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# A HISTORICAL PERSPECTIVE ON CARBON OFFSETS

## The Creation of a Global Carbon Market, 1960s-2000s

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**ABSTRACT:** This paper examines how carbon offsets evolved through the marketisation of the environment and became one of the primary policies for climate action. Carbon offsets allow firms and individuals to compensate for their emissions by buying reductions from other places, mainly the Global South. The paper argues that carbon offsets is a distinct form of environmental marketisation, created to establish a global market in carbon emissions and to allow trading outside of the cap in traditional cap-and-trade markets. By using Michael Freeden's notion of 'thin ideologies' and John S. Dryzek's environmental discourse 'economic rationalism' the paper expands on the core concepts used by offset proponents to explain and legitimise offsetting. These concepts display how the application of offsetting changed from its birth in air pollution control to its later use in climate control through the United Nations' Kyoto Protocol.

**KEYWORDS:** environmental marketisation, neoliberalism, carbon markets, carbon offsets, environmental history

# Introduction

The concept known as 'carbon offsetting' enables various economic actors to continue emitting greenhouse gasses while claiming to be carbon neutral. This is done by paying other people, particularly from the Global South, to reduce their emissions or to plant trees to compensate for already emitted carbon. The concept dictates that a tonne of carbon emitted in one place is equivalent to a tonne sequestered or reduced in another place (Buller 2022: 77-78). Offsetting is therefore a concept which creates a tradable good, the offset, which grants you the right to e.g., emit a tonne of CO2. The justification for this market is that it gives economic actors the flexibility to select the cheapest way of reducing their emissions, even if this is by buying offsets in other countries (Rose, Tietenberg 1993: 7). This marketisation of the environment is what philosopher Larry Lohmann characterises as central to neoliberal environmental thinking (Lohmann 2014: 158).

To understand the characteristics of offsetting we have to analyse the specific historical context behind the concept. Since offsets allow firms to call themselves carbon-neutral while continuing emitting carbon, they have become a central part of the global approach to addressing the climate crisis. They are at centre stage in both the UN's and firms' environmental thinking, as shown by how Total and Shell use offsets to sell 'carbon-neutral fossil gas' (Buller 2022: 77-80).

The paper asks: Where did the concept of offsetting originate, and who developed it? How has the use of offsetting been legitimised, and how has the political implementation of offsetting changed historically? With these questions, the paper seeks to contribute to the study of neoliberal environmental thought, by showing how carbon offsets came to play a significant role in the world's approach to the climate crisis and how offsets diverged from the idea of cap-and-trade and became a distinct form of environmental marketisation.

Cap-and-trade markets allow carbon emissions to be priced, through the creation of a new market. It starts with a government entity setting a fixed cap on the total amount of emissions permitted in

a certain geographic area. Firms in this area are hereafter allowed to emit as much carbon as they have permits for. If the firms want to reduce or increase their emissions, they can then trade emission permits with one another. Thus, supply and demand in the market determine the price of carbon (Buller 2022, 59). This paper argues that even though carbon offsets are often incorporated into cap-and-trade policies, they are distinct because they allow reduced emissions and captured CO2 from outside the cap, to count as permits within the cap. Hereby making the market global and contesting the idea of a fixed cap on carbon emissions.

There are few historical analyses on carbon offsets. When the concept is brought up, it has mainly been as a side note in works by environmental and economic historians on other topics such as the American Environmental Protection Agency (EPA) and the economic theory used in US public policy (Halvorson 2021; Berman 2022). Scholars from other disciplines have studied carbon offsets and carbon markets with typically two distinct angles. Some study its economic and technical aspects (Kollmus, et al., 2010; UNCTAD 1999; Bahnzaf 2020), while others such as Larry Lohmann, Hannah Wittman, Adrienne Buller, and Heidi Bachram study its relation to neoliberalism, colonialism, marketisation and inequality through sociology, philosophy, and other social sciences (Lohmann 2001; Wittman, et al., 2009; Buller 2022; Bachram 2004). They see carbon offsets as part of the neoliberal marketisation of the environment, which commodified nature, effectively allowing pollution to "be "nullified" through investments in renewables or "carbon sinks."" (Bachram 2004: 7) This, they argue, legitimised the continued extraction and expansion of fossil fuel use for Northern firms (Büscher 2014: 202).

