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Tell me where you come from, I will tell you who you are: A genealogy of biodiversity offsetting mechanisms in historical context

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ABSTRACT

Biodiversity offsetting (BO) is now a well-established mechanism worldwide. In several countries, it stands as a regulatory requirement and can be achieved via commercial transactions of biodiversity “credits”. Little is known however among ecologists and BO practitioners about the genealogy of BO instruments and the historical factors that shaped them. It is only quite recently that the use of market-based instruments to protect the environment has gone from being politically anathema to politically correct. How can we account for this shift? To shed light on the rise of BO market mechanisms, we build upon historical records and historical research. This research documents a link between the emergence of BO market mechanism and the 1973–1990 rollback of environmental regulations. These results help contextualize the rise of market-based instruments in conservation science and policies within the ascent of a new “liberal environmentalism” policy paradigm. They therefore shed light on the co-evolutionary relationship linking conservation to societal and ideological dynamics.

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1. Introduction

Biodiversity offsetting (BO) has become a widespread label and mechanism worldwide (Lapeyre et al., 2014; Calvet et al., 2015). In several countries, it stands as a regulatory requirement and can be achieved via commercial transactions of biodiversity “credits”. While the environmental efficiency and societal desirability of BO markets remains unclear and much debated (for contrasting stances, see Madsen et al., 2011 and Spash, 2015), little is known in the conservation sector – including ecologists and practitioners involved in BO on a daily basis – about the genealogy of BO instruments and the historical factors that shaped them.

Back in the 1960s and early 1970s, the idea that market-based mechanisms would yield better environmental results than public instruments was indeed far from being widely acknowledged. Key instruments used for environmental conservation were public instruments. They included parks and natural reserves placed under the authority of public bodies with patrolling rangers in charge of their surveillance, but also lists of endangered species, technical standards and norms established by states with fines for those infringing them as well as tax systems levying on polluters to make them contribute to the maintenance of environmental goods and services.

It is only quite recently that “harnessing market forces to protect the environment has gone from being politically anathema to politically correct” (Stavins, 2002: 1). How can we account for this conversion from a state-led environmental policy paradigm to a new market

based governance model in the last decades? To shed light on this shift and on the rise of BO market mechanisms, we build upon historical records and historical research. Environmental history, together with environmental policy studies and political ecology, is indeed now a mature research area that has extensively documented not only the development and historical contexts of environmental ideas, movements and regulations, from Yellowstone to the US Environmental Protection Agency (Hays, 1998; Gottlieb, 2005; Wellock, 2007), but also the “green backlash” of the Reagan era (Rowell, 1996; Layzer, 2011) the rise of “liberal environmentalism” (Bernstein, 2001) and the related emergence of market-based instruments (Lane, 2012; Büscher et al., 2014). An empirical historical analysis of how BO emerged in the USA may be helpful to understand some of its present stakes, strengths and weaknesses.

The aim of this paper is not to address whether BO methodologies are sufficiently scientifically grounded nor economically efficient, but rather to shed light on the historical context, socio-environmental struggles and political-ideological battles in which BO emerged from the 1970s to the 1990s. We shall outline the rise and decline of environmental regulations (Section 2), an evolution which paved the way for new market-based environmental policy instruments including biodiversity offset market mechanisms (Section 3).

2. The rise and demise of environmental regulations

2.1. From *Silent Spring* to loud environmental battles

As of the publication of Rachel Carson's *Silent Spring* in 1962, the environmental movement gathered growing public supports in industrial

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countries and worldwide. Uproar over pollutions such as the Minamata chemical contamination in Japan, oil slicks (Torrey Canyon en 1967, Santa Barbara en 1969), fights against an airport project in Florida (victorious in 1971) and against nuclear power plants projects, but also the creation of Friends of the Earth in 1969 and of Greenpeace in 1971 or the massive participation of 20 million people in the first Earth Day on 22 April 1970 in the USA are but a few historical milestones bearing witness of that momentum. Between 1969 and 1973, and particularly with the first UN environment Summit in Stockholm in 1972, this led to the progressive institutionalization of environmental concerns. In the USA, under Nixon, major environmental reforms were passed. The National Environmental Policy Act (NEPA, 1969) established the US Environmental Protection Agency (US EPA) in 1970. The same year a bold Clean Air Act set very strict emission standards as well as penalties for polluting industries. It was followed in 1972 by the Federal Water Pollution Control Act, and in 1973 by the Endangered Species Act and the ban on DDT (Hays, 1998; Wellock, 2007: 179–184). On the other side of the Atlantic, in response to the famous MIT Limits to Growth Report (1972), the soon-to-be President of the European Commission Sicco Mansholt offered to implement “massive reductions in per capita material goods consumption levels” within a “rigorously planned economy” (Mansholt, 1972).

However, after 1973, the situation progressively reversed and a huge ‘environmental backlash’, as environmental historians call it, was to be observed. In the late 1960s–early 1970s, profits started to look down as a result of decreasing productivity gains, mounting social unrest, tighter environmental regulations, as well as of the 1973 oil shock ringing the end of the cheap energy era. In this context, the ecological movement’s increasing influence became a major concern for a large part of the US political and economic elites—should it be political leaders, OECD executives, top managements of firms with high environmental impacts (in the mining, steel, oil, chemical or food sectors) and most industry leaders in a general sense. In the early 1970s, a counter-revolution in favor of massive deregulations was launched, with the objective to dismantle both environmental regulations and the apparatus of social and Keynesian measures adopted in the aftermath of the Second World War (Rowell, 1996). This prepared the ground both to Ronald Reagan’s rise to power and to the emergence of air pollution marketable permit systems — which paved the way for future biodiversity offsetting mechanisms.

