ETS cuts the emissions cap by 2.2% every year but this linear reduction factor will be increased to 4.2% in 2024 following the European Green Deal 'Fit for 55' package.

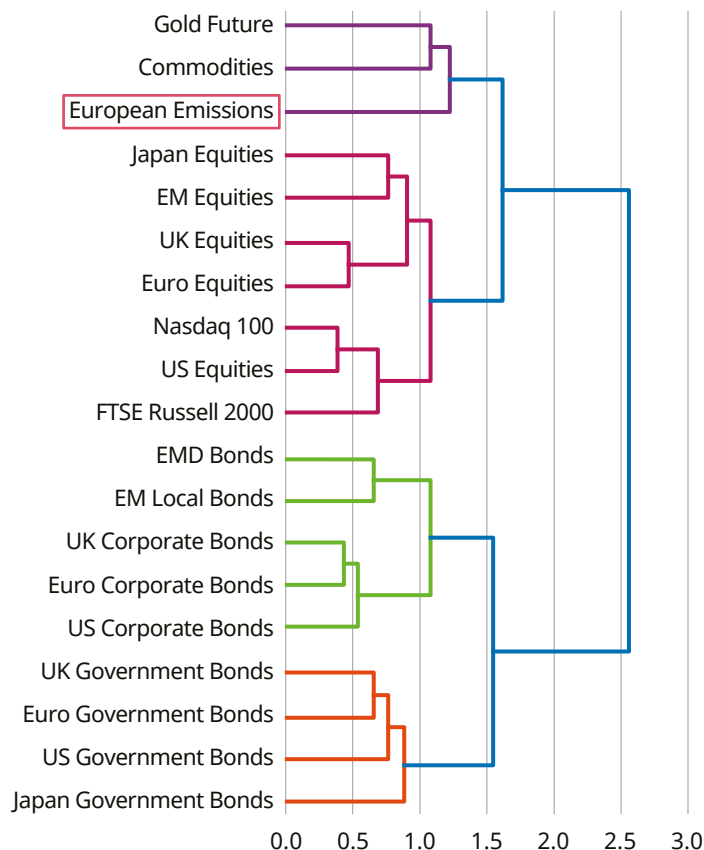
From the investor's standpoint, we believe there is both an investment and sustainability case for using carbon allowances within portfolios. The investment rationale is based primarily on policy and societal pressure for decarbonisation, combined with the powerful tailwind from a falling supply of allowances. This is reflected in the forward curve for European carbon allowance futures. In April 2022 the spot price of European carbon allowances was €80 and the forward curve suggested a price of €104 in December 2030, suggesting a forward looking annualised return of around 3%.

Since the creation of the European ETS, carbon allowances have had a volatility of around 50% p.a. with a return of around 10% p.a., making them less risk-efficient than most other asset classes. However, the scheme has had a couple of false starts and a tumultuous early life. As climate transition momentum picks up speed in the coming years, demand and supply dynamics could settle into a more predictable behaviour pattern.

In addition to assessing the standalone investment characteristics of carbon allowances, we must also consider them in a portfolio investment context. Figure 3 shows, using a clustered dendrogram², carbon emissions are most closely correlated with commodities, but broadly cluster with equities.

² A clustered dendrogram shows correlation using Ward's linkage method. This is a bottom up approach where an asset starts in its own cluster, then the two most closely correlated clusters are merged to form a pair. These pairs of clusters continue to be merged further up the hierarchy, with the purpose of identifying any potential reduction in breadth of trades.

Figure 3: Carbon allowances are most closely correlated with commodities



Source: Schroders, April 2022. Data based on 3 years of weekly returns.

The sustainability case is somewhat more nuanced. By buying carbon allowances, investors do not directly contribute to the decarbonisation of society. We are simply holding back these allowances until we sell them to a counterparty seeking their use. In that regard, we contribute to a market mechanism which incentivises decarbonisation by making it costly to emit carbon, and reducing the overall available supply of allowances.

If the world was already on a trajectory consistent with the goals of the Paris Agreement, the carbon allowances price mechanism would be ineffective. If that were the case, then by buying carbon allowances we would be expecting decarbonisation to slow or indeed fall (demand for carbon allowances would be expected to rise), and we'd benefit from a lack of progress towards decarbonisation. But the world is *not* on a trajectory consistent with the Paris accords. Decarbonisation progress is behind the curve globally, so action is required to push the global economy onto a sustainable trajectory. Market-based incentives such as carbon pricing won't be the only form of action required, but there is evidence that reductions in emissions caps lead to falls in emissions. For example, the EU ETS coincided with a 35% fall in emissions between 2005 and 2019. Combined with fiscal-based measures such as carbon taxation and decarbonisation subsidies, we believe that a higher price of carbon in cap-and-trade systems globally will be instrumental in meeting the Paris goals.