Using the social scientist Michael Freeden's concept of 'thin ideologies', the paper analyses the connotations and concepts embedded within carbon offsets and offsetting historically. Freeden describes ideologies as sets of ideas, beliefs, opinions and values which groups of people use to make sense of the world around them and to drive policy (Freeden 2003: 32, 55). A thin ideology "does not embrace the full range of questions that the macro-ideologies do, and is limited in its ambitions and scope." (Freeden 2003: 98) Thin ideologies are distinct from macro-ideologies in their limited scope, but they are often embedded within larger ideologies (Freeden 2003: 98). As such this paper sees offsetting as a thin ideology within neoliberalism. The ideological form of offsetting will

hereafter be held up against the political scientist John S. Dryzek's environmental discourse 'economic rationalism' from his 1997 book *The Politics of the Earth*, to further analyse the central assumptions in the concept (Dryzek 1997: 8, 12-14, 20, 45-49). As Dryzek sees discourses as ways language shapes people's perceptions of the world, those who agree with them articulate what they see as central assumptions about the world. The assumptions embedded in the discourse 'economic rationalism' will therefore be used to expand on how offsetting was sought legitimised by speaking into a particular worldview.

The paper makes use of research papers, books and reports from environmental economists, legal scholars and international as well as US governmental institutions from the 1960s to the early 2000s. The material includes the early ideas on marketising the environment, the first uses of offsetting as well as carbon offsets' implementation in the Kyoto Protocol (Coase 1960; Dales 1968a; Landau 1979; Hahn 1989; Rose, Tietenberg 1993; Carbon Dioxide Assessment Committee 1983). The paper is organised according to the questions it poses; first, it explains the historical background of offsetting. Secondly, it focuses on how offsetting was legitimised as a distinct and useful strategy for addressing the climate crisis. Lastly, it explains the political implementation of offsetting and the evolution of offsetting's application to carbon emissions.

## The market turn in environmental thinking

### Marketisation of pollution in the 1960s environmental economics

As the first offset policy was introduced in American environmental policy in 1976, the following chapter deals with the theoretical origin of environmental marketisation in the 1960s as well as the state of environmental consciousness in the US in the 1960s and 1970s.

Throughout the 1960s The United States of America saw an expansion of environmental consciousness and thinking. Citizens Around the country saw air pollution damage trees, buildings, the paint jobs on their cars and irritate their eyes and lungs. The effect was especially severe in large cities such as New York and Los Angeles, but pollution was also seen in rural districts where the agricultural sector both experienced and produced pollution (Halvorson 2021: 10, 13-15).

This consciousness was simultaneously felt among economists in the field of environmental economics, as they began revitalising ideas on pricing pollution. Their focus was on the economic gains and costs related to environmental quality (Berta 2021: 63). Most environmental economists such as Allen V. Kneese, James M. Buchanan and Ralph D'Arge argued that environmental issues had to be internalised in the market by pricing pollution through taxes as this would provide firms with economic incentives to reduce their pollution. Their goal was to set an optimal price for pollution that would balance abatement costs with the costs of pollution, making abatement as cheap as possible (Berta 2021: 63-64; Halvorson 2021:88, 225).

Stressing the information problem, in 1968 Canadian neoliberal economist John H. Dales argued against the use of government set prices as "The administrative problem of approximating optimum shadow prices by actual user charges promises to be a nightmare." (Dales 1968b: 791) Instead, Dales wanted to marketise environmental issues by creating a new market for tradeable pollution rights within confined geographical areas i.e. cap-and-trade, since only markets would be able to consolidate information effectively (Dales 1968b: 799, 803-804; Berta 2021: 64, 71). Dales is important for the development of the first offsets in the US since he is credited as being the father of cap-and-trade markets, with his 1968 book 'Pollution, Property and Prices' (Berta 2021: 64). Even though Dales is Canadian, he matters to the American case as a result of his work on pollution in the Great Lakes, his connections to the Chicago school of economics and the circulation of his ideas in the early 1970s in forums such as the Economic Report of the President of the US and the White House Council on Environmental Quality (Berta 2021: 69, 77).

