

Carbon Capture and the Production of Technological Futures through Corporate Climate Solutions Discourse

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"Man, unlike any other thing organic or inorganic in the universe, grows beyond his work, walks up the stairs of his concepts, and emerges ahead of his accomplishments."

– John Steinbeck, "Grapes of Wrath"

Abstract

This study reviews sustainability discourse within the context of emerging carbon capture technologies, while evaluating the unsustainable framework in which this discourse is situated. Through ideological and rhetorical discourse analysis of the websites of three prominent carbon capture companies, the study investigates how sustainability is strategically used as a symbolic concept to justify and continue profit-driven agendas. Findings show that carbon capture businesses operate within capitalist structures that adapt to market demands while presenting growth and innovation as synonymous with environmental guardianship. Four themes are identified as prevalent in the discourse of the three companies: shared culpability for climate change, depoliticisation of climate mitigation, corporate saviourism, and promotion of technological futures. This study presents perspectives on contemporary climate solutions discourse by analysing how up-and-coming market players define sustainability and success in climate mitigation.

Keywords

Sustainability, discourse analysis, website analysis, climate solutions, carbon capture, technopositivism, capitalism, science.

Type of project

Research Dissertation

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1 Introduction

With an increase in extreme weather, alarming rates of species extinction, novel diseases, vanishing coastlines, and the feeling of a rapidly approaching doomsday, 'sustainability' has surged to the forefront of public discussions. According to the Oxford English Dictionary (OED, 2023), the word itself has experienced a meteoric rise in popularity, shooting up from hardly any use whatsoever before the 1960s, to a steep increase from the 1970s onwards, and continuing today.

As the breakdown of ecological structures becomes undeniable, various approaches to sustainability have emerged, often under a new form of capitalism that is ideologically committed to shaping public opinion on climate change and how to address it, not least through language. Climate solutions companies in particular strategically portray themselves as pioneering in and leading the fight against climate change, through emphasising modern technologies, innovative research and breakthrough solutions. By linguistically positioning themselves as defenders of the environment, they reflect an ideological belief that corporate companies hold authority and responsibility in debates of sustainability and that technological advancement is imperative for mitigating climate change.

In this light, the significance of studying the discourse of climate solutions companies based in the Global North becomes evident, as these companies reflect perspectives on sustainability aligned with dominant Western ideologies. Within climate solutions discourse, the forefronting of Western thought is problematic, given its historical role in bringing on the current environmental crisis, which reveals the relevance of critically examining this discourse.

1.1 Compatibility of Corporate Sustainability and Economic Growth

Jeremy Davies (2016, 198) uncovers the abstractness of the new buzzword 'sustainability' that is increasingly used in corporate marketing. According to Davies, the word is generally ill-defined and obscured by modern perspectives on the world that are based on thinking directed towards forms of economic accumulation and predatory capital. In its most adverse form, the work towards sustainability becomes a way of defending current exploitative systems and consumerist ways of living that are supporting a continued accumulation of capital. From a more benevolent perspective, the abstract nature of the principle only makes it

susceptible to corruption by capitalism, rather than being the actual cause of its ambiguity. In either case, the idealistic nature of the concept promotes a fantasy of keeping Earth's natural resource abundance constant throughout time, in order to change as little of the way of the world as possible. In this way, the current, mainstream use of the word 'sustainability' and other similar discourses fail to challenge the underlying structures that make up capitalism and the destructive ideal that constant, economic growth constitutes.

Thus, Davies (ibid., 199) claims that discourse based on so-called 'green politics' involves a form of sustainability that takes a 'respectful' approach to consumption, by not overexploiting the material boundaries of the planet, as though the planet itself is imposing constraints onto the economy. This argument does not take into account that these constraints are just as much constructed through decisions about resource use and economical trade-offs. Therefore, while it is true that infinite growth is impossible on a finite planet, simply relying on the idea of biophysical limits isn't enough to achieve sustainability. Instead however, we need to take into consideration the relationships that define and shape these limits in practice.

In this discussion, ecofeminist Amaia Pérez Orozco (2022, 6) recognises that there is an unsolvable conflict between capital and all that can be considered living, which originates from the structural basis of capitalism itself. This stands in direct opposition to the idealised sustainability put forward in corporate messaging. Much like Orozco, Nancy Fraser (2023, 78, 81) identifies capitalism as the driver of climate change, seen as this system's inherent structural makeup is inextricably linked to planetary destruction and is conditioned to bring about natural crises time and time again. Therefore, Fraser (ibid., 81) argues that true sustainability can not be achieved from within the current economic and social system, not even through "increased knowledge or green bona fides."

1.2 Purpose and Research Questions

This thesis will explore the discursive interplay between sustainability and capitalism within the context of scientific knowledge. It will focus on capitalist narratives of authority and profiteering as they manifest in technopositivist discourse. By analysing linguistic constructions in the communications of carbon capture companies Twelve Technologies, CarbonCapture Inc., and Climeworks, the study aims to assess how this language aligns with capitalist ideology. To achieve this, the thesis will address the following questions:

- How does discourse connected to scientific knowledge portray sustainability, and how is this knowledge connected to technopositivist ideas of human superiority and exploitation of the natural?
 - What are the predominant arguments surrounding corporate and human agency within sustainability discourse on the websites of Twelve Technologies, CarbonCapture Inc., and Climeworks, and how do these arguments relate to and perpetuate a capitalist narrative?
- How is success framed within corporate climate solutions discourse?

In order to organise the analysis of the research topic, the following sections outline the paper's framework: Section 2 of the study provides a general overview of the body of literature comprising the study's subject. Section 3 determines the theoretical lines of thought that the study will be based upon, while section 4 does the same for the methodological approach. Section 5 constitutes the analysis of the chosen companies' websites based on the methodology and theory specified in the previous sections, and section 6 concludes the study's main findings. Finally, section 7 provides a discussion of the overall implications of the study's findings and potential paths for further research.

2 Previous Research on Sustainability and Discourse

Following growing societal demands, governments and corporations are increasingly acknowledging sustainability in their public discourse in order to maintain legitimacy. In analysing the Swedish fast-food chain MAX burgers, Christiansen, Hajdu, Mollaoglu, Andrews, Carton and Fischer (2023, 79) exemplify how net-zero commitments might justify "business-as-usual" behind ambiguous and presumably high-reaching goals of climate action.

Christiansen et al. (ibid., 85) show that MAX burgers' discourse justifies an approach of continuing business based on accumulation and expansion and distracts from more direct and concrete sustainable enterprising. The issue, as argued by Christiansen et al. (ibid., 79-80), is that net-zero approaches that are gaining in popularity do not put pressure on companies or politics as a whole to reduce emissions, as acceptable net-zero approaches include carbon offsetting, and thus let corporations continue and even increase their emissions. According to Christiansen et al. (ibid., 80), this is the case for MAX burgers. MAX operates on 100% renewable energy, and offsets 110% of its emissions, leading to

claims of not only net-zero, but also a genuinely climate positive operation. This stands in opposition to its rising emissions, resulting from business expansion.

Above all, the study exemplifies the general consensus that encourages market-based “voluntary actions over political regulation” when dealing with climate change. The authors propose stricter regulations around offsets and claims of net-zero, and while this is not inherently bad, the study lacks an explicit argument that there might exist systematic issues behind corporate climate action as a whole. These issues can even be enhanced by the regulations that the paper proposes, seen as even the stricter regulations could be reason for “business-as-usual.”

The business-as-usual theme is highly present in the body of literature concerned with capitalism and ‘green growth.’ Lamb, Mattioli, Levi, Roberts, Capstick, Creutzig, Minx, Müller-Hansen, Culhane, and Steinberger (2020, 2) create a framework for analysing ‘green growth’ discourses that legitimise delay in climate action. These discourses are divided into four different categories: redirecting responsibility onto others, surrendering to the hopelessness of the situation, emphasising the downsides of change, and pushing non-transformative solutions. The latter of these four categories is particularly applicable to the present study as it includes technopositivism. This category showcases the argument that highlights development of current technologies in order to handle the climate crisis, which in turn places faith in the possibilities that future technology could bring for addressing climate change. This also deflects action onto future generations.

