

Financialisation of Nature

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Abstract

The 'financialisation of nature' is related to a shift in environmental governance—from regulation to market-based approaches—involving strong state support to facilitate the establishment of 'innovative financial instruments' and markets related to nature. Although innovative finance got a bad reputation after the 2008 financial crisis, they are strongly encouraged in the environmental policy domain and supported by actors such as UNEP or the CBD. This paper explains the theoretical underpinning and the process of establishing such financial instruments, focusing in particular on offsetting and related ideas such as 'net-zero' calculations and 'nature-based solutions'. It explains how natural entities are converted into abstract units of equivalence to allow the establishment of schemes for tradable 'nature credits' (supposedly) compensating damage across time and space. The financialisation of nature is then analysed and critiqued with respect to its lack of environmental effectiveness, its problematic socio-economic consequences and its impact on human-nature relationships. Instead of dealing with the environmental problems at hand, the conversion of nature into financial assets simply turns nature into objects of investment and speculation, while simultaneously creating a potential for financial bubbles.

Keywords: environmental governance, innovative financial instruments, natural capital, offsetting, biodiversity banking, mitigation hierarchy, net zero, nature-based solutions, restoration of nature

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INTRODUCTION¹

Broadly speaking, ‘financialisation’ refers to the increasing importance or dominance of financial markets, financial motives, financial institutions, and financial elites in the operations of the economy and its governing institutions, both at the national and international levels (Epstein 2005). This also means that the size of the financial sector is growing relative to other sectors of the economy. As an economic phenomenon, financialisation has received increased attention during the last decade, having been strongly associated with—and by some even seen as responsible for—the financial crisis of 2008. In particular, the deregulation (or ‘regulatory capture’) of the financial sector has been pinpointed as leading to financial, and hence economic, instability (Dow 2018). This deregulation allowed the creation of a variety of so-called ‘innovative financial instruments’ as well as a ‘shadow banking system’ encouraging ‘moral hazards’ in institutions ‘too big to fail’ (Authers 2010; Bookstaber 2007).

Critical scholars, however, had already been studying the phenomenon of financialisation for many years, associating it with the more general neoliberal turn that started in the late 1970s. To understand the emergence of financialisation, it is useful to review the economic context of the time period when the process started. At this time, the crisis of the Fordist accumulation regime, with its specific mode of production and consumption, was becoming quite evident, and it was clear that the crisis was not just a minor accumulation crisis, but a structural crisis (Boyer 1990). This led to an over-accumulation of capital in search for new investment opportunities. Over time, new ways of creating profits were developed, for example investing in the dot.com industry or in new financial assets. A range of new

¹ A version of this paper will appear in *The Handbook of Critical Environmental Politics*, edited by Luigi Pellizzoni, Emanuele Leonardi and Viviana Asara (Cheltenham: Edward Elgar).

innovative instruments were developed, and almost everything could now be traded, including risks, futures, credits, or pollution rights. Seen from this perspective, financialisation of the economy was *a deliberate strategy* to overcome the structural crisis of Fordism by solving the lack of investment opportunities for accumulated capital. While David Harvey claims that “[c]ontinuous financial innovation has been crucial to the survival of capitalism” (Harvey 2011, p. 7) and is therefore not unique to neoliberalism, others are talking about ‘financialised capitalism’ and a long-term structural transformation of (global) capitalism with broad repercussions (see e.g. Simon & Tittor 2014).

What characterises this transformation is not only expansion of the finance sector and innovative new instruments, but also an industrial sector more involved in finance, financing through capital markets (instead of through banks), the rise of institutional investors (i.e. pension funds), and the involvement of individuals through pension savings, insurances and social security systems. At the same time, financialisation is characterised by the language and practice of the financial world taking over increasingly more parts of our daily lives. Our homes are converted from a right or a need into an object of investment, an asset. Decisions and important choices are focused on returns and risks. Further, the ideology of the financial markets and the value of stocks push up the requirements for return on investment throughout business (Hjertaker & Tranøy 2017).