In Pollution, Property and Prices, Dales references the economist Ronald H. Coase, whose 1960 article 'The Problem of Social Cost', was the first to advocate for a market of tradeable pollution rights (Rose, Tietenberg 1993: 4). Coase argues that the goal should be to "secure the optimum amount of (…) pollution, this being the amount which will maximise the value of production" (Coase 1960: 42). For Dales, this 'optimal' amount of pollution could not be found since the world was too complex to calculate the economic damage caused by every margin of pollution (Dales 1968a: 28-31, 35-40). Instead, a new market should be created to gather the needed information and be used as a tool to reach a politically decided maximum amount of pollution in the most

efficient way. Dales hereby abandoned cost-benefit analysis and turned his attention to cost-effectiveness (Berta 2021: 61, 65).

The market proposed by Dales required an expansion of property rights for natural resources such as water and air, as he argued that unlimited common rights to a resource led to its destruction and overuse as no one was held accountable (Dales 1968a: 67). For Dales property rights were not the rights over an object, but the rights to use it in certain ways. The expansion of property rights on the environment therefore meant that the state would set a quality standard for air and water and issue a corresponding number of pollution-rights to firms (Dales 1968a: 58, 62-63, 65). The pollution-rights would allow their owners to emit a certain amount of pollution and could be traded on a market. If the amount of issued rights were less than what firms demanded, they would result in a pricing of pollution. Dales argued that even at a miniscule price per right, some companies would profit from reducing emissions rather than buying rights, causing them to be able to sell off their remaining stock (Dales 1968a: 85-86, 93-95). Since firms could decide for themselves what amount of emission reductions minimised their costs, the market would result in the most cost-effective abatement, and as Dales argued, ”the best way of implementing a policy is the least costly way” (Dales 1968a: 99). His conclusion however, relies on a considerable optimism in the market’s ability to allocate resources as effectively as possible (Berta 2021: 72-73). This notion is heavily criticised by Adrienne Buller, who argues that a pollution-rights market would require a bigger and more expensive state apparatus than command-and-control policy, to prevent abuse and cheating (Buller 2022: 68-69).

**The EPA and environmental problems**

The growing environmental consciousness and the revitalised ideas on pricing pollution coincided with a growing national environmental movement, driven by countercultural youth, middle class suburbanites, traditional conservationists, and academics, who advocated for government action to address the environmental issues. A turning point for the movement was the first ‘Earth Day’, held in April 1970, where 20 million Americans gathered to demonstrate for a more ambitious environmental policy. At the same time 82% of Americans said that improvement of the environment was among their most important political issues (Halvorson 2021: 29-30). President

Nixon therefore saw a need to cater to the environmental movement if he wanted to win re-election in 1972. The result was the creation of the EPA in 1970, and its first restrictive law for air pollution control in the 'Clean Air Act' (Halvorson 2021: 2, 32-33).

Historian Charles Halvorson notes that in the 1970s there were two different perspectives on environmental issues. There were liberal environmental activists on one hand who believed that a clean environment was a natural right and who supported state regulation as beneficial and necessary. On the other hand, economists such as Dales argued for a monetary cost-benefit framing of environmental issues where abatement costs had to be balanced with pollution costs. Until the mid-1970s, the liberal wing of the environmental movement had an almost unrestricted ability to pursue their policy aims (Halvorson 2021: 10). These policies for further environmental control resulted in increased expenditures which became heated topics of debate following the 1973 OAPEC oil embargo and the subsequent economic stagnation (Berman 2022: 98). Industrial firms warned that environmental control was too expensive, and that they had to shut down plants and fire employees if forced to comply (Halvorson 2021: 101-102). As such, economic rationales for environmental action focusing on effectivity and cost-benefit began to gain traction in political spheres after 1973. Even though these rationales consistently led to market-based solutions with the stated intention of making environmental control as efficient and effective as possible, they were seen value neutral, technocratic, and even apolitical (Berman 2022: 98, 116).

As Dales was the first to propose a cap-and-trade market, where a state sets a pollution cap and grants firms tradeable rights to pollute, he should be considered an influential figure in the creation of the first cap-and-trade market (Berta 2021: 65). This happened in 1976 when the EPA reformed their Clean Air Act to incorporate tradeable pollution rights. These rights were called 'offsets', and they denote the first time offsetting is used to describe a market-based compensation option in relation to pollution (Halvorson 2021: 113-114). During the 1970s these offsets and cap-and-trade were essentially the same thing as all the trading happened within the caps, but offsets would in the 1980s and 1990s diverge and become qualitatively different from cap-and-trade, with its own internal conceptual framework (Bahnzaf 2020).