According to Lamb et al. (ibid., 2), this fourth category also entails arguments of humanity’s apparent limitless resourcefulness, despite the finite resources that our planet bears. This idea often underestimates the complexity and delicacy of ecological systems and asserts that, through continuous innovation, we can develop more efficient methods of resource extraction and use. While Lamb et al. (ibid.) state that parts of this discourse might actually hold true to a certain extent, it is still associated with arguments that solutions are connected to market-based initiatives, and not political regulation, which in turn leads to the belief that breakthroughs are on the horizon. This illegitimises the argument that systematic measures are needed, as voluntary inventions will allow for our current lifestyles to continue and further justifies current consumption behaviours.

Because of this, Lamb et al. (2020, 5) state that arguments within this framework become arguments of delay that misrepresent sustainability. They create further debates, thus discouraging consensus around what needs to be done while at the same time making the true nature of the climate crisis more difficult to understand. To the authors, illustrating to the

general public how misinformation regarding climate change can work against true sustainability could aid in building understanding and resistance.

Clearly, this literary repertoire exemplifies the persistence of corporations in leaving core structural issues out of the discussion of climate change. At the same time, they present business and climate goals as synchronously achievable, despite recognising the seriousness of the climate crisis. In his study, Carlos Tornel (2019, 64) demonstrates the aforementioned overreliance on technology-centric responses to climate change, that has transformed climate justice into what he terms an "empty signifier". In his work, Tornel (*ibid.*, 66) raises concerns about this movement's entanglement with the capitalist economy's expansion and exploitation of human and natural resources, as this association may pose problems for the movement's ability to enact meaningful change.

Tornel (*ibid.*, 66–67) questions the neoliberal emphasis on market-driven solutions, arguing that such an approach fails to adequately address underlying economic and political structures. Tornel (*ibid.*, 72) recognises a need for radical critique of growth-oriented capitalism within the climate justice movement and he rejects "quick technological or market fixes" (*ibid.*, 68) in favour of a more politically driven approach that prioritises systemic change over sequential solutions (*ibid.*, 72). Tornel's insights around the climate justice movement provides an argument for reorienting its priorities towards a more politically grounded approach.

Within linguistics, there is a growing body of work that utilises discourse analytical methods to deconstruct corporate discourse on sustainability to reveal its ideological persuasions. For instance, Diana Jacobsson (2019, 19) uses critical discourse analysis to examine the paradox of a Swedish municipality disregarding capitalism and class when talking about sustainability. Jacobsson's analysis (*ibid.*, 33–34) shows how governments reinforce "mainstream common-sense discourses" that are grounded in neoliberal capitalism when presenting inequality as unpolitical and as inherent to society. An example given is the use of expressions like "vulnerable areas," suggesting that social and economic inequalities are immutable and can only be alleviated, for instance through acts of kindness such as handing out free books. These discursive constructions showcase assumptions about what is political and therefore what is legislatively changeable.

Continuing within the field of discourse based critiques on sustainability, Matthew Megura and Ryan Gunderson (2022, 3, 7) specifically examine corporate environmentalism by looking at the sustainability reports of eight leading oil, gas and fossil companies. The authors use qualitative frame analysis and critical discourse analysis in order to uncover

subtle discourses of climate denialism. The study finds that the analysed sustainability reports contain four frames that reveal climate denialism and greenwashing: technopositivism, necessitarianism, compliance, and countermeasures. The technopositivist frame is especially interesting to the current study, as stated earlier, with Megura and Gunderson (*ibid.*, 7) terming the faith placed in technological advancement “ideological denialism.” The authors state that this wrongly defines the climate crisis as a technological problem, and redirects attention away from fossil fuel actors as driving forces behind the climate crisis.

Similarly, through legitimacy theory, Matteo Fuoli and Annika Beelitz (2023, 21–22) find that big emitters are responding to public demand for a greener economy by foregrounding their objective to manage their impact on climate change. However, the linguistic constructions analysed reveal that the core issue regarding global warming – accumulative economies – is left unquestioned. Matteo and Beelitz (*ibid.*) recognise a disconnect between ‘sustainability’ discourse, the solutions proposed and the extremity of the crisis at hand, especially as companies still predominantly focus on implicitly legitimising their continued enterprising and growth.

The present study will build onto the research presented in this section, by focusing specifically on carbon capture technology and analysing linguistic patterns in the corporate discourse that is employed to justify this ascending business niche. Given that a great deal of faith is placed in technological development for mitigating climate change, and that climate change is a global problem stemming from a neoliberal Western capitalism, it is important to evaluate the corporate discourse produced by emerging climate solutions companies, in order to understand how sustainability is framed and reinforced.

3 Theoretical Framework

Contemporary discourse around sustainability is greatly dependent on and shaped by the perspectives that powerful corporations are putting forward. Here, sustainability, as already introduced in the sections above, is centred around the conveniently comforting idea that as long as we correctly ration earth’s resources, a capitalist system could continue more or less forever (Davies 2016, 199).

Thomas Wanner (2015, 35) criticises this sustainability and how it is presented in contemporary marketing, arguing that green economy and growth discourse depoliticises sustainability issues. This discourse prioritises value accumulation above true ecological sustainability and promotes principles of competition and consumerism while marginalising

issues like social equality. Wanner (ibid.) also challenges the idea of economic growth as separable from environmental disintegration as a myth.

To understand the idea of sustainability as presented in this paper, the ideology of capitalism must be elaborated upon. This will mainly be done by discussing the sub-concept of technopositivism in the following sections.

3.1 Technopositivism

Ralph Cintron, David Bleeden and Casey Corcoran (2020, 248) note that, within technopositivism, technology and science are generally perceived as objective entities capable of fully understanding the material world, solving all our problems, and optimising human prosperity. According to Cintron, Bleeden and Corcoran (ibid., 250), this means that science is presented as both impartial and ethically detached in its assessment of the world in its entirety.

Cintron, Bleeden and Corcoran (2020, 251) explain technopositivism by breaking down its components: "positivism" relates to the epistemologically-based belief that humanity can fully understand the natural world when unbiased, while "techno" represents the value derived from this knowledge. Cintron, Bleeden and Corcoran (ibid., 252) argue that the combination of these elements embodies the progressiveness of technopositivism: presumably, understanding nature at its core allows humanity to harness knowledge for our species' collective benefit and lets us insulate ourselves from unpleasant natural changes.

3.1.1 On Scientific Knowledge Production

In order to understand the faith that is being placed in technological advancements for dealing with the climate crisis, as exemplified by Lamb (2020) and Tornel (2019), one must comprehend scientific knowledge production and its connection to capitalism. For instance, Bruno Latour (2007, 87) describes how scientific knowledge production is generally understood as a linear path toward a fixed, universal truth that will appear if we only look hard enough. However, this image is flawed; science should be seen as transformative and dynamic, with truths being temporally situated within contemporary economies and dependent on ongoing research.

Equally, Anna Tsing (2015, 218) notes that science is often seen as an objective entity, capable of transcending national borders for the benefit of all species. However, Tsing argues that science is in truth influenced by the interests of those who conduct and fund it. Jonathan

Crary (2022, 14–18) asserts that this connection unmistakably binds science to capitalism, seen as it optimises life within accumulation-focused structures. Because of this, science is defined through the value it generates for the dominant system, that is, Western capitalism.

Davies (2016, 55) however opposes grouping all scientists as serving “the interests of human mastery over nature,” arguing that there exists great diversity and disagreements within the scientific community. However, Crary (2022, 14–15) states that the previously discussed placing of science as an omnipresent authority above history and ideology still makes it the “one remaining mirage of legitimacy behind which global capital continues its rampage of planetary looting and destruction.” This means that discourse that reinforces the superiority and facelessness of science serves to further obscure the diverse nature of science and to strengthen capitalism.¹ Achille Mbembe (2023, 3) therefore questions whether science truly benefits all life on Earth, as its connection to Western capitalism means it is destined to unravel natural systems.