Pillar 4: Voluntary markets for carbon, or carbon offsets

To reduce the amount of CO₂ *already* in the atmosphere, it needs to be removed from the air. There have been many technological innovations that help to do this, but undeniably the greatest 'inventions' – the tree and the ocean – are the most powerful. The function of carbon removal from the atmosphere has been served since time immemorial by nature itself – not just by trees and oceans, but by other forms of land and sea vegetation. These functions are part of the carbon offset market, and while the function of carbon offsetting has been around forever, the idea that humans can claim, own and manage the function of carbon offsets is relatively new. Since humans voluntarily emit CO₂ into the atmosphere, a market for voluntarily offsetting those emissions has developed. That's why the market for carbon offsets is often called the *voluntary* carbon offset market.

Importantly, we believe that offsets 'rank' below efforts to reduce emissions in investee assets, so should only be used where other opportunities to reduce emissions have been exhausted. These are the residual emissions that can be offset while new technologies and new methods of emissions reduction are developed. Practically, that means investors should seek to reduce their portfolio emissions to a point where further reductions would place too much pressure on the investment integrity³ of the portfolio. After that point, offsets are appropriate. The market is also yet to be scaled to the size it would need to be in order to fully support climate action on a large scale.

³ By investment integrity we mean that considerations of net zero should not compromise a portfolio's financial goals or diversification.

Carbon offsets are instruments which reflect an emissions reduction of one metric ton of CO₂. This reduction can come about either through emissions-reduction (polluting at a lower level), emissions-avoidance (stopping an activity that would have released emissions), or the removal of CO₂ from the atmosphere (such as planting trees which sequester carbon naturally). Carbon offsets allow investors to voluntarily pay for the cost of their portfolio's emissions.

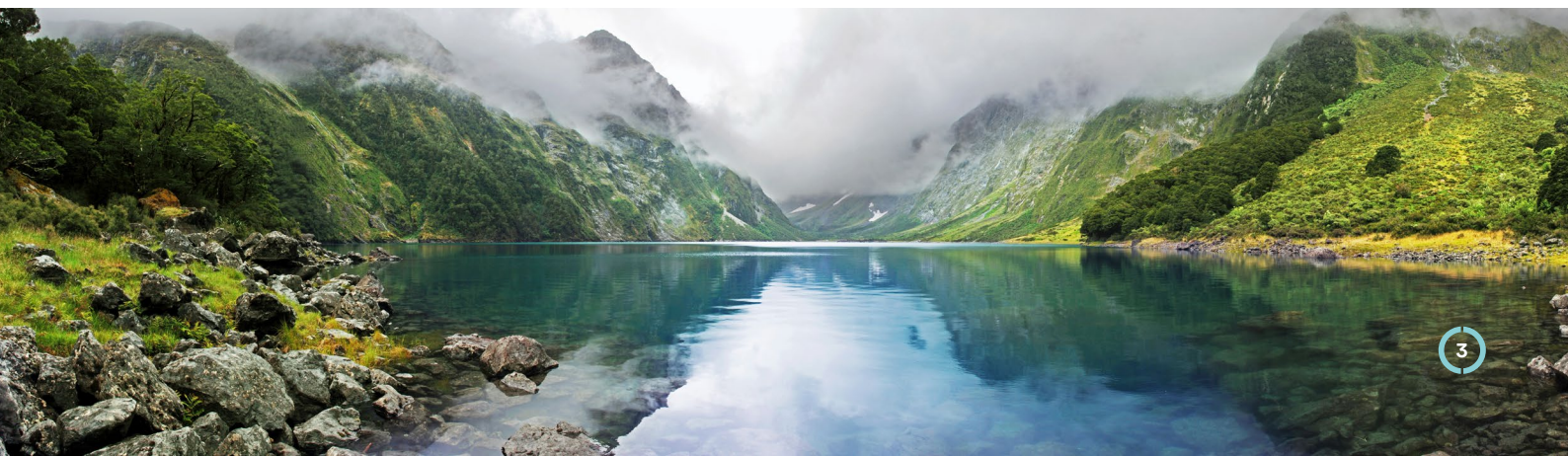
Voluntary markets are unregulated by an official government body, setting them apart from compliance markets. The lack of regulation leads to large variations in the price of offsets currently set by the project developers. They can range from as little as a few cents to as high as several hundred dollars per ton. The price of an offset depends on several factors:

- The nature of the project (local community projects typically command higher prices)
- The type of project (removal has a higher price versus reduction and avoidance)
- The volume of offsets being traded at the time (higher volume tends to have a lower price)
- The vintage (older projects are cheaper).