# Offsetting's ideological form and assumptions about the world

**Flexibility and cost-effectiveness**

As the EPA incorporated offsets in their Clean Air Act in 1976, it was to balance "air quality and economic development." (Landau 1979: 578) The previous air pollution policy was disliked by industrial interest since they saw it and the environmental movement as "a reactionary anti-growth movement that in its present form is wholly irreconcilable with economic growth." (Landau 1979: 577-578) From 1976 it became possible for firms to expand their production and emissions, in polluted areas, if they could make other actors reduce their emissions in the same area (Landau 1979: 578-579). The EPA adjusted the offset policy in 1977 and 1978 allowing firms to keep their offsets for later use and to see industrial plants as enclosed *bubbles*, where all emissions originate from the same place. This gave firms the flexibility to decide for themselves, where they wanted to reduce their emissions as long as they did not overshoot the allowed cap within the bubble. "In effect a small-scale offset policy was being applied." (Landau 1979: 583) These changes show flexibility as one of the core concepts in offsetting, as it allowed firms to choose the most cost-effective solution (Landau 1979: 585-586).

**The right to pollute**

Another core concept in offsetting concerns the strengthening of property rights. As the EPA gave US states "the option of treating offsets as purely private property", resources such as air were no longer common goods (University of Pennsylvania Law Review 1989: 946). Economist Robert W. Hahn wrote that property rights were central to understanding offsets, as they gave firms the legal right to pollute. If the market for these rights was constructed correctly, they would minimise abatement costs (Hahn 1989: 96-97). The industrial sector also advocated the private ownership of offsets. Without this, they argued, the economic incentive to reduce emissions would go away and offsets would no longer be cost-effective solutions (University of Pennsylvania Law Review 1980: 947).

The scale of offsetting changed significantly from the 1970s to the 2000'. In the 1970s offsets had to originate from the same local area as the emissions (Hahn 1989: 99). As such they still functioned

as cap-and-trade markets. The later carbon offsets were made global and could come from both reduced emissions and captured atmospheric CO2, from outside the cap (UNCTAD 1999: 17-20). Hereby, the conditions for obtaining the legal right over a quantity of pollution changed significantly as carbon offsets made emissions from within the cap replaceable with emissions from other locations. As Larry Lohmann writes, this involved a ”simplification, abstraction, quantification, [and] propertization” of the environment (Lohmann 2014: 161-162, 178). Without this expanded notion of property rights, the marketisation of the environment would not be possible, as dividing pollution up and selling it on a market could not happen (Lohmann 2014: 178; Hahn 1989: 101, 110).

Buller agrees with this notion by stating that offsetting implies that ”two or more entities can be substituted for one another, insofar as they have certain comparable traits.” (Buller 2022: 49, 251) It was not all traits that had to be alike, only the amount of CO2, implying that actions and emissions with widely different social, economic and environmental consequences could substitute each other. The strengthening of the property rights for pollution should therefore be seen as central in offsetting.

**Offsets as rational**

Another core concept is rationality as this was inseparable from the desirability of cost-effectiveness. In 1972 the environmental economist W. David Montgomery stated that the market handled information much more effectively than state bureaucracy as it “makes the necessary calculations independently in the course of reaching equilibrium.” (Montgomery 1972: 411) Market solutions such as cap-and-trade and offsets are “superior to taxation” and command-and-control policy and this superiority can even be calculated and proved mathematically (Montgomery 1972: 411, 417). The market would effectively, cheaply, and rationally calculate its way to the best possible outcome. There was no need for command-and-control policy, you could just follow the rational market (Montgomery 1972: 396).

This logic was in the 1970s equally present in both cap-and-trade and offsetting, but during the 1980s economists began criticising the geographically confined cap-and-trade markets for providing

inadequate cost savings. In 1989 Hahn wrote that the cost savings of the EPA's tradeable pollution rights, called offsets, fell "far short of the potential savings which could be realized if there were more external trading." and "where barriers to trading are low, more trading is likely to occur." (Hahn 1989: 101, 108) As such, barriers for offset trading had to be lowered to allow for more trading and a better working market.