As such, despite the fault not lying with individual scientists, science will continue to produce non-transformative quick fixes, so long as the powerful groups who fund and make possible research are allowed to further the ecological exploitation that benefits them under the guise of green transformation. Therefore, as stated by Crary (2022, 14–15, 17), the failure lies with the system – science originating from alternative politics will create entirely different solutions to the ongoing crisis. This sentiment aligns with Debord (2008, 90), who calls for a transformative shift away from state-run and regulated approaches, towards democratic decision-making by workers themselves.² In this way, it becomes clear that true sustainability, disengaged from the corporate idea of sustainability, is anti-capitalist.

Similarly to Tsing (2015, 218), Ajay Singh Chaudhary (2024, 20) questions the mainstream idea that there exists an all-encompassing, “scientific” climate politics, stemming from the idea that the climate crisis is universal and strengthened by contemporary marketing. In truth, there exist multiple climate realities, meaning that there exist multiple climate politics, out of which neoliberal, right-wing climate politics are the most prominent. To Chaudhary (ibid.), it is clear that this dominant approach is worthwhile to the set of politics

¹ This links technopositivism to anthropocentrism. Davies (2016, 53–54) argues that separating the environmental crisis from politics by emphasising technological advancement predetermines the implementation of “modernist, high-tech, top-down” solutions. Therefore, climate discourse promoting technological solutions creates technological futures.

² Val Plumwood (1991, 6) argues that this decentralisation, based on ecofeminist principles of emotionality and care, threatens dominant Western rationality and masculinity. As an alternative to the dominant economy, Kate Raworth (2017, 219, 221) suggests “doughnut economics.” Graphicalised, this goal looks like a doughnut, creating a “circular, not linear, economy that works with and within the cycles of the living world.”

that represents it, because despite the social and ecological sacrifices that it requires, it manifests in the “concentration, preservation, and enhancement of existing political and economic power.” Therefore, Chaudhary (ibid., 42, 51) defines the business-as-usual approach as a deeply unequal one, as there is no global identity that is benefiting from this power maintenance.

Chaudhary (ibid., 35) argues that current climate policies, even nation-transcending ones, are inherently flawed, as they combine climate mitigation with system preservation. In this way Chaudhary (ibid., 98) shows how the technology that is being implemented to combat climate change is dependent upon, defined by, and exasperated by capitalism. As such, Chaudhary (ibid., 62) explains how capitalism paves a path for the continued expansion of carbon emissions, through green marketing, voluntary corporate responsibility, as well as commitments (and often unfulfilled promises) of fantastical technological solutions.

3.1.2 Carbon Capture and the Depoliticisation of Sustainability

One of the latest technopositivist solutions being promoted to solve the climate crisis is carbon capture. Keith, Ha-Duong and Stolaroff (2006, 17) state that there does not yet exist any large-scale air capture technologies that can produce a desirable effect on global warming at a reasonable cost. The authors are however confident that the cost–effectiveness ratio can be made acceptable within the time frame that has been imposed by comprehensive climate policies. Similarly, a report by Royal Society (2009, 9) suggests that it is theoretically possible to slow global warming and even reverse it by removing greenhouse gases from the atmosphere. Nonetheless, Royal Society (ibid., 10) also highlights the effectiveness of simpler strategies, such as protecting vital ecosystems, which effectively absorb and store greenhouse gases.

Fraser (2023, 81) takes a more drastic stance, arguing that even through technological fixes to the environmental crisis, global warming can never be stopped under a capitalist system, as processes that account for consumerist behaviours must then continue.³ The solution of artificial air capture is however still argued in corporate capitalist contexts. To Guy Debord (2008, 84–85), this is due to the need of our “overdeveloped economy” to convert everything, even the air around us, into economic goods that can be traded for commercial benefit.

³ Barbara Muraca (2013, 149) states that continued consumption will inevitably deplete natural resources entirely, even at zero growth. Consequently, Muraca (ibid., 152–154) claims that the concept of degrowth is essential for true sustainability, leading to “a fierce refusal of modernity.”

Consequently, Chaudhary (2024, 123) argues that the proposition and existence of carbon capture perfectly exemplifies the systematic attempt to preserve current ways of life and value accumulation. With this backdrop, it becomes apparent why fossil and extractive sectors are unthreatened by novel carbon capture technologies: dominant firms recognise carbon capture as an absolute necessity in preserving profitability as it bridges business-as-usual with rising consumer demands for green solutions. Chaudhary (ibid., 122–123) believes that what is truly a threat to capital is extensive decarbonisation, and carbon capture technology serves as justification for the system in delaying this necessary transition, as well as extending the life of capital accumulation, much like arguments by Lamb et al. (2020, 2). Chaudhary (2020, 122–123) notes that it is for these reasons that those investing in carbon capture are companies like Shell and ExxonMobil.

Even so, Chaudhary (ibid., 122) states that there do exist reasons for the development of carbon removal technologies once the economy has been decarbonised. However, deploying this technology before this transition has been made is pointless, as current technologies are far more beneficial, and the investment into developing carbon capture technologies will merely lead to carbon capture catching up to existing renewable energy. In short, the usefulness of carbon capture is not found in immediate climate challenges, but in a future where necessary transitions have already been made.

Finally, carbon removal technologies also reflect our relationship to the planet. Fraser (2023, 82–84) states that Western capitalism has created a division between the economy and its externalities, mainly nature, where nature is presented as not being a part of the economy that depends on it. Nature therefore becomes a “realm of stuff, devoid of value, but infinitely self-replenishing and generally available to be processed in commodity production.” In this sense, everything the planet provides is treated as a gift, obtained at minimal cost or for free, without any obligation of the economy to restore what has been taken or damaged. This paper argues that corporate marketing and discourse based on these premises reflects and reinforces these ideas in its discourse.

3.1.2.1 Defining Value and Responsibility

Further economic aspects of environmental discourse include definitions of value and responsibility. To Stoddard, Anderson, Capstick, Carton, Depledge, Facer and Gough (2021, 665), applying solely money as a measure of value renders everything tradable. Consequently, harm is seen as beneficial, which means that inflicting harm like pollution can be compensated with more consumption, such as carbon offsetting or buying ‘climate

positive' products. These market solutions allow developed countries to comply with their CO2 emissions targets in a 'cost-effective' way. However, carbon markets have not emerged in a political void, but should be seen as situated within a broader historical context of the evolution of market-oriented environmental strategies.

Goodman and Boyd (2011, 105–107) find that this raises questions about the involvement of powerful industry players in climate solutions: who benefits financially from the alleged 'sustainability' found in carbon markets? In this context, consumers' efforts to reduce emissions inadvertently contribute to profit for these new companies, in turn attracting support from influential stakeholders. The deflection of responsibility onto individual consumers sidelines a more collective and political approach to addressing climate change, favouring capitalist corporations and overlooking the clear partitioning between certain groups in impacting the natural world.

Therefore, Davies (2016, 53–54) directly denounces the corporate ideal of 'sustainability' where humanities' "vaguely defined habits of industrialization, resource exploitation, and over-consumption" have led to the climate crisis, arguing instead for a re-politicisation of sustainability discourse. Market-based solutions that revolve around rationing and quotas are based on anthropocentric dualisms: in describing humans as responsible and rendering them an indistinguishable mass, humanity becomes an antonym to nature. This species thinking, as argued by Davies (*ibid.*, 54–55), also leads to a justification of human management of the planet, especially a depoliticised and technology-driven one.

4 Methodological Approach

Qualitative discourse analysis has been chosen to uncover the assumptions and ideas driving linguistic choices found on the selected company websites. Particular interest is placed on the messages' ideological function and how they contribute to reproducing largely accepted perspectives on sustainability.