But what has all this got to do with nature? The ‘financialisation of nature’ is a particular version of both financialisation and of the ‘neoliberalisation of nature’, the latter usually referring to the commodification and privatisation of tangible nature and natural resources. Some (e.g., Brand & Wissen 2014) see financialisation of nature as a strategy to handle the multiple current crises (environmental, social and economic). However, these scholars understand financialisation of nature more broadly as including the financialisation of land,

speculation in natural resources/products or profiting from biopiracy (i.e. theft of biological material for commercial purposes). Narrowly defined, however, the financialisation of nature, is about creating markets for trading in *abstractions* of these natural entities. It refers to the promotion of new financial instruments and markets for example for natural capital, ecosystem services or pollution rights, and the mainstreaming of a new kind of finance, i.e. sustainable finance. In particular, it refers to the *conversion of nature into financial assets* which can themselves be traded. This leads to a divorce between the underlying nature entity and its associated ‘piece of paper’ (a financial asset), where the latter becomes an object of investment and speculation.

Many instruments that we know from ‘mainstream’ finance are being developed for nature as well, e.g. insurances, derivatives and futures. The most ‘innovative’ instruments have so far been developed in the field of carbon, where financial actors now buy and sell derivatives on the ‘commodity price’ of carbon, commodity futures or subprime carbon (high risk-projects). The latest inventions include securitisation (activity of repackaging and selling to investors a pool of financial assets such as mortgage loans), collateralised debt obligations, index trading, swap funds, blockchain and green bonds, including so-called ‘catastrophe bonds’ (Hache 2020).

Due to space constraints, this chapter mainly concentrates on one specific mechanism—offsetting—because of its many perverse environmental and social effects. Offsetting is based on a logic of allowing destruction of nature in one place, and offsetting (or ‘compensating’) the damage in another. Today offsetting schemes exist for example for pollution (in particular greenhouse gases (GHGs), or what is most often called ‘carbon offsets’), biodiversity, specific species, habitats, wetlands and other ecosystems. The idea and the existence of financial instruments for offsetting pollution or destruction of nature has huge consequences

for how environmental politics and international agreements are increasingly being formulated in relative terms, that is as ‘neutrality’ or ‘net zero emissions’, instead of in absolute terms which would involve actual emission cuts or halting the loss of biodiversity. Behind this financialisation of nature, lies an important shift in the modes of governing the environment, i.e. a move from regulation by the state or international bodies to market-based instruments.

This chapter outlines the development of the idea and the actual establishment of offsetting and other financial instruments to regulate destruction of nature during the neoliberal era, including an overview of the financialisation discourse and its grounding in neoclassical economics. The phenomenon of financialisation is then analysed and critiqued with respect to its environmental effectiveness, its socio-economic consequences and its impact on our relationship to nature. In conclusion, I provide an outlook for the future of offsetting as a solution to environmental problems and consider what the consequences of the ongoing financialisation of nature might be for nature, people and the economy.

UNDERSTANDING THE ‘FINANCIALISATION OF NATURE’

As defined in the previous section, the financialisation of nature is associated with a shift in environmental governance, relying on the creation of ‘innovative’ financial instruments and new financial markets for trading in abstractions of various nature-related entities. These abstractions can refer to broad, economically defined conceptions about nature, such as *natural capital* and *ecosystem services*, or to already institutionalised financial assets such as pollution rights or biodiversity credits. However, it is not obvious for the uninitiated what a financial asset is, what a tradable abstraction is, or how such markets work. Hence, we start in the concrete, explaining first two basic kinds of markets—for tradable emission rights and for offsets—and the financial instruments involved.

Emissions Trading - or 'Cap & Trade'

A cap and trade-system is generally used to regulate emissions. It is a system of rights to emit a certain amount of a specific pollutant (e.g. SO₂) or groups of pollutants (e.g. GHGs). The system is set up for a specific region and in such a way that there is an upper ceiling—a cap—on the total emissions allowed, a ceiling which is decided politically. The allowances of all the permits in the system then add up to the cap set for the amount of pollution accepted. Ideally, the permits should be sold or auctioned to the interested economic actors by the public body governing the emission trading scheme (ETS), but in practice they are often given away for free (Spash 2010).

Further, the rights to pollute can be traded, and the trading part is key to the system. Its purpose is to achieve a certain environmental target while still basing policies on the (supposed) efficiency of the market. According to mainstream (neoclassical) economic theory, making the pollution rights tradable can make the scheme cost-effective, meaning the aggregate costs of pollution reduction are minimised. Further, by using the price mechanism, the social cost of pollution (the so-called 'externality') can be 'internalised'.