This perspective continued and in 1993 economists Adam Rose and Thomas Tietenberg related it to climate change. As greenhouse gasses are global in nature, they were perfect for an offset market as the market could be made global, leading to the largest potential for cost savings (Rose, Tietenberg 1993: 1, 4-5, 7, 19). International organisations such as the 'United Nations Conference on Trade and Development' (UNCTAD) also argued for expanding the offset market to climate change (Bachram 2004: 13-14). In their 1992 report 'Combating Global Warming' they argued that carbon offsets should allow bought emission reductions outside the cap to nullify emissions inside the cap. Thus, creating a new and bigger market with no cap (UNCTAD 1992: 18). This expansion of the scope of the market was seen as a rational use of market forces to maximise cost-effectiveness (UNCTAD 1992: III-VII).

The concepts used to create and legitimise offsetting reveal the concept's internal framework (Freeden 2003: 127). This framework stresses offsetting's ability to achieve cost-effective outcomes, but as Carbon Trade Watch wrote in 2003, it is problematic to assume cost-effectiveness to be a universal goal since it always results in different outcomes for different groups of people. What is cheap and efficient for firms might not be the same for farmers in for example Uganda. Especially not if 150.000 Ugandans are displaced to make space for carbon offset projects. This was the case in the region around Mount Elgon, where from 1993 to at least 2003 the Ugandan government displaced the people living in the area to make room for a new reforested national park without any 'encroachers'. The Ugandan government had made a deal with a private carbon offset provider, with connections to the Dutch Electricity Generating Board who wanted to provide offsets for a new coal fired power plant, to reforest and sell of the forest's CO2 sequestration. As such, for the sake of cheap offsets, there was no space for the people already living in the area (Carbon Trade Watch 2003: 12-13; Cavanagh, et al. 2014: 58-59).

### Economic rationalism and carbon offsets

The environmental discourse 'economic rationalism' from John S. Dryzeks 1997 book 'The Politics of the Earth' helps to further expose offsetting's world view (Dryzek 1997: 15-17). "Economic rationalism may be defined by its commitment to the intelligent deployment of market mechanisms to achieve public ends." (Dryzek 1997: 102) Just like offsetting, it seeks to strengthen property rights for natural resources and the environment to marketise them and create cost-effective solutions (Dryzek 1997: 112-113). Importantly for our understanding of offsetting, just like economic rationalism it lacks any acknowledgement of ecosystems or nature as anything else than natural resources. It does want to protect these resources, but only for human economic gain (Dyzek 1997: 112). Even when ecosystems are mentioned, this is in a context of marketisation where the 'ecosystem' fits into geographically enclosed areas (Robertson 204: 361-362, 369). The idea of large and interconnected ecosystems doesn't exist, as nature, like a machine, can be torn apart, sold, and assembled again. Thus, underlining the need for the environment to be divided into small privately owned and tradeable parts, to most effectively reduce emissions (Dryzek 1997: 112-115). Just as offsetting's ideological form developed over time so did their implementation in policy.

## From air pollution to CO2

### Offsetting and local air pollution

The EPA's introduction of offsetting in the 1976 Clean Air Act gave firms the ability to increase their production in air polluted areas, if they arranged for reductions in the same area. In the beginning, the terms were strict as firms couldn't buy offsets without also complying with several environmental demands (Landau 1979: 578-579). In the following years these terms were loosened with the bubble concept and offset banking (Landau 1979: 583, 585). Market liberals such as the EPA's Assistant Administrator David Hawkings welcomed these changes, saying the increased flexibility would lead to more emission reductions. Landau furthered this point by stating that offset banking was "one of the most important air quality regulations to be promulgated by the EPA." as it gave "much needed flexibility in meeting air quality and economic development demands"

(Landau 1979: 585-586). The legal framework for offsetting was loosened from the beginning to create a larger and more flexible market.

When Hahn analysed the effect of the EPA's offsets in 1989, offsetting had led to billions of dollars saved on environmental control. However, Hahn recognised that the number of sold offsets could have been larger and critically that the programme had not led to any noteworthy improvements in air quality levels (Hahn 1989: 100-101). The lack of environmental improvements did not lead to a discontinuation of offsetting. Instead, it was argued that we needed more offsets. This required a global market and an environmental policy where offsetting was a core element, not just a supplement to already existing command-and-control policy. Offsetting should therefore be implemented for global warming (Tietenberg 1990: 18, 25-26, 31).

