

# Why Ethical Investors Should Target Carbon-Neutrality

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## ABSTRACT

Carbon emissions play a major role in climate change. Current approaches to limiting global average temperature rises have focused on encouraging companies to report and reduce their carbon emissions. However, due to factors such as slow uptake of initiatives by governments, population growth and desirable economic growth in less-developed countries, reduction of carbon emissions is unlikely to prove sufficient to meet aims of limiting increases in global average temperatures to 1.5°C (or well below 2°C) above pre-industrial levels. To achieve this companies need to move towards zero net-carbon emissions (ZNCE), putting in place implementation strategies as a first step. In financial markets, ethical and sustainable investors are already familiar with carbon emission reductions as an environmental factor. However, now ethical investors need to appreciate the importance of zero net-carbon emissions as a factor in the selection of their investments, to stimulate companies to adopt strategies to achieve this. If such a development to ethical and sustainable investment is to become widely adopted it will require the involvement of underlying investors, wealth managers and fund providers.

## KEYWORDS

Ethical Investing, Climate Change, Carbon Emissions, Low Carbon, Carbon Reduction, Carbon Offsetting, Sustainability, Energy.

## 1 INTRODUCTION

Unsustainable human activities have generated threats including climate change, (associated with rising sea levels, extreme weather and flooding, for example) resulting in damage, loss of life, and disruption to food and fresh water supplies. As a result of these issues, proponents of responsible investment argue that behaving in an unsustainable manner will cease to be an option. Sustainable investing is already used to encourage companies to avoid harmful environmental, social and governance practices; including monitoring and reduction of carbon emissions.

However, whilst reduction of carbon emissions is often included in sustainable and ethical investment criteria, generally as one factor of many considered, very few ethical investors consider the need to target zero carbon emissions, or zero net-carbon emissions (carbon-neutrality) directly. The current paper calls for ethical investors to explicitly require that companies do not only report and reduce carbon emissions, but also that they target a goal of zero net-carbon emissions (ZNCE). Companies that are major carbon-emitters will need to develop plans to transition to lower-carbon technologies before seeking carbon-neutrality. Ethical investors considering these companies should be scrutinizing their low-carbon transition strategies before supporting them. This approach would represent a significant step forward by the ethical investment community, being well ahead of current general practice.

The remainder of the introduction outlines the role of carbon emissions and the UN FCCC global average temperature targets, and outlines some of the difficulties, including the ease with which companies can externalise emissions leaving others to deal with the costs incurred. Thereafter the paper explores the current emphasis on carbon reduction and why this is likely to prove insufficient, before considering transitions to lower carbon technologies and carbon-offsetting. Next, the role of ethical investing is addressed in the context of ZNCE, demonstrating that it fits within currently-existing sustainable investing criteria, even if it is rarely addressed. Finally, conclusions include the next steps for ethically-minded investors, as well as outlining further developments required and the challenges faced by investors seeking to support a move towards ZNCE.

### 1.1 Carbon Emissions and Climate Challenges

Carbon emissions play a major role in climate change, and current efforts have been based around encouraging companies to report and reduce their emissions. However, this may prove to be insufficient to meet the UN FCCC (United Nations Framework Convention on Climate Change) intended aims of holding the increase in global

average temperatures to well below 2°C above pre-industrial levels while pursuing efforts to limit increases to 1.5°C above pre-industrial levels [1].

In themselves the UN FCCC aims already accept consequences from global warming, recognising that the risks and impacts of climate change would only be reduced, not eliminated. Thus, they may prove insufficient, particularly with slow uptake from international governments, and the potential for political pressures to delay or disrupt progress.

Progress is also likely inhibited by the ability of companies to externalise costs associated with carbon emissions. For example, a company's activities or products may release significant quantities of atmospheric CO<sub>2</sub>. Although unsustainable, it is generally unlikely that the company responsible will be paying significantly towards atmospheric CO<sub>2</sub> reduction, or pricing the cost of CO<sub>2</sub> removal into the finished product. The costs of adapting to climate change will fall to society as a whole, often with poorer countries suffering greater damage (and costs) than richer, industrialised countries, which have historically often benefitted from the industry that generated much of the carbon-emissions in the first place. This typifies externalised costs: the company responsible for the emissions has not paid for the consequences. Generally consumers buying that company's goods may not pay a price reflecting the true cost of dealing with the CO<sub>2</sub> involved in production, use or disposal. The company in question is left with little incentive to either reduce carbon emissions or to develop a strategy for achievement of carbon-neutrality [2], [3]. Although many companies will be responsible for lower levels of carbon emissions the same arguments still apply.