The US sulphur dioxide trading system for coal-fired power plants, tried out in 1990s under the new Acid Rain Program, is usually considered the first large scale financial cap and trade scheme. The scheme resulted in emission reductions even bigger than the programme's emission reduction goal and was hence considered a great success (Stavins 2012). On a larger scale, emissions trading took off with the agreement of emission reduction targets in 1997 under the Kyoto Protocol (a treaty under the UNFCCC – the United Nations (UN) Framework Convention on Climate Change).

The move to offsetting under the Kyoto Protocol arose as a supplementary means for meeting targets and as a separate mechanism from what was meant to be achieved by domestic

reduction (e.g. via ETS or other scheme). Two mechanisms were developed before the first legally binding GHGs emission reduction targets came into force in 2005: the Clean Development Mechanism (CDM) and Joint Implementation projects. These mechanisms authorised Parties to the protocol to achieve their emission reduction targets in countries without binding targets (i.e. developing countries). For countries who had organised their domestic emission reductions efforts via an ETS, this meant that the cap was effectively removed (Hache 2020).²

Offsets and Offsetting

Let us look at what exactly such an offset is and how it works. Typically, offsetting refers to an action aimed at *compensating* for environmental harm taking place at a different time and place. In an offsetting system, the right to emit or do other harm—the ‘credit’—is issued based on the logic that the harm will be compensated for. This differs from a basic cap and trade system where the right to emit simply is issued by the authorities in charge. Hence, within an offsetting logic or scheme an actor can carry out an action harmful to the environment, e.g. emit CO₂ or destroy a wetland, *only* by compensating the damage. The fundamental idea behind carbon offsetting is that someone else is paid to avoid, sequester or reduce GHG emissions, which then compensates for the GHG emissions that originate from the purchaser’s actions. Still, offsetting have some similarities to emission trading. Within an ETS, a kind of offsetting occurs if polluters reduce their emissions enough to allow them to have an excess of permits to sell to others (Spash & Theine 2018).

Offsetting exists in many forms and can be either voluntary (e.g. offsetting impacts from flying) or regulated (e.g. the mentioned Kyoto Protocol). In practice, both kinds are mediated by economic actors specialised in buying and selling compensational ‘credits’ (e.g. ‘carbon

² For the history of the development of these mechanisms, see Spash (2010).

credits’). However, beyond this intermediary, someone needs to ‘produce’ the credits in the first place. This is done through various kinds of offsetting projects. For example, projects that produce carbon credits, could in principle be any project that can demonstrate so-called additionality, i.e. that their activity is *saving CO₂ emissions*. Common examples include building of hydropower plants that will prevent (or substitute) production of energy from fossil fuels or the establishment of tree plantations where carbon is captured and stored in the trees. Through the agreement of conversion factors between different kinds of GHGs, and through equating fossil and living organic carbon, a metric has been created that helps facilitate the comparison of damage and compensation.³ Such conventions, creating equivalence measures between various natural components, are exactly what is needed for developing financial instruments for trading in nature abstractions (Smith 2017).

Biodiversity offsetting is a more complicated affair than carbon offsetting. This kind of offsetting is linked to the planning and implementation of activities that require land use change, itself the most important contributor to biodiversity loss. Such activities typically include large construction or development projects, such as motorways, airports, hydroelectric dams or new housing estates. In this context, offsetting is perceived to deal with conflicting interests between economic interests and nature protection interests, i.e. “reconcile the unavoidable tension between development and conservation goals” (Peterson et al. 2008, p. 14). In principle, the mechanism for both kinds of offsetting (carbon and biodiversity) is similar. In practice however, it has proven much harder to construct and agree upon a measurement system for biodiversity that can facilitate the equating between damage and compensation. That is, how to equate types, quality and amount of biodiversity or ecosystems? Is it at all possible? Although establishing a system of CO₂-equivalents,

³ However, to demonstrate that the projects actually lead to emission reductions have proven more difficult, as we will return to in section three.

allowing the conversion and hence equation between different kinds of GHGs, also did not happen without controversy, establishing equivalents within the realm of biodiversity has been much harder due to both the incredibly large number of species and the different qualities that characterise specific ecosystems or habitats (Spash 2015a).