**Rising climate awareness and the first carbon offset**

Even though the first offset-policies only affected local pollution problems (Hahn 1989: 97-103), research was still done on the increase of CO2 in the atmosphere, and this research would become important for carbon offsets from the 1980s and forward. An example is the physicist Freeman J. Dyson who in 1976 argued for controlling CO2 levels by planting trees on a global scale, since this was "less drastic than the shutdown of industrial civilization" (Dyson 1976: 288). He argued for reasonable costs since third world countries with low wages could be paid to plant the trees (Dyson 1976: 288, 290). According to the World Resources Institute (WRI) who oversaw the first carbon offsets, Dyson's paper proposed the first notion for solving global warming via tree planting (Faeth, et al. 1994: 2). Tree planting and the protection of already existing forests would later become a central way of making 'reductions' for carbon offsets (Faeth, el al. 1994: 1-2). Alarmingly, carbon offsets didn't have to stop deforestation just make it slower or less likely to happen (Lohmann 2014: 21).

Climate thinking also effected the US government in the 1970s and 1980s, as seen in the state financed report from 1980, 'Environmental Control Technology for Atmospheric Carbon Dioxide'. The report argued for controlling atmospheric CO2 through the capture and storage of already emitted CO2. The report proposed dumping carbon in the ocean, planting trees or burying it

underground (Steinberg, Albanese 1980: 2, 9, 12-14, 18). Even though several of these solutions were seen as problematic because of energy efficiency, technology, and price, the report still highlighted these solutions over real decarbonisation. The report had a clear focus on the technological possibilities of climate abatement and showed that forestry projects were not the only form of carbon capture considered (Steinberg, Albanese 1980: 28).

Through the 1980s the US government's discussion of climate change changed as economics took centre stage. An example is the 1983 report 'Changing Climate', which argued for simply adapting to a changing climate, as future growth and technology would make this economically preferrable to expensive environmental control now (Carbon Dioxide Assessment Committee 1983: 87, 449, 471-475, 481-482). Even with state sanctioned recommendations for inaction, climate change received more political attention as more research was done and four of the warmest years on record occurred during the decade (Bell 2021: 309-311). Demands for CO2 reductions surged but the economic approach was kept and the reductions had to be as cheap as possible. However, the Reagan-administration with its 'regulatory freeze' stopped any new governmental regulation after the saying "not (…) better regulation, but simply less regulation." (Halvorson 2021: 154) As a result, climate action was stifled, and the first carbon offsets were undertaken on a private and voluntary basis rather than by governments (Halvorson 2021: 184-188; Buller 2022: 83).

The first carbon offset was bought by the US energy firm Applied Energy Service, Inc. (AES) in 1989. They wanted to reduce their emissions from a newly build coal fired power plant, but found this technologically impossible to do at source (Wittman, et al. 2009: 713; Faeth, et al. 1994: 2). There is reason to doubt the technical infeasibility of reducing CO2 on site, as scrubbers which can remove air pollution particles from emissions, had been in use since the 1970s (Halvorson 2021: 86-87). Instead AES's reason for choosing offsetting should probably be seen in the price, since "Alternatives in the United States to avoid the release of carbon dioxide or sequester it at the source appeared to be considerably more expensive." (Faeth, et al. 1994: 2) AES therefore invested in an ongoing forest project in Guatemala, whose previous focus had been on poverty alleviation, to offset their emissions, causing the focus of the project to shift. The project however, never realised the expected reductions as only around 1,7% of the expected CO2 had been captured by the project in

1999. Furthermore, the project resulted in the criminalisation of practises such as fuelwood gathering and a shift away from community control and management of forests. Simultaneously, the shift towards carbon sequestration took money and manpower away from poverty alleviation work and caused the project managers to slow down their work with small and poor farmers and communities, to instead focus on the larger and better off farmers (Wittmann, et al. 2009: 714-716). But as it was cheap and good PR, the market for voluntary offsets expanded exponentially (Swisher, et al. 2003: 15; Faeth, et al. 1994: 2-3, 7).