Sustainable investing, with carbon emissions in mind, is one way of encouraging companies to reduce carbon emissions. Awareness of ethical investment appears to be increasing rapidly, with £14.4 billion assets under management in the UK ethical funds sector in August 2017 according to the IA (Investment Association), an increase of £4.3 billion since August 2016 [4].

However, ethical investors need to be aware that while reporting and reduction of carbon emissions by companies is helpful, it is unlikely to be sufficient to meet the UN FCCC

aims of limiting average global temperature increases to 1.5°C and well below 2°C at current rates. What is required is a clear movement by companies towards zero carbon emissions, or zero net-carbon emissions (ZNCE) to achieve carbon neutrality. At the current time companies appear to have been slow to accept the need for ZNCE.

To move this forward the ethical investment community (including underlying clients, wealth managers and fund providers) needs to start influencing companies to develop ZNCE strategies, and screening investments in companies based on their progress towards development and implementation of such strategies.

## 2 CARBON REDUCTION

Thus far current efforts have primarily been directed towards reduction in CO<sub>2</sub> emissions. Examples include the Carbon Disclosure Project [5] (which encourages companies to report their carbon emissions), or the UNPRI [6] which supports the adoption of ESG principles (environmental, social and governance principles) [7], [8]. These encourage their incorporation into decision making, policies and practices, disclosure, acceptance and implementation, and enhancing effectiveness in implementation and reporting.

In terms of accounting for carbon emissions, the Greenhouse Gas (GHG) Protocol has categorised emissions into three groups, or 'scopes' [9]. Scope 1 emissions originate from sources that are owned and controlled by a company, known as direct emissions, including, for example fuel used in company vehicles. Indirect emissions are covered by scopes 2 and 3. Scope 2 emissions are those resulting from energy used by a company, including electricity, steam, heating, and cooling; while scope 3 emissions cover all indirect emissions arising due to company activities. Scope 3 emissions include upstream and downstream value chain emissions. Thus scope 3 emissions include those of suppliers and customers using their products (for more detail see [10]). For current purposes all three scopes of carbon emissions should be considered. Although many carbon emissions may take place when customers use products purchased, consumers' efforts to reduce their emissions can be constrained by the range of products available. Hence companies are best-placed to reduce emissions by designing their products to

generate less carbon, and all CO<sub>2</sub> released, however generated, contributes to global warming.

## 2.1 Why reduction alone is not enough

Carbon reduction reporting and reduction initiatives are useful steps in the right direction – but given anticipated population growth and desirable economic development in less-developed countries, it is reasonable to question whether they are likely to be sufficient to meet the UN FCCC aims. Indeed, an expanding proportion of a growing world population will demand improved living standards as less developed countries modernise [3].

There is a danger of a Malthusian trap, in which any spare capacity gained by decreases in carbon emissions will be taken up by population growth or increases in economic activity. To quote Malthus “The power of population is indefinitely greater than the power in the earth to produce subsistence for man” [11]. The problem is that if carbon emissions are only reduced, the reduction is likely to be taken up by either increased global population, or else by increased emissions per capita, resulting from improved living standards in less well developed countries. The issue of population levels and the impact of population growth is explored in some detail in [12]. Addressing emissions from a population perspective can be a highly controversial topic, and the arguments for and against are not explored here. However, if carbon emissions are thought of in ‘per capita’ terms, it becomes clear that as population increases, emissions per capita must decrease proportionately, just to keep overall emissions stable. The only way to avoid this is for emissions per capita to decrease to zero; at this point population increases would have no effect from an emissions perspective. Here, it should be noted that carbon emissions are only one aspect of a larger challenge. Attainment of carbon neutrality is only one facet; sustainability is required in all aspects.