Additionally, the study used the AI tool ChatGPT (OpenAI, GPT–3.5, 2022) for language refinement and vocabulary in the study's final editing stage, as well as for shortening certain passages. All AI-generated content was reviewed and edited to maintain academic integrity.

4.1 Semiotics, Power Dynamics and Implications For Sustainability

Hilary Janks (1997, 329) sees language as a social practice that is rooted in a historical context, serving different interests and sustaining power relations. Linguistic choices lead to the enhancing of certain interests and are not selected at random. This in turn means that the production and reception of discourse are socially restricted, with Janks (*ibid.*, 330–331) arguing that what texts produce are their own ideological versions of reality. Critical discourse analysis is useful when it unveils power dynamics by analysing the signifiers and formal structures that make up a text.

As there are a multitude of possible discourses to choose from when constructing a text, Janks (*ibid.*, 340–341) states that different texts will privilege different discourses, which will in turn serve certain interests. Discourses are driven by ideology, and oftentimes the ideologies have become so ingrained into social life that they are no longer clearly distinguishable to either producers or receivers. Therefore, ideology is the most powerful when it has become naturalised. It is only in times of change that new discourses progressively create new perspectives through which we can understand the world.

To Bonnie S. Brennen (2021, 211–212), ideology can be defined as mainstream ideas of individuals, groups or societies at large, as well as the way in which meaning is socially constructed for these groups. Texts are in this essence an integral part of ideology, as they represent dominant ideas and positions within certain groups at a particular place and time. This means that texts often reproduce dominant ideologies in that they are constructed as common sense and unquestionable. Therefore, dominant worldviews do not need to be explicitly stated, as they are imprinted into every aspect of the group's lives.

Brennen (*ibid.*, 203–204) similarly recognises that textual analysis involves more than just language, as language is a representative tool and helps us make sense of and construct the world around us. In qualitative research, this is what “text” refers to – the way history, society, and culture shape language and make meaning, in combination with their manifestation. Discourse analysis is therefore the study of relationships between media, culture and society and the realities constructed by “words, concepts, ideas, themes and issues.” To Brennen (*ibid.*, 206), this means discourse analysis must interpret texts in their entirety, including their background and context, instead of breaking texts down into units, as this creates an analysis of worse quality.

Semiotics are in this sense highly relevant to discourse analysis. Brennen (*ibid.*, 208) highlights how semiotics let researchers examine not only the obvious linguistic meanings,

but also what these portray in terms of people, ideas, and events, helping to understand how texts intertwine with social knowledge to create meaning. Additionally, Brennen (ibid., 210) underscores the importance of understanding text producers' intentions for producing a particular text. This makes historical, cultural and economic relationships that are present in a certain society at a certain time integral, which in turn relates to the concept of intertextuality; the way in which texts relate and refer to other texts.

Additionally, discourse analysis recognises that meaning-making moves from the textual producer to audiences, as the meaning of the text might change once the text reaches its receivers. Brennen (ibid., 211) explains that authors naturally construct texts with an intended meaning, however, as audiences will evaluate texts in a variety of different ways, they might take an oppositional, balanced or favourable stance to the text. Therefore, discourse analysis must go beyond the intended meaning and include an interpretation of possible received meanings.

Birgit Schneider and Thomas Nocke (2014, 12–13) argue that discourse analysis is specifically relevant for sustainability due to the inseparable bond shared between media and climate. Seeing as the idea of ‘climate’ is a scientifically created concept, Schneider and Nocke (ibid., 18) highlight how media framing shapes understanding of climate change, with dominant Western culture influencing perspectives by presenting geo-engineering as a climate saviour. Therefore, Western sustainability discourse must be evaluated, not least because climate futures that are put forward today “might become the blueprint for tomorrow’s realities.” This further demonstrates how language is far from a neutral phenomenon.

4.2 Ideological and Rhetorical Discourse Analysis

The selected method for analysis includes Brennen’s (2021) ideological and rhetorical analysis. Brennen (ibid., 217) asserts that the choice of one particular aspect of discourse analysis, including following established categories for analysis, is secondary to letting the texts studied establish what should be analysed, of course within the frame of the determined study object. The most important thing within discourse analysis is to go beyond the text’s superficial level and to unveil the structures that make up the present linguistic choices, in which the study of ideology is highly relevant.

Brennen (ibid., 213) asserts that one must not mistake theories of ideology, as defined in the previous section, as stating that only one single dominant worldview exists that texts

subsequently reinforce. Rather, texts represent “multiple versions of our socially constructed reality.” Texts are therefore shaped by politics, economics and various social ideologies. The ideological method for discourse analysis becomes relevant for the study in its revealing of underlying assumptions about the world that texts reproduce, put forward by powerful social and economic agents that wish to further their interests.

In rhetorical analysis, Brennen (*ibid.*, 216) places emphasis on the persuasive properties of language that producers use to influence receivers. Rhetorical analysis is particularly relevant for assessing language that places especial emphasis on persuasion, such as in public relations and advertising. According to Brennen (*ibid.*), rhetorical analysis focuses on the relationship between texts, producers, receivers, and surrounding context. Researchers focus on how language is used to enforce arguments, comparing textual elements through their associations, such as how texts capitalise on fears. Brennen (*ibid.*, 218) notes that this makes discourse analysis subjective, with no two analyses generating the same interpretations. Therefore, researchers must remain open to unexpected findings.

Finally, Janks (1997, 330–331) asserts that an estranged position to a text is beneficial within discourse analysis, as this allows the researcher to read against the text. However, it is still crucial to be aware of and receptive to the assumed position of the textual producer, as this is a central aspect to analysing discourse and allows for pattern identification. Therefore, Janks (*ibid.*) recommends reading both with and against the text, identifying the intended readings, while also remaining critical of the underlying drivers of linguistic choices.

4.2.1 Website Analysis

According to Luc Pauwels (2012, 260), by shaping and being shaped by the cultures it serves, the internet is more than just a technological achievement. It is not separated from or simply a reflection of offline cultures, but a dynamic space where diverse cultural practices, including online and offline culture, intersect and interact. To Pauwels (*ibid.*, 247–248) the particular interest of discursively studying websites as a manifestation of meaning stems from the ways in which they are able to uniquely reflect the contemporary culture of groups. The different multimedia aspects of websites can therefore serve as a window to culture and ideology, through analysing both the form and the actual content.

Pauwels’ framework is employed due to its relevance for organisational cultures, that is, professional corporations and the culture that they represent. Pauwels’ framework is further relevant due to its questioning of mainstream understandings of culture. Pauwels

(ibid., 250) claims that the concept of culture is oftentimes too simplified – cultures are seen as separable entities connected to nation-states, and the study of cultures is too concerned with words, ignoring other expressions, like images and symbols.

Pauwels (ibid., 250) explains the internet as currently limited to the visual and the auditory modality (thus excluding the senses touch, taste and smell), with the visual modality in particular including a wide possibility of expressions, such as text, layout and design, among others. Due to the scope of this study, the analysis will only be conducted on the visual modality.

Similarly to Schneider and Nocke (2014, 12–13), Pauwels (2012, 251) contends that few choices in website infrastructure and general design are socially neutral. As such, website analysis, much like a more traditional discourse analysis, is concerned with unveiling both explicit and implicit messages about culture, in terms of ideology and power relations. Pauwels’ six-phase multimodal framework for analysing websites is presented below.