Unlike the offsetting of GHGs where emissions taking place in one country can be offset in another, biodiversity offsetting generally requires the offsetting site to be within geographical proximity. In its most basic and early form, a development project could be required to carry out *on-site* mitigation. As offsetting practice developed, it became more common to allow and carry out *off-site* mitigation, since this was usually cheaper. Later came an opening for offsetting '*in-kind*', referring to an offset that provides the same type of biodiversity as that which is destroyed by protecting land within the same ecosystem, and—finally—'*out-of-kind*', referring to an offset that protects land within a different ecosystem, thereby providing a different type of biodiversity (US EPA 2004). Besides generally costing less, off-site offsetting introduces the opportunity for a third party (an intermediary) to implement and maintain the offsets on behalf of the developer in exchange for financial compensation. These intermediaries usually go under the name of 'offset banks', such as habitat banks, species banks or wetland banks (see Sullivan 2013).

Many countries have by now introduced mandatory offsetting into their environmental regulations. Such legislation usually requires that in order for the construction project to be approved, the so-called *mitigation hierarchy* must be followed (ten Kate et al. 2004). The mitigation hierarchy proscribes that a developer or company must first try to avoid destroying e.g. a habitat; it must then try to minimise the impact that cannot be avoided; and finally mitigate the degraded habitat following impacts that cannot be completely avoided or minimised. If there is still a *residual* impact after these three steps are taken, then this must be

compensated through offsetting. It is therefore often highlighted that offsetting is the last step in the mitigation hierarchy and should only be used when damage is unavoidable. However, as we will see in section 3, this is quite a contested issue, as the hierarchy instead works to legitimise destruction.

The mitigation hierarchy has for some time been considered a general sustainable practice followed by many developers and companies on a voluntarily basis, hence is already operating in many places prior to any legislation. At the same time, it is increasingly being integrated in planning legislation or made obligatory in order to achieve financial support of various kinds. For example, the World Bank's environmental and social framework from 2018, made it mandatory to offset biodiversity destruction in order to receive financial support. Such rules contribute to increasing demand for offsetting and expansion of new kinds of financial markets.

The European Commission (EC) has also been preparing regulations requiring these kinds of offsets for some time. In 2010, a proposal for an EU habitat banking market was developed at the request of the EC, but the attempt at introducing it into European environmental legislation in 2014 failed due to strong public opposition (Hache 2019b). Still, with the EU Green Deal—and the associated new Biodiversity Strategy—the door has again been opened to mandatory biodiversity offsetting and thereby to habitat banking (European Commission 2020). Proposed initiatives include developing an EU No Net Loss label, making EU infrastructure funding conditional upon minimising biodiversity damage, and introducing mandatory EU requirements to offset losses to all biodiversity and ecosystem services.

The Extent of Financialisation

Financial markets and instruments related to nature and the environment have grown in size and type especially over the last two decades. Today, 31 carbon emissions trading schemes (ETS) are in place or scheduled worldwide (World Bank 2020). For a long time, the European ETS has been the largest ETS scheme and also the biggest source of demand for international carbon credits (Hache 2019a), but by mid-2021 the Chinese National ETS is expected to launch and become the world's largest scheme (Xu & Stanway 2021).

The CDM has historically been the largest carbon credit issuer, responsible for over half of all offsetting credits ever issued. The number of actors in this field is however increasing, and in 2019 more than 2/3 of credits issued came from independent crediting mechanisms (World Bank 2020). That same year, the accumulated number of registered crediting project to date had reached more than 14,500 (World Bank 2020).

Already in 2009, Deutsche Bank declared carbon markets to be amongst the most promising emerging markets (Korosec 2009). However, due to the strongly fluctuating 'prices of carbon' (i.e. rights to emit CO₂), the interest in the carbon markets have been up and down over the years. In the later years, it has been relatively low, but with the recent spike in carbon prices following the review of the EU ETS, the interest of banks and hedge funds was reawakened, with trading volumes spiking 45% in 2018 and carbon being called "the City's hottest trade this year" (Hache 2019a, p. 41).

It is however expected that the scale of the carbon markets will reach new highs in the years to come given the various new and large additional schemes coming up, such as the carbon offset markets expected to emerge from the Paris Agreement (United Nations 2015), China's new carbon market, and not least the new aviation carbon offset market whose pilot phase started in 2021 (CORSIA 2021). At the same time, the carbon capture and sequestration

market is projected to grow from an estimated USD 4.25 billion in 2016 to USD 8.05 billion by 2021 (Markets and markets 2021).