Alternatively, if there is continued exponential GDP growth in the carbon-based economy, anything less than an exponential reduction in carbon emissions will make no difference [13]. Peak human-induced warming is primarily determined by accumulated CO<sub>2</sub> emissions until such time as they are reduced to zero. In a faster-growing world economy, if average emissions are not allowed to increase, it will be cost-effective to reduce emissions to zero sooner. What matters for peak global warming is the total emissions used to achieve a given rate of economic growth [13].

Apart from the need for dramatic reductions in carbon emissions, this highlights the need for companies to reach a stage where they rapidly become zero net-carbon emitters, whilst maintaining growth.

The scale of the challenge can be seen by considering the energy production from fossil fuels, which remains a major contributor to global warming, with 833 gigatonnes of CO<sub>2</sub>-equivalent emitted in the 28 years since 1988, slightly more than emitted in the prior 237 years from the start of the industrial revolution [14]. The fossil fuel industry and its products made up 91% of global industrial greenhouse gas emissions in 2015, with 25 entities (both companies and state producers) accounting for 51% of global industrial emissions. Seven of these top 25 emitters were publically-owned companies which accounted for 2.9 gigatonnes of scope 1 and 3 emissions between them in 2015. Using emissions data for 224 fossil fuel companies in 2015, public investor influence reached 20% of global industrial emissions [14]. While many ethical investment strategies will exclude such companies, this highlights the need for investor engagement as well as significant market shifts away from reliance on fossil fuels. Major emitters will need to develop a transition plan to move away from carbon-intensive technologies.

## 2.2 Transition and the role of Carbon-offsetting

An illustration of the transition to carbon-neutrality might explore UK electricity generation. Historically much UK electricity generation used coal-fired power stations. More recently much of that capacity has been replaced by CCGT (combined cycle gas turbine) generation, with a further progressive move into renewables including wind-power.

For the sake of discussion consider coal, CCGT and wind generation of electricity. Over a full life-cycle (including manufacture, installation of plant, maintenance and decommissioning); coal generation emits around 1,000g CO<sub>2</sub>e per kWh (grams of CO<sub>2</sub> equivalent per kilowatt-hour), CCGT emits about 500g CO<sub>2</sub>e per kWh, and wind, up to around 32g CO<sub>2</sub>e per kWh [15]. Strictly Ref. [15] considers greenhouse gases, including those other than CO<sub>2</sub>, with emissions measured in terms of grams of carbon dioxide equivalent (g CO<sub>2</sub> equivalent), although this point is not further explored here.

Consider a hypothetical company generating 1TWh (terawatt-hour) of power annually; if coal fueled this would be responsible for around 1 megatonne of CO<sub>2</sub> emissions, replacing with gas (CCGT) would halve this to 0.5 megatonnes of CO<sub>2</sub> emissions per year, while wind-power would generate this with emissions of 0.032 megatonnes of CO<sub>2</sub> emissions.

The above outlines a possible transition from high-emission generation to lower emission technologies. However, wind-power generation is not zero carbon as greenhouse gases are emitted during manufacture, installation, maintenance and decommissioning [15]. Thus progression from coal, through CCGT to wind-power gives a significant reduction in emissions, but not achievement of ZNCE. Indeed, for an offshore wind-farm around 78% of the CO<sub>2</sub> emissions arise from manufacture and installation, with 20% from operation and maintenance and 1% from dismantling and disposal [15].

Having significantly reduced emissions by transitioning to lower carbon technologies, to achieve ZNCE, as a final step, offsetting the remaining emissions would be required. For the example above, the hypothetical generator company using wind-power has residual emissions of 0.032 megatonnes of CO<sub>2</sub> that would need to be offset. Using a notional price for offsetting of £10 per tonne in August 2017 (for more information see for example [16]), the resulting cost would be £320,000. Wholesale electricity prices reflect the prices that electricity suppliers are paying. Although they can be subject to considerable variability, and tend to be higher in winter, a notional wholesale electricity price might be around £40 per MWh (megawatt-hour) [17]. On this basis the 1TWh annual generation of the hypothetical wind-generation company would be worth around £40 million at wholesale market prices, making the £320,000 cost of offsetting the residual carbon emissions 0.8% of the value of the electricity generated, a level that would appear economically affordable.

It should be noted that the above example is not intended to be a blueprint as to how the electricity generation sector could achieve ZNCE, but merely a concrete example to illustrate how a combination of technological transition and carbon-offsetting could be used. Clearly electricity generation could not be solely dependent on wind-power,

including reasons such as seasonality, potential unreliability of wind as a power source, the need for different types of generation to match specific demand requirements and the desirability of diversification in the energy mix.