Despite no globally consistent, binding regulation, there are processes in place to certify the quality of offsets. Independent bodies called 'standards' are responsible for verifying the quality of carbon offsets that are traded in the voluntary markets (such as the Verified Carbon Standard or Gold Standard Verified Emissions Reduction). COP26 also included provisions to strengthen the offset market through renewed regulation and government focus, designed to ensure quality in qualifying activities and to limit risks of double counting savings (this occurs when a government claims the benefits of reductions while also selling the offset to an international company to do the same).

While compliance markets are aimed at tackling carbon emissions on a company level, voluntary markets enable both individuals and companies to offset their carbon footprint. We have identified two stages of the carbon offset lifecycle where investors could get involved: **financing the development of carbon offset projects and purchasing the offsets themselves.**

At the project development stage, private or corporate capital can fund the development of carbon offsetting schemes, such as afforestation on an otherwise barren plot of land. Investment at this level has a lot of attractions, given the prospect of much stronger demand for offsets (and therefore the assets that generate them) in the future. Such investments could benefit financially from sustainable forestry (the sale of timber) and the sale of carbon offsets associated with trees left in the ground. Assessment of whether these trees would have been left in the ground anyway is a common topic of debate in the world of carbon offsets; that is, are those trees *additional* to what would have happened anyway? That debate – covering the topic of *additionality* – is the fundamental basis of offset *quality*, and we believe the bar will keep rising in this regard.



But such investments are also illiquid and may not be suitable for many types of investors. For example, carbon offsets are unlikely to be suitable for a defined contribution pension fund or late stage defined benefit pension fund due to the liquidity risk. Crucially, we believe that for these investors, buying the carbon offsets later in the lifecycle is *not* equivalent to project development funding earlier in the lifecycle. This is because carbon offsets, once bought, must be retired in order to 'lock in' the offset. Since that removes any possibility of selling the offset, the purchase of

carbon offsets is not attractive from a purely investment point of view. There is a danger that investors will take less stringent steps to limit emissions from the assets in which they invest when using carbon offsets. Despite this, for the most part, investors (or households, or corporates) purchase offsets purely for the sustainability benefits. In that regard, we believe offsets are more helpful as a tool *outside* portfolios, such as at the share class level of a fund, or in the treasury account at the company or entity level.

Summary

The second two pillars of our carbon framework represent carbon-linked assets that investors can tangibly buy and sell. The two types of tradeable markets – compliance and voluntary – are very different from the investor's point of view. We believe there is both an investment and sustainability rationale for using carbon allowances, making them suitable for use inside a portfolio.

For carbon offsets, we believe the sustainability rationale is strong, but the investment rationale depends on the stage of the lifecycle that the investor is involved. There is an investment case at the project development level for those

that can take on the size and illiquidity risk, but for investors buying offsets later in the lifecycle, we think such purchases should be made *outside* of portfolios, and the outlay regarded as a cost, rather than an investment.

System-wide decarbonisation will happen in a non-linear and unpredictable way, with many twists and turns along the path. Markets for carbon-related assets can provide investors with opportunities to directly protect their portfolios against carbon price risk and take advantage of opportunities created by the transition, and in doing so also reduce their net contribution to climate change.

Important Information

The views and opinions contained herein are those of the authors as at the date of publication and are subject to change and may become outdated due to market or regulatory developments. Such views and opinions may not necessarily represent those expressed or reflected in other Schroders communications.

This document is intended to be for information purposes only. The material is not intended as an offer or solicitation for the purchase or sale of any financial instrument or security or to adopt any investment strategy. The information provided is not intended to constitute investment advice, an investment recommendation or investment research and does not take into account specific circumstances of any recipient. The material is not intended to provide, and should not be relied on for, accounting, legal or tax advice.

Information herein is believed to be reliable but Schroders does not represent or warrant its completeness or accuracy.

No responsibility or liability is accepted by Schroders, its officers, employees or agents for errors of fact or opinion or for any loss arising from use of all or any part of the information in this document. No reliance should be placed on the views and information in the document when taking individual investment and/or strategic decisions. Schroders has no obligation to notify any recipient should any information contained herein change or subsequently become inaccurate. Unless otherwise authorised by Schroders, any reproduction of all or part of the information in this document is prohibited.