When it comes to biodiversity offsetting, the number of countries with government policies in this area has doubled in the past fifteen years (IUCN in Kill 2020). Interestingly, it is a field where one can observe extensive cooperation between large corporations, new environmental ‘entrepreneurs’ setting up habitat banks, large consultancy firms involved in the auditing of the offsetting schemes, and the involvement of certain large conservation organisations such as WWF, IUCN, Nature Conservancy or Conservation International. A range of new business-environmental coalitions have also been born (e.g. The Capitals Coalition). At the same time there is increasing interest from traditional large financial corporations. In 2016, Credit Suisse published a report titled ‘Conservation finance – from niche to mainstream: the building of an institutional asset class’. The report assessed that sustainable farmland, healthy forests, clean water and abundant habitat stand to become more valuable as the global population rises. Estimating the total conservation finance investment potential to be USD 200-400 billion between 2016-2020, the recommendation is that “[n]ature must not be turned into a commodity, but rather into an asset” (Credit Suisse in Hache 2019b, p. 68). More recently, the same position was echoed by *The Dasgupta Review* on the economics of biodiversity, commissioned by Her Majesty’s Treasury (UK). The main approach and message of the review is that we need to start managing nature as an asset, with the finance sector playing a crucial role (Dasgupta 2021).⁴

The Core of ‘Financialisation of Nature’

The conversion of nature into tradable financial assets, especially as a way to allow destruction of nature in one place, and offsetting the damage in another, has become key to

⁴ For a critical review, see Spash and Hache (2021).

financialising nature. As noted above, it has not been easy to create and agree on equivalence measures between various kinds of nature areas or biodiversity. Still, this is exactly what has been done within biodiversity ‘banks’ and what has been accepted where there are offsetting regulations in place. To make such equivalences work, all aspects of nature must be rendered commensurate⁵ and the place-specific uniqueness of each nature type disappears (Smith 2017).

We have seen how financial instruments imposed through environmental regulation were championed by the USA, which is also the place with the most developed and varied schemes and markets for offsetting. As other countries are increasingly adopting similar legislation (e.g. France, UK, Germany, Colombia), there will follow a similar impetus for more financial activity related to environmental problems and nature protection, especially since there is still a lot of accumulated capital in search of investment opportunities.

At the same time, we observe that as the sector develops and sees new opportunities, many instruments that we know from ‘mainstream’ finance are being developed for nature as well, e.g. catastrophe bonds, insurance of states (instead of protection), derivatives and futures. Berta et al. (2016) claim that the EU ETS has in practice become a financial market mainly used for hedging and speculation. They found that since 2010, derivatives accounted for 99% of trades in the EU ETS. Despite these developments, innovative financial mechanisms are encouraged for example by the UN Convention of Biological Diversity (CBD).

It is important to note the key role played by the public sector or state apparatus in facilitating the process of financialising nature. For while neoliberalism is generally characterised by a move away from the use of laws and regulation to a reliance upon economic incentives and market solutions, this does not mean the withdrawal of the state, but rather an active role for

⁵ Meaning nature or ecosystems can be viewed as homogenous and replaceable.

the state for example in the facilitation of new kinds of markets and new economic activity (Harvey 2005; Mirowski 2013). In the environmental field this is particularly clear. Setting up new markets for hitherto unknown (environmental) goods, services or assets, such as emission rights or biodiversity credits could not have taken place without a large public sector apparatus facilitating it and supporting its establishment.

CONTENTIOUS ISSUES AND PROBLEMATIC EFFECTS

Carbon trading markets have been shown to suffer from a range of problems including excess allowances, price fluctuations and fraud (Hache 2019a; Lohmann 2012; Spash 2010). While this has raised the alertness of many actors to the potential downside of the emission trading system, not all see it this way. A World Bank report has claimed it is a sign of success: “ironically (..) these controversies provide evidence that the emissions market is maturing and becoming mainstreamed within the European economy” (Kossov & Ambrosi 2010, p. 6). Offset markets for both biodiversity or carbon have also been shown to suffer from a range of problems. Some of them were already hinted at above and relate to conceptual and measurement issues. Others link to problems with the economic theory behind (e.g. valuation and price signals, see Spash 2010).