A MULTIMODAL FRAMEWORK FOR ANALYZING WEBSITES	
1. Preservation of First Impressions and Reactions	<ul style="list-style-type: none"> ■ Categorization of 'look and feel' at a glance ■ Recording of affective reactions
2. Inventory of Salient Features and Topics	<ul style="list-style-type: none"> ■ Inventory of present website features and attributes ■ Inventory of main content categories and topics ■ Categorize and quantify features and topics ■ Perform 'negative' analysis: significantly absent topics and features
3. In-depth Analysis of Content and Formal Choices	<p>3.1 Intra-Modal Analysis (fixed/static and moving/dynamic elements)</p> <ul style="list-style-type: none"> ■ Verbal/written signifiers ■ Typographic signifiers ■ Visual representational signifiers ■ Sonic signifiers ■ Lay out & design signifiers <p>3.2 Analysis of Cross-Modal Interplay</p> <ul style="list-style-type: none"> ■ Image / written text relations and typography-written text relations ■ Sound / image-relations ■ Overall design / linguistic, visual and auditory interplay <p>3.3 In-depth 'negative' analysis</p>
4. Embedded Point(s) of View or 'Voice' and Implied Audience(s) and Purposes	<ul style="list-style-type: none"> ■ Analysis of POV's and constructed personae ■ Analysis of intended/implied primary and secondary audience(s) ■ Analysis of embedded goals and purposes
5. Analysis of Information Organization and Spatial Priming Strategies	<ul style="list-style-type: none"> ■ Structural and navigational options and constraints (dynamic organization) ■ Analysis of priming strategies and gate keeping tools ■ Analysis of outer directed and/or interactive features ■ Analysis of external hyperlinks
6. Contextual Analysis, Provenance and Inference	<ul style="list-style-type: none"> ■ Identification of sender(s) and sources ■ Technological platforms and their constraints/implications ■ Attribution of cultural hybridity

Table 1. A Multimodal Framework for Analysing Websites (Pauwels, 2012).

For the first phase of the framework, Pauwels (2012, 253) asks that the researcher conducts preparatory work in order to perform the analysis that will follow. Phase one includes securing a first impression of the website as a whole, so as not to miss any initial reactions that might be lost to the more in-depth analysis. The researcher should note down the “look and feel” of the website, as well as any features that they are immediately drawn to, so as to consciously receive the website as a meeting place for producers and receivers.

The second phase entails the collection of important website features, such as graphs or tables, and main content categories, such as “about us” or “products.” It is also beneficial to produce a list of “meaningfully absent” aspects that would be expected to be present, as even that which is not communicated becomes communicated. This phase also includes determining the genre or cultural reality that the website relates to, as well as any absent topics that might highlight underlying ideologies. Pauwels (*ibid.*) notes that this stage of the analysis is highly guided by the specific research interest at hand.

The third phase includes a separate modality analysis, as well as a combined modality analysis. The latter looks at the interplay between the modalities, highlighting how meaning is often created through their combination (Pauwels *ibid.*, 254–256). For the separate modality analysis, Pauwels (*ibid.*) explains five sub-phases:

1. **Textual signifiers:** Examines cultural meanings in prepositions, value statements, and descriptions and their possible political or corporate situatedness, as well as style elements like lexicon and rhetorical strategies to deduce the producer's background and ideology.
2. **Typographic signifiers:** Analyses font styles such as colour, size and legibility.
3. **Visual representational signifiers:** Looks at culturally significant characters, symbols, composition, special effects, and editing.
4. **Sonic signifiers:** Includes tone, non-vocal sounds, and music.
5. **Layout and design signifiers:** Reviews graphical and layout choices like colour schemes, backgrounds, and themes.

The fourth stage looks not so much at what is being said through form and content (as in phase 3), but more at who is expressing the identified messages to whom, and with what purpose. Pauwels (*ibid.*, 257) explains that this phase serves to reveal dominant narratives that may be presented as absolute truths, that might actually be furthering a personal agenda.

In this way, phase 4 complements and adds onto the impression-based phase 1, in that its interpretations uncover the aims of certain discursive choices.

The fifth stage, according to Pauwels (*ibid.*, 258), is concerned with the dynamics of the website's layout in its steering of audiences in their readings and navigation. Depending on positioning and the organisation of information, such as menus and navigational tools, website producers exercise control over the user with various strictness. This includes sizing, hierarchy, burying/layering, or flow of elements, as these might express social preferences. This stage uncovers what visitors are allowed to do, and how active they are expected to be in engaging with the website. External hyperlinks can be revealing, as they might indicate interests, aspirations and values on a political, commercial or educational level.

Lastly, the sixth phase looks at infrastructure. Pauwels (*ibid.*, 259) contends that design and infrastructure carry political implications as they can limit certain uses or users and influence visitor behaviour, with technologies reflecting cultural norms and impacting the purpose of the platform. Understanding these embedded cultural cues relies on recognising what lies behind design choices and how these choices interact to produce intended and unintended effects.

In the study's analysis, Pauwels' website analysis is employed as an adaptable framework in order to review discursive aspects that might reveal the ideological and rhetorical arguments highlighted in Brennen's framework for discourse analysis. Special attention will be paid to phase 2 and 4, as well as the analysis of meaningfully absent aspects, as these have been deemed particularly relevant for the ideological and rhetorical analysis.

5 Results

Twelve Technologies (hereafter Twelve) is a U.S.-based carbon capture company focusing on direct CO₂ removal from the atmosphere and at emission sources. According to their LinkedIn profile (Twelve, LinkedIn 2024), their technology is used to turn carbon into "essential products" and fuel, claiming it is "a critical pathway for eliminating industrial emissions, creating a circular carbon economy, and transitioning to a fossil-free future." CarbonCapture Inc. (hereafter CarbonCapture), also based in the U.S., removes CO₂ from the atmosphere, repurposing it in synthetic fuels, low-carbon concrete, carbon black, or other industrial products. Finally, Climeworks, based in Switzerland, mineralises CO₂ into stone for underground storage in Iceland. Climeworks also offers a portfolio of carbon removal

solutions, including afforestation, biochar, enhanced weathering, and bioenergy, combined with carbon capture and storage, tailored to companies' needs.

Twelve, CarbonCapture and Climeworks were selected due to their prominence and subsequent influence in the field of carbon capture. These companies represent different approaches to carbon capture and provide accessible data that is suitable for the discursive analysis undertaken in this study. Additionally, their active promotion of sustainability narratives related to carbon capture strengthens their relevance for this research. The website content from each company was chosen based on its perceived significance, relevance to theoretical and methodological frameworks, and its connection to the research object. This selection was made to understand how the texts align with dominant ideologies (Brennen 2021, 218).

5.1 Twelve: “A World Made from Air”

Twelve’s website is heavy on imagery, with the landing page featuring a montage of moving images that rhetorically set the tone for the company to website users. This video montage is represented in Figure 1.

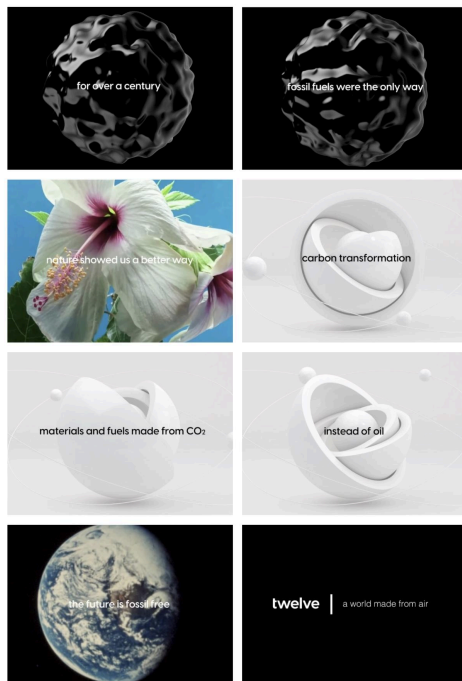


Figure 1. Introductory video montage.

The main feature of the montage is the recurrent symbol of the circle, which from a Western perspective could be ideologically associated with concepts of sustainability and circularity,

as compared to linear symbols. The circle therefore serves as a representation of environmental guardianship bestowed onto humans, as proposed by Davies (2016, 54–55) and also suggests a returning or giving back, similar to the cyclical patterns found in nature. Equally, the white atom, combined with messaging stating that nature showed Twelve how to solve the climate crisis through “carbon transformation,” might be calling for a return to nature but also reinforces the narrative of technopositivist future. The visual and textual comparison of Twelve with nature portrays the two as in symbiosis, which conveys the idea that the future of sustainability is man-made.