However the example also raises important questions about the role of offsetting. For example, if a carbon-intensive business is sufficiently profitable, why not just offset in large volume? There are reasons why such an approach may not be desirable. In terms of carbon-intensive activities, if an extremely high volume of carbon offsetting were to be required, it seems likely that there may be insufficient offsetting capacity to meet demand, either resulting in a shortfall, or else the creation of substandard offsetting schemes that may not yield the promised benefits. Another issue is that the estimation of carbon emissions may be prone to degrees of inaccuracy. Coupling this with the difficulties of accurately assessing the true amount of carbon taken up by offsetting schemes, it seems likely that although offsetting may be carried out in good faith, there is a danger that it may prove insufficient. However, neither of these points means that offsetting should not be used, just that it might be wise to adopt a precautionary principle and use it only as a last resort, or as a temporary measure when nothing better can practically be done.

Thus it would seem logical to use carbon-offsetting primarily in two circumstances:

- After low-carbon technologies have been used to reduce emissions to as low as practicable, in which case offsetting may be used to absorb any residual CO<sub>2</sub> emissions.
- As a practical temporary measure to mitigate the worst effects of carbon emissions while a strategy to adopt lower carbon technologies is developed and implemented.

The resulting guidance for ethical investors would be that any carbon-offsetting is better than doing nothing, but a preferred strategy would be to use technology (or other means) to get CO<sub>2</sub> emissions as low as practically possible and then to use offsetting to address any remaining emissions to attain ZNCE. As a temporary measure, while strategies are being developed and implemented to reduce

actual emissions, carbon-offsetting would also be acceptable until such time as these are in place.

### **3 ETHICAL INVESTING AND CARBON SUSTAINABILITY**

For current purposes, little distinction is made between ethical investment, responsible investing or sustainable investing. For brevity, the term ‘ethical’ investing will generally be used interchangeably with ‘responsible investing’ and ‘sustainable investing’ except in cases where a useful distinction can be drawn. Definitions of these terms are offered in [7]. Broadly, companies are encouraged to promote practices including environmental stewardship; consumer protection; human rights and to support the social good [7], [8].

Ethical investors are already familiar with sustainable investing with its focus on environmental, social justice and corporate governance (ESG) issues [7], [8]. In sustainable investing, funds are directed into companies with business practices capable of being continued indefinitely without causing harm to current or future generations, or exhausting natural resources (i.e. not ‘unsustainable’). Sustainability is often defined as ensuring development meets the needs of the present without compromising the ability of future generations to meet their own needs [18].

ESG identifies three key aspects of sustainable investing:

1. Environmental, including CO<sub>2</sub> emissions, or carbon-intensity; forest and woodland degradation (important for absorption of atmospheric CO<sub>2</sub>); airborne, water-borne or land-based pollution; usage of scarce resources, including water and living creatures as well as minerals, oil and natural gas; mining activities which generate toxic by-products; over-fishing, intensive agricultural methods and so on.
2. Social, including corporate social responsibility (CSR); child labour; modern-day slavery; payment of non-living wages; hazardous, exploitative and/or coercive working conditions; structures that reduce corporate taxation bills to levels incommensurate with the profits and activities taking place in those countries; anti-social working hours or conditions; displacement of indigenous peoples.

3. Governance; companies with weak internal controls may have management not following company policies, increasing risks of irresponsible behaviours, corruption and bribery. At board level, weak governance may mean that non-executive directors (NEDs) are unable to hold powerful executive directors in check, with possible damage to the company as well as the owners’ (shareholders’) interests, and increased risk of excessive executive remuneration.

Within sustainable investing, environmental factors include climate change and the need to avoid the worst effects of global warming caused by excessive build-up of CO<sub>2</sub> in the atmosphere. Thus the need for carbon emissions sustainability sits squarely within an ESG investment framework.

In environmental terms, climate change might be regarded as the ‘grandfather’ of all environmental issues. While other environmental issues are of undoubted importance (as well as other social and governance issues), few show the potential of climate change to pose an existential threat to human society, multiple species, and possibly even worse consequences for individual countries and cultures.