Any data contained in this document has been obtained from sources we consider to be reliable. Schroders has not independently verified or validated such data and it should be independently verified before further publication or use. Schroders does not represent or warrant the accuracy or completeness of any such data.

All investing involves risk including the possible loss of principal.

Third party data are owned or licensed by the data provider and may not be reproduced or extracted and used for any other purpose without the data provider's consent. Third party data are provided without any warranties of any kind. The data provider and issuer of the document shall have no liability in connection with the third party data. www.schroders.com contains additional disclaimers which apply to the third party data.

Past performance is not a guide to future performance and may not be repeated. The value of investments and the income from them may go down as well as up and investors may not get back the amounts originally invested. Exchange rate changes may cause the value of any overseas investments to rise or fall. This document may contain 'forward-looking' information, such as forecasts or projections. Please note that any such information is not a guarantee of any future performance and there is no assurance that any forecast or projection will be realised.

European Union/European Economic Area: Issued by Schroder Investment Management Limited, 1 London Wall Place, London, EC2Y 5AU. Registered Number 1893220 England. Authorised and regulated by the Financial Conduct Authority.

Note to Readers in Australia: Issued by Schroder Investment Management Australia Limited, Level 20, Angel Place, 123 Pitt Street, Sydney NSW 2000 Australia. ABN 22 000 443 274, AFSL 226473.

Note to Readers in Canada: Schroder Investment Management North America Inc., 7 Bryant Park, New York, NY 10018-3706. NRD Number 12130. Registered as a Portfolio Manager with the Ontario Securities Commission, Alberta Securities Commission, the British Columbia Securities Commission, the Manitoba Securities Commission, the Nova Scotia Securities Commission, the Saskatchewan Securities Commission and the (Quebec) Autorite des Marches Financiers.

Note to Readers in Hong Kong: Schroder Investment Management (Hong Kong) Limited, Level 33, Two Pacific Place 88 Queensway, Hong Kong. Central Entity Number (CE No.) ACJ591. Regulated by the Securities and Futures Commission.

Note to Readers in Indonesia: PT Schroder Investment Management Indonesia, Indonesia Stock Exchange Building Tower 1, 30th Floor, Jalan Jend. Sudirman Kav 52-53 Jakarta 12190 Indonesia. Registered / Company Number by Bapepam Chairman's Decree No: KEP-04/PM/MI/1997 dated April 25, 1997 on the investment management activities and Regulated by Otoritas Jasa Keuangan ('OJK'), formerly the Capital Market and Financial Institution Supervisory Agency ('Bapepam dan LK').

Note to Readers in Japan: Schroder Investment Management (Japan) Limited, 21st Floor, Marunouchi Trust Tower Main, 1-8-3 Marunouchi, Chiyoda-Ku, Tokyo 100-0005, Japan. Registered as a Financial Instruments Business Operator regulated by the Financial Services Agency of Japan. Kanto Local Finance Bureau (FIBO) No. 90.

Note to Readers in People's Republic of China: Schroder Investment Management (Shanghai) Co., Ltd., RM1101 11/F Shanghai IFC Phase (HSBC Building) 8 Century Avenue, Pudong, Shanghai, China, AMAC registration NO. P1066560. Regulated by Asset Management Association of China.

Note to Readers in Singapore: Schroder Investment Management (Singapore) Ltd, 138 Market Street #23-01, CapitaGreen, Singapore 048946. Company Registration No. 199201080H. Regulated by the Monetary Authority of Singapore.

Note to Readers in South Korea: Schroders Korea Limited, 26th Floor, 136, Sejong-daero, (Taeyyeongno 1-ga, Seoul Finance Center), Jung-gu, Seoul 100-768, South Korea. Registered and regulated by Financial Supervisory Service of Korea.

Note to Readers in Switzerland: Schroder Investment Management (Switzerland) AG, Central 2, CH-8001 Zürich, Switzerland. Authorised and regulated by the Swiss Financial Market Supervisory Authority (FINMA).

Note to Readers in Taiwan: Schroder Investment Management (Taiwan) Limited, 9F, 108, Sec.5, Hsin-Yi Road, Hsin-YI District, Taipei 11047 Taiwan, R.O.C. Registered as a Securities Investment Trust Enterprise regulated by the Securities and Futures Bureau, Financial Supervisory Commission, R.O.C.

Note to Readers in the United Arab Emirates: Schroder Investment Management Limited, 1st Floor, Gate Village Six, Dubai International Financial Centre, PO Box 506612 Dubai, United Arab Emirates. Registered Number 1893220 England. Authorised and regulated by the Financial Conduct Authority.

604822