Further, the blooming flower together with its accompanying text personifies nature as a mentor wanting the best for humanity, and willingly sacrificing itself for human benefit, as per Fraser (2023, 84). These discursive strategies – connecting the company with natural ideals – work in Twelve’s favour. They also showcase a technopositivist belief that economic growth is not only compatible with sustainability (Lamb et al. 2020, 5), but also essential for achieving it.

On the startpage, users are met with the company’s catchphrase: “A world made from air: We transform CO₂ into essential products.” Here, the use of the term “world” could signify various things, initially perceivable as referring to planet Earth. However, in the context of the company’s production focus and the employed wording, it becomes clear that this “world” does not have to do with anything natural, but rather with anthropocentric human creation and the world of materials made from nature-based externalities, allegedly existing for the purpose of consumption. This reflects Fraser’s (2023, 82–84) idea of nature being treated as a “realm of stuff” that has been excluded from the modern economy that is in fact dependent upon it.

The startpage features links to promotional videos showcasing Twelve’s products, including their CO₂Made® Materials: “If it’s made from oil we can make it from air instead.” Below the text is a video displaying a rotating, levitating shoe, represented in Figure 2. The imagery resonates with traditional marketing strategies, appealing to emotions of lightness and modernity, rather than essential need. Customers are enticed to favour Twelve over competitors as their products not only cater to personal preferences but also contribute to environmental restoration – “CO₂Made products have zero fossil fuels, zero net new emissions and zero trade-offs in quality and performance.” This aligns with Stoddard et al. (2021, 665) who recognise that ‘sustainable’ companies often argue that harmful consumption can be offset by more consumption.



Figure 2. "If it's made from oil we can make it from air instead."

In this way, what is promoted as sustainable simply furthers the capitalist agenda. Interestingly, Twelve's messaging commodifies not only the air around us due to its carbon content (Debord 2008, 84), but also consumption itself: the carbon dioxide generated in production can now be utilised to create more consumption, which means that Twelve benefits from continuing emissions. This indicates that the destruction of the planet is in itself advantageous to people in power and to companies like Twelve, which reflects Goodman and Boyd's (2011, 106) claim that the climate crisis is generating value for 'sustainable' corporations, revealing underlying power dynamics.

Finally, the bottom of the home page boasts a number of supporting companies, such as Microsoft and the Chan Zuckerberg Initiative. This suggests a certain mainstreaming, a process that Chaudhary (2024, 123) has highlighted as not particularly desirable when relating to sustainability, as it shows an alignment with dominant narratives. For carbon capture in particular, Chaudhary (ibid.) notes that ideological support and funding by major firms is to be expected due to its delaying of decarbonisation.

To summarise, Twelve's discourse is focused on connecting the company to natural processes, despite it being highly concerned with business growth. In this sense, 'sustainability' is employed as a signifier used for marketing to enhance profitability, which directly opposes a true sustainable approach and which aligns Twelve with a capitalist ideology.

5.2 CarbonCapture: “Let’s Face Civilization’s Greatest Challenge Together”

Scientific jargon is one of the most defining features of CarbonCapture’s website. As illustrated in Figure 3, the “What We Do” page features an image of seemingly endless rows of carbon capture machines placed in a field. This portrays technological solutions as being integrated with nature and suggests a harmonious coexistence between the two, implying that human intervention is essential for environmental restoration. This visual narrative supports the discourse of capital-based, technological approaches as key to addressing climate change, while at the same time reinforcing the narrative of human ingenuity.



Figure 3. Carbon capture machines on field.

On their “Who We Are” page, under the title “What makes us different?,” CarbonCapture argues “We’re going big by going small: It may seem counter-intuitive, but we think the best way to get big is by fitting our DAC systems into small container-sized modules. That way we can mass produce them in controlled factory environments [...]” The title “What makes us different?,” as well as phrasing like “mass produce” and “controlled factory environments” places the company firmly in the capitalist paradigm of competition and effectivity. The embracing of capitalist ideals also exemplifies Goodman and Boyd’s (2011, 106) argument that ‘green’ companies are only replacing more outdated companies in the capitalist economy.

Further, on their start page, CarbonCapture makes the comforting declaration that they are “permanently securing [CO₂] from reentering the atmosphere.” Just below this statement follows a clarification on the permanence claim: “The CO₂ we capture is securely locked away for more than 1,000 years in deep saline aquifers via Class VI injection wells.” It becomes apparent that the assertion is used to pacify customers, investors, and other

audiences, permitting CarbonCapture to capitalise on the fears and pressures that are generated by corporate sustainability discourse (Brennen 2021, 216).

The “What We Do” page also includes the graphically prominent slogan “Let’s face civilization’s greatest challenge together,” placed under the title “Partnerships.” Following the catchphrase, the message is developed: “Over the next decade, we anticipate requiring a significant amount of capital as we deploy megatons of DAC capacity. We’re seeking to develop relationships with forward-thinking, project finance investors that share our mission to decarbonize the atmosphere.” It is evident that the catchy slogan is part of the string of messages that are implicitly arguing that we are all equally responsible for climate change and that we therefore should ‘do our part’ in alleviating the planet from our collective wrongdoings (Davies 2016, 53). It also strongly relates to arguments of voluntary, corporate-focused climate action.

In turn, the “Imperative” page is made up of a number of images that deepen the narrative of joint liability, compiled in Figure 4. Together, the images clearly paint “humans” as a group as the culprit to blame for melting sea caps and for risking the lives of future generations. The data that is linked in each image supports this narrative by providing external, statistical evidence to CarbonCapture’s projections. The final image in the figure, representing the culmination of the narrative, illustrates the solution to humanity’s misdeeds, with CarbonCapture emerging as saviour. The images also showcase the natural world as vulnerable, connecting it to Davies’ (2016, 54–55) anthropocene, where human’s must assume custody over nature to safeguard it from the harm that our own economic system has inflicted.



Figure 4. Alleged necessity for carbon removal.

The technopositivist ideology of hope and saviour is deepened under the “Who We Are” page: “We’re on a mission: We’re here to preserve the environment for future generations by leveraging science, technology, and human innovation to decarbonize the atmosphere. That shared mission is both a privilege and a responsibility that brings us together [...]” The passage suggests that CarbonCapture is a sort of defender of the planet, with phrases like “innovation” and “we’re on a mission” creating a feeling of optimism and possibility that CarbonCapture can leverage to sell their services. Presenting the climate movement as a “shared mission” obscures the fact that CarbonCapture is benefiting economically from the climate movement and individuals’ attempts at doing good.

Similar lexicalisations, like “we’re explorers” and “thirsty for knowledge,” portray CarbonCapture as being in the climate solutions industry for a greater good, rather than for monetary gain. This reflects Tsing’s (2015, 218) and Latour’s (2007, 87) arguments around a general science’s alleged interest in everyone’s equal well being. Notably, the company also states that they “challenge the status quo”; a statement that is highly questionable when relating to Chaudhary’s (2024, 123) claims that carbon capture is in fact a perfect manifestation of the dominant capitalist paradigm.

In summary, CarbonCapture uses various discursive measures to pressure audiences into buying into the narrative of equal climate liability, while presenting themselves as saviour. This in turn favours their business. The implicit and explicit references to advancement also reflect technopositivist ideology that places unreasonable faith in “human innovation,” despite the planet’s limited ecological resources.

5.3 Climeworks: “Take Action on Behalf of the Planet”

Climeworks discourse is heavily focused on responsibility, lexicalised both implicitly and explicitly. For instance, the company website includes the call-to-action button “Act Now”, placed as the only readable element in the website header area, next to the menu bar. This button is available to users from wherever they are on the website, making it a defining feature of the website and the company as a whole.