Current rates of CO<sub>2</sub> (and other greenhouse gases such as methane and nitrous oxide) increases in atmospheric concentrations and the associated radiative heating are unprecedented for the ice core records of the last 22,000 years. There is also evidence that atmospheric CO<sub>2</sub> concentration plays an important role in colder periods associated with glacial advancement, as well as periods of warmer climate [19]. Analysis of long-term temperature data suggests that global warming could be sufficient to significantly disrupt modern-day agriculture to an extent that would result in major food shortages. Sea levels are also effected by climate change, with estimated rates of mean global sea level rises averaging between 2.8 and 3.6 mm.yr<sup>-1</sup> over 1993-2012, a rate that is unusual relative to that estimated over the last two millennia. If these rates persist over long periods this will have important consequences for heavily populated, low-lying coastal regions, where even a small sea level rise can inundate large areas [19].

Further, for species, climate is one of the most important physical limiting factors; climatic changes have unquestionably caused many extinctions. Indeed global

climactic change may be the single most important proximate agent of mass extinction [20].

Thus investors' environmental requirements should include strategies for the achievement of zero-net carbon emissions, or for more carbon-intensive industries the development of transition plans to low carbon technologies. For UK-based investors one standard that may assist their evaluation of companies' performance is the existence of the PAS 2060 standard for carbon neutrality launched by the British Standards Institute in 2010 [21], [22].

#### 4 CONCLUSIONS

Ethical investors need to start asking for investments in companies to be judged on the development and implementation of zero net-carbon emission (ZNCE) strategies in addition to current ethical and sustainability criteria. For carbon-intensive industries the same ultimate goal should apply, although including a preliminary step of planning for transition to lower-carbon technologies on a realistic timescale.

The current work represents an initial step in terms of highlighting the importance of the need to target ZNCE, however without a significant increase in profile, it remains easier for ethical fund providers to maintain the 'status quo' which includes offering carbon reporting and limited reduction strategies to investors, rather than including a clear unambiguous emphasis on the need to target ZNCE directly. Many ethically-minded investors are not in a position to truly judge the approaches used by fund managers. This can leave fund management houses with a temptation to adopt minimal ethical criteria, or be content with a comfortable consensus on what is acceptable for ethical funds, while keeping an eye on the profitability and marketing advantages that ethically-labeled funds provide them. Lacking expertise in this area and access to detailed information, many ethical investors are only weakly positioned to challenge this consensus. Regrettably the climate science suggests that fund managers' failure to pursue ZNCE directly may be an important opportunity lost.

For this additional focus on ZNCE requirements to be effectively adopted by the financial sector, it will need to be taken up by underlying investors, wealth managers and fund

providers. Fund providers will need to develop the capability to judge and screen companies on their development and implementation of ZNCE strategies. Interest from underlying clients will be needed to generate the demand for products incorporating this requirement, while wealth managers can facilitate direction of invested monies into the most suitable funds in this category.

Wealth management companies that use their expertise to select ethical and sustainable funds from those on offer by fund management houses have an important role to play in this context. They often screen funds offered by management houses to determine which are most suitable for their clients. Portfolios of funds selected can be used to meet specific income requirements or risk targets to meet client objectives. Providing they have the necessary ethical investment expertise, and capacity to complete the necessary screening and due diligence on fund managers, this puts wealth management companies in a strong position to select only those ethical funds that meet strict, progressive ethical and sustainability criteria. These ethically-skilled wealth management companies can also raise the profile of issues that the wider ethical fund management sector may not be ready to address (such as ZNCE) to help address failures in the range of ethical investment funds on offer. By selectively directing client funds towards ethical funds that meet higher standards they can encourage improvement in the range and quality of funds on offer.

However, to exert influence on fund management companies to improve their ethical offerings (including in the context of ZNCE), ethically-skilled wealth management companies need, in turn, the support of their clients. This will require them to educate their clients, including financial advisers and direct bespoke clients on the crucial importance of the issues identified. These clients ultimately provide them with the underlying investor monies to direct towards the better quality ethical funds.

From the above it can be seen that to make progress in this area, it will be necessary for ethical investors at all levels, from private individuals, charities and trusts, through ethical wealth managers and ethical fund providers work together to raise the profile of this crucial aspect of sustainable environmental investment.

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