**Clean Development Mechanism**

As the voluntary offset market was not seen as optimal, talks on a UN-sanctioned market on global pollution rights began appearing before the 1992 'Rio Earth Summit', as seen in UNCTAD's establishment of a department working towards cap-and-trade and their lobby organisation 'International Emissions Trading Association' in 1991. In 2003 Carbon Trade Watch saw this as the Global North's reaction against structural change and legally binding treaties to continue the economic status quo, since offsets and market solutions passed the responsibility on to consumers instead of governments or firms. With this, politicians and firms did not have to fear repercussions if climate goals were not reached (Carbon Trade Watch 2003: 10-11; Buller 2022: 74-76, 84-85). Despite these developments, market solutions and offsetting would only garner enough support to be formally pursued as policy in the mid-1990s (Carbon Trade Watch 2003: 11).

This happened in 1997 with the adoption of the Kyoto Protocol, whose goal was to reduce participating countries' emissions by 5,2% under their 1990-level by 2012. Centrally, this was to be done via a pollution market with offsets playing an essential role via the 'Clean Development Mechanism' (CDM), a policy the US in particular had pushed for (Bell 2021: 328). The US however, choose to not ratify the protocol (Bachram 2004: 6). The protocol wanted climate action after the slogan "common but differentiated responsibility", where countries had different responsibilities for reducing their emissions (Buller 2022: 184). As such, only developed countries legally bound themselves to reductions. However, the CDM allowed and legitimised not reducing at source, and instead buying offsets in developing countries (Lohmann 2001: 2). As such offsetting

allowed firms to go outside their respective emission caps and nullify their emissions by investing in projects that would either capture already emitted carbon or reduce future emissions.

Carbon emitters did not have to worry about the consequences of their offsets, since an institutionalised monitoring programme of the CDM-projects wasn't voted through, making "transparency, public engagement, and accountability" difficult to guarantee (Wittman, et al. 2009: 712). Even UNCTAD admitted that an offset market without extensive monitoring had a tendency for corruption. "As (…) there (…) exists an incentive to over-report emission reductions" to maximise economic returns (UNCTAD 1999: 72-73). It is therefore not surprising that a 2016 report to the EU Commission concluded that 85% of all CDM offsets "had failed to generate a meaningful reduction in emissions." (Buller 2022: 84) Furthermore, it can be argued as climate scientist Kevin Anderson does, that carbon offsets are "worse than doing nothing", since they lock investments in fossil fuel, keep political focus away from real decarbonisation and destroy livelihoods for citizens in developing countries (Buller 2022: 89). Despite this, offsetting has managed to create a "dominant narrative frame of climate change policy based on offsetting rather than reducing emissions" (Wittman, et al. 2099: 712, 723).

## Conclusion

The concept of offsetting originated from the marketisation of nature and the environment from the 1960s USA. This marketisation was a part of a growing awareness of pollution which in 1970 pressured the US government to establish the EPA. The environmental economist John H. Dales with his idea of a pollution rights market, became decisive for the EPA's implementation of offsetting in their Clean Air Act from 1976. At the time offsetting revolved around local air pollution, but it would later expand to encompass CO2.

A framework for offsetting was legitimised and made distinct from cap-and-trade by stressing a number of concepts. Significantly, it was argued that offsets should be acquirable both from within and outside cap-and-trade markets, as this lead to flexibility for firms and thus cost-effective emission reductions. To do this, it was necessary to strengthen property rights for pollution,

allowing it to be owned and sold globally. As such, government created offset markets was seen as the best way of solving environmental problems.

Shortly after 1976 offsetting saw an increase in market size and flexibility as this led to greater economic gains. Since the market for carbon offsets could be worldwide, CO2 emissions were perfect for offsetting. The first voluntary carbon offset was sold in 1989, but political support for offsetting was lacking until 1997, when the Kyoto Protocol was adopted. Here, the market solution was prioritised, and offsetting played a central part in the protocol through the Clean Development Mechanism. The international community thereby recognised offsetting as a legitimate and preferred climate action. Offsetting, however, is often shown to be worse than climate inaction, as it rarely results in meaningful reductions, leads responsibility away from governments and firms, slows down real decarbonisation and often creates considerable human consequences in developing countries. Offsetting has become a central part of the world's approach to climate change as it promises cost-effective reductions. However, much suggests that its promises are hollow and that its primary goal is to maintain the fossil industry's central position in the global community and the economic status quo (Buller 2022: 15, 89, 276-277).

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