The button takes users to a landing page that uses textual elements to convince audiences of Climeworks’ relevance and prominence: “Many of the world’s top businesses partner with Climeworks on their journey to net zero [...]” The text is followed by a dozen logos of companies that have used Climeworks services, such as Audi and Shopify. The buying of services from these companies is rhetorically positioned as ‘committing’ and ‘partnering,’ instead of just ‘buying’ or ‘using services.’ These lexical constructions drive the idea of carbon capture as existing for a cause greater than what constitutes mere business, as also highlighted by Tsing (2015, 218).

The same page is headed by the phrase “Join the fight against global warming,” underpinning the narrative of responsibility that guilted audiences into contributing to ‘climate focused’ companies’ revenue (Goodman and Boyd (2011, 107). This means that the audience’s role in creating a desirable future is buying Climeworks’ services. Under this slogan follows the statement: “Climate science states we must reduce our emissions as much as possible and actively remove the rest with carbon dioxide removal.” This dehumanises science as the unidentifiable and omnipresent entity that Crary (2022, 14–15) defines as the enduring pretence of legitimacy that enables global capital to continue its destruction of the natural. It also subtly shifts the focus to individual economic choices, undermining the urgency for broader, systemic solutions.

In Climeworks’ discourse, the idea of nature as suffering under humanity’s actions, only to be saved by carbon removal, is prominently featured as a justification for the adoption of and investment in their technology, suggesting a key role for such interventions in

addressing environmental challenges. For instance, under their subscriptions tab, Climeworks' technology is claimed to be a thousand times more effective than trees placed on the same land, while also crediting trees with being “critical in the fight against climate change.” This depicts nature as inspirational, yet fragile enough to require human intervention and aid. This saviour role is fulfilled specifically by capital-based voluntary measures like carbon capture, as further exemplified on the “Carbon Capture Technology” page: “With our service, you can take action on behalf of the planet by permanently removing the CO2 emissions you can't reduce.”



Figure 5. Climeworks building in the countryside.

More nature hints are found on the “Subscriptions” page. A building in a rural landscape sporting the Climeworks logo is shown in Figure 5. The image suggests Climeworks' connection to nature by placing the building quite literally in the midst of nature, though it also seems to imply that rural equals natural, as though human-made nature is the same as wilderness. Following the image is a count of Climeworks service purchases: “20,399 Climate Pioneers removing CO2 from the air,” under an image of hands holding a heart, shown in Figure 6. The image hints at symbolism typically used by charity and nonprofit organisations which further draws attention away from the capitalist nature of the company. The text in itself drives the narrative that it is voluntary action by private persons that is needed to solve the climate crisis. The number is followed by Climeworks' subscription offers.

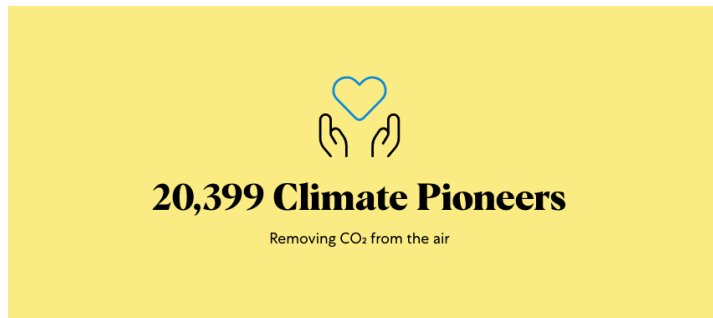


Figure 6. Charity symbolism.

To deepen this line of thought, the subscription offers are followed by the text: “At Climeworks, we’ve developed an innovative technology called “direct air capture” to remove historic and unavoidable CO₂ from the air, so it can no longer contribute to climate change. [...] We provide high-quality carbon dioxide removal that’s permanent, measurable, and scalable.” The passage strongly relates to capitalist narratives. Not only is the quality of services emphasised, but CO₂ emissions are referred to as “unavoidable”, underscoring the capitalist argument that we can keep our current lifestyles as long as we take responsibility for our private consumption through offsetting.

Similar arguments are found under the “Carbon Capture Technology” page. “Lead the race to net zero. You can focus on reducing what you can, while we remove what you can’t.” The inclusion of a footprint calculator, clearly aimed at private persons due to questions around lifestyle, solidifies the placing of responsibility on individuals. This tool encourages individuals to quantify their carbon emissions and take personal steps to mitigate them. Notably, under the Frequently Asked Questions, Climeworks clarifies that anyone who buys their services gets a certificate for doing so – “no one else can stake a claim to that amount.” This also relates strongly to the competition and responsibility narrative. If this is not clear enough, Climeworks also believes that “we all have a responsibility to reduce our carbon emissions.” This also relates to the equal liability that Davies (2016, 53) recognises in typical sustainability discourse, and which is also present in Twelve’s and CarbonCapture’s messaging.

On their “Remove To Net Zero” page Climeworks state: “For the entire planet, net zero is no longer a nice-to-have. It’s a have-to-do. And we can help your business deliver it – by removing the CO₂ emissions you can’t cut down. For good. Zero is the biggest big deal of our lifetime. Now is the time to remove to zero.” The passage conveys hope, determination and lexicalisations comparing “nice-to-have” with “have-to-do” make it clear to readers that they hold responsibility. In this case however, the passage explicitly turns to corporations and

not individuals. Most prominent is the claim that emissions reductions are the “biggest big deal of our lifetime,” revealing Chaudhary’s (2020, 122–123) argument that net-zero is an investment for business owners and investors.

In order to create legitimacy, Climeworks provides a link to an external site that it has used to develop its CO₂ removal estimates in comparison to trees. The cited source was archived due to outdated content, yet it is still being used under Climeworks’ FAQ. This is contrastable with the argued necessity of a “credible, science-based net-zero strategy,” found on Climeworks start page. Equally questionable is, as with CarbonCapture, the argument that Climeworks’ carbon removal is “permanent”: “Our carbon dioxide removal service physically removes CO₂ emissions from the air, locking the CO₂ away by permanently storing it for thousands of years.” Here, permanence means delaying the problem, removing it from any imaginable future, mirroring arguments by Lamb (2020, 2) that future generations will be more adept in dealing with our emissions.

Climeworks also contributes to the creation of technological futures through its emphasis on innovation: “Direct air capture is one of today's most promising carbon removal technologies.” The subscription passage also relates strongly to technopositivism, not only in its citing of a general “science,” but also in its arguing for the relevance of Climeworks’ business with technopositivist arguments of breakthrough and advance. These kinds of arguments tell readers that carbon removal technology is a part of solving the climate crisis, impacting how audiences think about the future and therefore shaping the future.

In summary, Climeworks above all reproduces individual responsibility narratives, while also positioning itself explicitly as “at the forefront of driving corporate sustainability efforts worldwide.” This supports Goodman and Boyd’s (2011, 104) idea that climate action should be privatised and voluntary. It also positions Climeworks as a pioneer in the field, aligned with a scientific community genuinely concerned with collective welfare, rather than solely driven by financial motives and and part of the science that truly cares for all, and not as simply driven by capital and current trends.

6 Discussion: “Zero is the biggest big deal of our lifetime”

This study’s analysis started from the assumption that all discourse production is conscious, paired with Brennen’s (2021, 213) framework that connects texts to politics, economics and social ideologies. The analysis revealed clear links to capitalist ideology surrounding technopositivism: through various discursive measures, the solution to the climate crisis is

persistently presented as depending on carbon removal. Four sub-themes related to technopositivism have been identified and are presented in the following section. The identified discursive motifs – shared culpability, privatisation, saviourism and a creation of technological futures – serve to safeguard present business models, rather than oppose and reinvent fundamental principles of our societies.