Many evaluative studies of offsetting schemes show a poor environmental and social track record. These include evidence of poor or disastrous outcomes for wildlife of these schemes which often push species to the brink instead of protecting them. Other studies have found that up to 2/3 of ecosystem restoration offset projects were unsuccessful. Another study analysing 558 offset projects between 1990-2011 found that despite attempts at compensating damage the net loss of habitats was 99% (see summary of studies in FoE Europe 2014). Other studies show that the majority of projects miscalculate their savings. For example, a study commissioned by the European Commission investigated the effectiveness of existing

offsetting projects and concluded that only 2% of the offset projects have a high probability of resulting in actual additional emissions reduction (Cames et al. 2016). If for example a hydropower plant will be built anyway, such a project should not be eligible for selling carbon credits—which in turn allow others to pollute more. The study further found that 85% of the offset projects used by the EU under the CDM failed to reduce emissions. Instead, CDM credits towards climate targets has in fact increased global GHGs emissions. In the EU alone, emissions increased by over 650 million tonnes of CO₂ as a result of the use of CDM credits within the EU ETS (Hache 2019a). Hache attributes this to an overwhelming majority of CDM projects essentially issuing ‘junk’ credits that do not lead to actual emission reductions.

The results are maybe not surprising. After all, offsetting is linked to a ‘licence to trash nature’ (de Zylva 2018) in the first place. Although the mitigation hierarchy is meant to assure that offsetting is possible only as a last resort, it is increasingly questioned whether the procedure is implemented in this way. Increasing evidence points towards a tendency to relax environmental regulations—both in the global North and in the global South—exactly because of the possibility of offsetting (de Zylva 2018; WRM 2018). In this way, an increasing reliance upon the mitigation hierarchy might have huge implication through increasing allowance for destructive projects. A common definition used for biodiversity offsets state that they are “conservation actions intended to compensate for the residual, *unavoidable* harm to biodiversity caused by development projects” (ten Kate et al. 2004, p. 13, my italics). However, what is interpreted as ‘unavoidable’ harm is of course highly debatable.

Offsetting ‘solutions’ generally assume that there is lots of land available that would otherwise not have been used for anything, by anyone. An example from Colombia shows how difficult

this can become. Colombia has introduced one of the most comprehensive environmental offsetting frameworks, and as a result the potential demand for land needed for biodiversity offset amounted to more than 180,000 hectares between 2013 and 2015. As an observer in Colombia pointed out: “With over 8 million hectares under mining titles, over 130 oil and gas companies with operations in the country over at least 1.5 million hectares, including Shell, Oxy, Chevron, ExxonMobil, and Petrobras, and thousands of kilometres of highways in the pipeline that will affect critical biodiversity hotspots, one of the key questions is where are the hundreds of thousands of hectares needed in offsets going to come from” (in Kill 2020).

Achieving Net Zero Goals and ‘Neutrality’ through Nature Restoration

We have seen how the logic of biodiversity offsetting has developed so that compensating damage in one place does not necessarily mean one needs to ‘create’ or increase biodiversity in another place. For in-kind offsetting, it is enough that the damage done is ‘compensated’ by protecting (temporarily) an equivalent amount of biodiversity somewhere else, where it would otherwise not have been protected. This meant, one could not really talk about ‘biodiversity neutrality’ in the same way as for GHGs where offsetting is in principle meant to ‘neutralise’ the emissions.

Against this background, ‘Land degradation neutrality’ emerged as a mechanism centred on ‘neutralising’ the loss of land through *restoration*, rather than through traditional offsetting as compensation (Safriel 2017). First developed under the Convention to Combat Desertification (UNCCD) and later part of the 2030 Agenda for Sustainable Development,⁶ achieving neutrality through restoration and recovery has later become a reference point also for the CBD. In the current draft for the Post-2020 Global Biodiversity Framework, expected

⁶ The UN has even chosen the period of 2021-2030 to be the UN Decade of Ecosystem Restoration.

to be adopted in October 2021, the overall aim to achieve “net improvements [in biodiversity] by 2050” (CBD 2020, p. 2). After two decades of ambitions to halt the loss of biodiversity, this change from ‘no loss’ to ‘no net loss’ represents a substantive reduction of ambition level within the CBD.

The move away from *halting* the loss of biodiversity and degradation of ecosystems is however not the only problem with this change of focus. It so happens to be that ecosystem restoration is also very compatible with offsetting: if there are no spaces left that can be protected as an offset for destruction somewhere else, then one can instead restore nature in places where it has been degraded, and in this way create credits that can ‘neutralise’ destruction elsewhere. Conveniently, there exists by now large areas of such degraded nature that can be restored.