6.1 Themes

A clear concept in all the companies' discourse is the narrative of shared culpability and responsibility, marked by subtle finger-pointing and a capitalising on climate insecurity, as identified by Davies (2016, 53). Twelve tells its audience "It takes everybody," CarbonCapture says "Let's face civilization's greatest challenge together," and Climeworks claims that "We all have a responsibility to reduce our carbon emissions." In this way, single individuals and corporations are being held accountable for climate change, instead of government bodies, to whom such responsibility should belong (Goodman and Boyd 2011, 107; Wanner 2015, 35; Tornel 2017, 66–67). In Climeworks' discourse, references to charity symbolism hide the fact that attempts by consumers to reduce emissions drive profits for novel capitalist enterprises and secure a maintenance of the dominant economic system.

In this way, the theme of responsibility connects to the theme of privatisation and a presupposed voluntary nature of climate action, strongly connected to technopositivism. Within this narrative, economic growth is presented as inevitable, with the discourse analysed failing to provide any alternatives to capitalist lines of thinking. Because of this, science is made a central actor, with the power to deliver us from the undesirable effects of climate change that will continue to be produced by a system characterised as inherently resistant to change. This reflects the faceless version of science that is identified by Crary (2022, 14–15), with the analysed companies presenting science as an anonymous object, without ties to specific groups, causes or clear human interests.

Through references to this science, all companies studied argue that climate change can and will be curbed through the upscaling of carbon removal businesses. This goes against Chaudhary (2024, 122) who recognises that the development of carbon removal technologies will only be effective once the economy has been decarbonised. Instead, the study has shown that the companies are commercialising emissions: for instance, Climeworks tells its audiences that "Zero is the biggest big deal of our lifetime." Much like Debord (2008, 84–85) argues, this shows that everything runs the risk of being turned into a marketable asset in the

current economy: not only have emissions become commodifiable, but the act of consumerism itself, through its emitting properties, is given a monetary value. In this way, much like Stoddard et al. (2021, 665), the harm that is done through consumption can be compensated for through more consumption, this time in the form of carbon negative services. Simultaneously, nature is continuously removed from the economy that is dependent upon it, where CO₂ and the land used for carbon capture are “treated as a gift” (Fraser 2023, 84).

Considering this construction of sustainability, the carbon capture companies portray themselves as saviours, seen in for instance Climeworks’ catchphrase “With our service, you can take action on behalf of the planet.” The saviour narrative justifies the existence of carbon removal services by arguing for the inevitability of emissions, particularly through Climeworks’ insecurity-based manipulation strategies and the portrayal of ecosystem vulnerability, such as the melting ice caps showcased by CarbonCapture. In the face of nature’s passivity, the need for human agency and intervention becomes implicitly argued.

Finally, the fourth theme relates to how all companies produce technological futures through their public discourse. Twelve describes its services as “a critical pathway” for achieving a desirable future where fossil fuels are abandoned. In this way, Twelve contributes to the creation of futures that, according to Davies (2014, 53–54), are shaped by a technocratic elite imposing modernist, tech-centric, and managerial solutions, which in turn relates to Megura and Gunderson’s (2022, 7) findings that faith in technological solutions wrongly frames the climate crisis as a technological failure rather than highlighting underlying structural issues.

To Schneider and Nocke (2014, 18), dominant Western culture is greatly connected to this meaning-making process in its narrowing of perspectives, through for instance presentations of geo-engineering as climate saviour. Therefore, Western sustainability discourse must be evaluated, not least because climate futures that are put forward today “might become the blueprint for tomorrow’s realities.” This demonstrates how language is far from a neutral phenomenon.

6.2 Meaningfully Absent Narratives

None of the studied companies mention potential downsides of carbon capture, such as impacts on marginalised communities or ecosystems, reflecting a focus on technical solutions over socially and ecologically inclusive ones. Additionally, there is no discussion of policy

regulations or responsible deployment of carbon removal technologies, which indicates a preference for market-driven approaches. This also raises doubts about the permanence claims made by CarbonCapture and Climeworks.

Unsurprisingly, there are no mentions of other sustainable practices or technologies, like reforestation or renewable energy, that might threaten the carbon capture business. Any comprehensive biodiversity efforts are overshadowed with technocratic carbon reduction. In this way, novel technologies are favoured over more restorative or systematic approaches. Ethical considerations, including the companies' own emissions, are also omitted, leaving audiences with empty promises of engagement with nature through aesthetically pleasing imagery and optimistic messaging. Finally, public participation is discursively limited to buying the companies' services, suggesting a top-down approach, which sidelines community involvement and local knowledge, relating to Davies (2016, 53–54) who argues that such an approach further depoliticises the climate movement. Overall, these aspects exemplify meaningfully absent elements in the companies' communication (Pauwels, 2012, 253).

7 Conclusion

This study set out to investigate discourses of sustainability produced by novel carbon capture companies. By focusing on the narratives presented by Twelve Technologies, CarbonCapture Inc., and Climeworks, the study sought to uncover the underlying ideological motivations that shape their depictions of sustainability. The research questions that guided this investigation are presented below:

- How does discourse connected to scientific knowledge portray sustainability, and how is this knowledge connected to technopositivist ideas of human superiority and exploitation of the natural?
 - What are the predominant arguments surrounding corporate and human agency within sustainability discourse on the websites of Twelve Technologies, CarbonCapture Inc., and Climeworks, and how do these arguments relate to and perpetuate a capitalist narrative?
- How is success framed within corporate climate solutions discourse?

For the first research question relating to corporate presentations of sustainability, the findings show that 'sustainability' is employed as a buzzword that commodifies the climate

movement, wherein carbon capture emerges as the latest manifestation of profit-driven and exploitative ventures found under the guise of environmental guardianship. Companies related to this framework portray environmentalism as compatible with capitalist principles of growth and innovation, while the simultaneous portrayal of nature as passive and vulnerable justifies human agency and intervention. The identified themes of shared culpability, privatisation, saviourism, and the promotion of technological futures serve to further rationalise technopositivist approaches to climate mitigation.

Regarding the second question concerning corporate and human agency, the discourse that is analysed presents a future where climate mitigation is heavily reliant on – if not fully dominated by – corporate initiatives that exclude extensive biodiversity conservation. In this way, not only is human and corporate agency made necessary, but the importance of pursuing technological innovation to tackle climate change is rendered inevitable, while more collective and political approaches are obscured. Not only are carbon capture companies depicted as saviours, but individuals and single companies are made responsible and agentive through market-centred language that encourages ‘sustainable’ consumption and offsetting.

This connects to the final research question of how success is defined in climate solutions through discursive decisions by corporations. The study has shown that a successful climate mitigation allegedly excludes decarbonisation and instead should work to maintain the capitalist framework based on constant value-accumulation, as this is painted beneficial and desirable for all. Therefore, moving forward, this study calls for further reevaluation of dominant sustainability narratives and a reexamination of the role of corporations in addressing environmental challenges.

7.1 Limitations and Suggestions for Further Research

Like all research, this study is inherently limited in scope and culturally positioned. Biases can be introduced as all discourse analysis is highly researcher-dependent (Brennen, 2021, 218), with limitations coming from factors like research focus, methods, sample selection and background of the researcher. To lessen these biases, it is important to engage in self-reflexive practices, which involves critical examination and transparent communication of choices made. Because of this, the study strived to maintain strong links to the selected theoretical and methodological frameworks to include perspectives by thinkers of diverse backgrounds and theoretical contexts (Pauwels 2012, 261). The study also contributes to hegemonic language by employing dominant English, which is itself a limitation.

It is important to acknowledge these limitations to understand research findings and their implications. As a result, the topic necessitates further research, particularly within other climate solution niches. As this study's formal scope is limited, focusing on additional aspects of discourse, such as syntax or keywords, would provide valuable additions to the discussion of corporate sustainability. Incorporating diverse backgrounds into climate solutions discourse analysis, considering language and culture, would also be beneficial. Lastly, exploring the intersectional aspects of climate solutions discourse, especially using feminist methods, would generate valuable insights for the examination of contemporary environmentalism and its situatedness in a broader socio-political and cultural context.

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