The move to restoration means entering a new phase of thinking about nature ‘conservation’. Or we could say, ‘a new era’, one in which ‘creating’ nature is seen to be just as valid as protecting natural ecosystems and habitats. This new kind of thinking easily borrows arguments from the Anthropocene paradigm, which not only points out that humans are now the most impactful geological force on earth (Crutzen 2002), but in parallel presents human ingenuity as the solution to the same problem (Baskin 2015; Spash 2015b). In this story, humans are both destroyers and God-like creators of nature. Such arguments also go hand in hand with a social constructionist perspectives claiming that there is no such thing as natural nature anyway—in our times all distinctions between nature and society have been eroded (see e.g. Latour 2004). This way of seeing things is not only problematic from many value perspectives (Malm 2019), but conveniently compatible with financialisation of nature. Restoration of nature now presents itself as a new growth sector, which has led Huff and Brock (2017) to coin the term ‘accumulation by restoration’.

Carbon Neutrality and the Trap of Nature-Based Solutions (NBS)

In the Paris Agreement the concept of GHG neutrality⁷ is based on a logic similar to the mitigation hierarchy: first one should aim for reducing the emissions as much as possible, then any remaining GHGs could be ‘neutralised’ either with i) an equivalent amount of removals (e.g. carbon sequestration) or ii) future negative emission technologies (NETs). In practice however, the problem is the tendency of countries to rely on the ‘neutralising’ option rather than cutting emissions. Critics have further pointed out the lack of realism in relying on NETs based on possible future development of technologies or unproven scaling up of newly developed technologies (see e.g. Anderson 2019).

However, ‘neutralising’ via removals is the method more interesting in terms of financialisation. Especially, the NBSs have attracted much interest in the latter years. Originally developed during the UNFCCC negotiations in 2009 and introduced in the 2013-2016 IUCN Global Programme, we now see it appearing for example in the EU Green Deal’s taxonomy for sustainable finance (i.e. a classification system for green investments) and in the Nature-Based Solutions for Climate Manifesto developed for the UN climate action summit 2019. At its core, the NBS concept encompasses both protection, (sustainable) management and the restoration of ecosystems. It expands traditional offsetting through carbon sequestration in trees/plantations, to also include sequestration in soil, wetlands and grasslands. The idea is particularly promoted as a link—a win-win solution—between the climate change and the biodiversity agendas since restoring nature goes hand in hand with carbon sequestration. The main problem with this approach, however, is the myth that the carbon sequestering possibilities of nature can compensate for the continued burning of fossil fuels. What is needed to reach the Paris Agreement goal of 1.5 degrees is *both* to stop using

⁷ In public speech, the concept of GHG neutrality is often referred to as carbon neutrality or simply ‘net zero’ emissions.

fossil fuels completely *and* to sequester the already emitted carbon within our planet's ecosystems. Improving ecosystems' carbon sequestration is in itself not a problem, the problem is when NBSs are used as offsets (Stabinsky 2020). As countries, cities, companies and other actors are committing to carbon neutrality/net zero targets, NBS has become an attractive way to offset. For example, the World Bank (2020, p. 8) highlights that 42% of the carbon credits issued over the last five years stems from the forestry sector, relates this to "a broader interest in nature-based solutions", and further notes that this may be "partly driven by the significant potential for these projects to reduce emissions cost-effectively and their ability to generate additional co-benefits". Again, the idea of NBS and net-zero carbon goes hand in hand with offsetting and market-based mechanisms that play to the finance sector. But as critics have pointed out, there simply is not enough available land on the planet to accommodate all of the combined corporate and government plans for offsets (Lewis 2021).

Social Consequences

Beyond the limited environmental effect, the restructuring of the economy under financialisation has led to many other social effects, e.g. in terms of power effects or restructuring of agency distribution. In particular in the global South, the socio-economic consequences for the already worst off are considerable. Poor and already marginalised groups are repeatedly the losers of these schemes which have been shown to lead to land grabbing, local conflicts, negative livelihood impacts and human rights violations (WRM 2014). Often, small-holders and indigenous peoples are restricted to use the forest in their ancestral way in order to store the predicted amounts of carbon in the trees. Ultimately, offsetting is unjust and has therefore been labelled a new form colonialism, i.e. 'carbon colonialism' (Bachram 2004).

In addition, this abstract way of thinking in terms of commensurability also eliminates any place-based or context specificity of the ecosystem itself and any human relationship to that specific wetland, forest or river. If a community has a special and meaningful relationship to a particular forest, replacing that forest with another one somewhere else cannot represent compensation for that lost relationship.

CONCLUSIONS AND OUTLOOK

The financialisation of nature is contested for a range of reasons. First, financial instruments are believed to provide a licence to pollute and destroy, providing a new source of income for financiers, but not solving the environmental problems they are argued to deal with, and while at the same time increasingly leading to displacements, land grabbing and other conflicts, especially in the global South. Offsetting schemes are also easily subject to miscalculation and fraud. Further, the financialisation of nature can be criticised for changing our relationship to nature. Offsetting, in particular, diverts attention from the need for deep transformation of our economic systems by allowing business as usual.

Despite the bad track record of both cap and trade schemes and offsetting schemes, there seems to be little sign of limiting them. Instead, the mitigation hierarchy is spreading, making offsetting increasingly mandatory. In addition, there is constant encouragement to develop even more innovative financial mechanisms. Despite the negative connotation that ‘financial innovations’ had after the financial crisis of 2008, the environmental and nature conservation community still has high hopes for what it can achieve, both for nature and for the economy. The CBD, for example, is still looking to raise resources and funds with the help of finance, while trusting that market mechanisms are cost-saving.

As this chapter has shown, financialisation and financialisation of nature have several similarities. Both are characterised by the importance of financial markets, financial actors and financial motives, and by the language and practice of the financial world taking over the way we talk about and govern nature. Hence nature is increasingly referred to as an undifferentiated object of investment, an abstracted ‘asset’ to be managed and thought about in terms of risk and return. Further, both depend on the development of ‘innovative instruments’.

At the same time there are some notable differences. Unlike the rest of the economy, financialisation of nature is not a phenomenon related to deregulation (of the financial sector), but rather facilitated by the state, involving increased regulation—although in quite a different and unique way. Examples are mandatory offsetting for development projects or imposed cap and trade-systems for GHGs emissions in certain economic sectors.

Critics of the general trend of financialisation, argue that the financial sector does not produce anything of real value, i.e. does not contribute to the real economy. It is at best considered an ancillary or facilitating sector, and as worst simply as a parasite on society as a whole. The strategy of the state, to continue to facilitate such financial frameworks for accumulation, is therefore questionable, not only from an environmental point of view, but also from a macroeconomic (Keynesian) point of view.

The financialisation of nature has brought together arguments and interests from a diverse group of actors including bankers, financiers and businesses looking for new investment opportunities, disillusioned environmentalists, ecologists and conservationists struggling to make an impact in policy, and economists determined to find ways to fit nature into their conceptual apparatus so that mainstream economics can be applied to it. Besides the actors described above, politicians and environmental bureaucrats have also played an important

part in promoting the financialisation of nature, for example through the UN system. Both the CBD and the UNFCCC promote market-based instruments, including innovative financial instruments, as part of their policy mix under their respective conventions, while their ‘mother’ organisation - the United Nations Environment Programme (UNEP) - has been key to related projects such as the green economy or in ‘hardwiring biodiversity into finance’ (UNEP Finance Initiative 2010).

The latest innovation from UNEP is to ‘unlock greater funding’ for offsetting projects in restoration and NBS through so-called ‘nature-backed securities’ (UNEP 2021). As the demand for offsetting (i.e. credits) is increasing fast, introducing securitisation into nature conservation can be a strategy for making it more attractive for big, private investors. UNEP mentions the bad reputation securitisation—and especially mortgage-backed securities—got after the 2008 financial crisis, but claims that “the basic concept remains brilliant”.

However, financialisation always carries the risk of financial bubbles. While the potential for emissions trading and offsetting to curbe environmental damage is limited, it seems like the potential of the growing sector of financial instruments related to nature might themselves carry a risk of financial collapse as these markets grow. Such risks have not yet materialised (e.g. due to the limited size and lack of real functioning of these markets), but the recent spike in carbon prices has reawakened the interest of banks and hedge funds, as described earlier. Biodiversity as an asset class could also create significant moral hazard and financial stability issues by fostering the build-up of unmonitored risks (Hache 2020). Hence, while capital is looking for new and securer profits, the financialisation of nature might transform into a societal nightmare.

Still, the latest change in the international biodiversity policy and preparations for the upcoming CBD meeting in 2021, is moving nature conservation even further into the hands

of financialisation, due to the shift from conservation and protection (stopping harm), via compensation for harm, to ‘restoration’ of degraded nature. In the words of Friends of the Earth: “Rather than try and curb biodiversity destruction, it is deemed economically preferable to destroy and restore biodiversity, as it generates more economic growth and minimizes the cost of compliance with environmental regulation for the private sector” (FoE International 2019, p. 1).

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