Major industries in the country got together and formed a vast anti-environmentalist coalition, leveraging on a wealth of new think tanks, freshly coined ideological slogans and updated strategies in terms of communication, legal disputes and lobbying. An offensive was launched on five major fronts: attacking the legal grounds of environmental regulations; fostering counter-social movements to confront environmentalists; casting doubts regarding the scientific grounds of ecological problems; questioning the economic costs of environmental regulations and imposing economic rationality as the overridingly legitimate way to think of and look at nature; spreading knowledge and bywords that would promote private property and market mechanisms (as opposed to those relying on public authorities or NGOs) as the best and most reliable instruments to manage the environment.

2.2. Legal and scientific battles

In 1973, a group of West Coast industries gathered in order to oppose environmental regulations and defend their interests via the creation of a dedicated organization, the Pacific Legal Foundation. Using a cohort of in-house high-profile lawyers, the latter would launch systematic actions against all types of social or environmental measures seen as threatening ‘free entrepreneurship’ or property rights, while targeting in particular the set of norms passed by the Environmental Protection Agency (EPA) to try and curb industrial pollution.

From then on, similar pro-business legal organizations intended to wage such legal guerillas started to proliferate across a number of states.

These were soon to unite in 1975 under the overarching umbrella of one organization, the National Legal Center, with money pouring in from conservative millionaires (Layzer, 2011). After it had lost a few cases, the EPA not only started to tread more cautiously but it also became questioned in its very own mission and means. Interestingly, it is one of these pro-business legal organizations which employed and saw the ascent of James G. Watt before he entered Reagan’s government. When appointed US Secretary of the Interior, Watt proceeded to cut the EPA budget by almost 29% while attempting to privatize national nature reserves (Heinzerling and Ackerman, 2002).

Science was also a battlefield for the environmental backlash movement. Selling doubts on the scientific basis of regulations had become a key enterprise to nuclear, chemical as well as tobacco industries since the 1950s (Proctor, 2012). It consisted in denying the effects of industrial pollution while paying experts either to propagate biased versions of the facts or to create suspicion around the body of works showing evidence of environmental damages. In the early 1980s, industries successfully secured that expert reports on air pollutions would be ‘amended’ first by some White House advisors, as part of their general attempt to discourage legislators from curbing sulfur dioxide emissions responsible of acid rains (Oreskes and Conway, 2010: 81–95).

2.3. “It takes a movement to fight a movement”

The Heritage Foundation – a neoliberal and conservative think tank – was created in 1973 when ultraconservative millionaires and business interests gathered to promote bold social and environmental deregulation and to “strangle the environmental movement” (Heritage Foundation, 1990: 4). It started to become clear that, beyond the mobilization of handsomely paid lawyers, a whole counter-social movement was being launched to undermine the environmental movement. One of its origins can be traced back to the ‘Sagebrush Rebellion’ started in the Western part of the country in 1975, when the food, oil and mining industries backed by Republican governors and senators strongly opposed the federal project to have large portions of the territory listed as nature reserves.

Later on in 1982, the Free Congress Foundation, a strong supporter of industrial interests, appointed Ron Arnold to write a laudatory biography of James G. Watt. The same Ron Arnold then proceeded to create and structure the ‘Wise use movement’ which, by 1988, had gathered hundreds of anti-environmentalist organizations under the auspices of its slogan, ‘using nature in a wise way’. Funded by conservative millionaires, the movement proved to be a rather heterogeneous group, with members ranging from big industry lobbies, forest workers and farmers unions to Christian fundamentalists or anti-federalist libertarians. “It takes a movement to fight a movement”, “the public will never love big business. The pro-industry citizen activist group is the answer to these problem... it can use the tactic of intelligent attack against environmentalists”, Ron Arnold said respectively in 1984 and 1988 (quoted by Rowell, 1996: 13). Clearly, the Wise Use Movement was waging a war to death against environmentalism: “Our goal is to destroy, to eradicate the environmental movement” (Arnold, quoted in Toronto Star, December 21, 1991). One of its biggest victories would turn out to be its intense 1994 lobbying campaign directed to senators, which eventually resulted in the USA not ratifying the Convention on Biological Diversity adopted at the Rio Summit in 1992 (Rowell, 1996: 30–31).

2.4. Economizing the environment

A fourth dimension of the environmental backlash revolved around dissolving the very concept of environment into the realm of standard economy. Bases for decision-making were substituted for technical norms (e.g. air pollution thresholds, acceptable levels of sanitary risk, water quality standards) issued by biological sciences such as toxicology or ecology while using cost-benefit analyses that reduced sanitary and environmental damages to their quantified and monetary aspects. The

whole process had generally a lot to do with keeping environmentalists at bay while asserting the rationale of *Homo oeconomicus*. The President of the USA Richard Nixon would thus declare in 1971:

“How clean is clean enough can only be answered in terms of how much we are willing to pay and how soon we seek success. The effects of such decisions on our domestic economic concerns – jobs, prices, foreign competition – require explicit and rigorous analyses to permit us to maintain a healthy economy while we seek a healthy environment. It is simplistic to seek ecological perfection at the cost of bankrupting the very taxpaying enterprises which must pay for the social advances the nation seeks” (Nixon, 1971: xi).

A specific discourse emerged at that time arguing that a choice had to be made between environment on the one hand and jobs together with competitiveness on the other hand – a position which proved to be very successful from 1973 onwards as oil shocks, the military defeat in Vietnam and the fear of Asian competition came to the fore. In 1978, the American Enterprise Institute estimated the total economic cost of environmental regulations to be about 100 billion dollars, a message then widely disseminated by pro-business lobbies and think tanks (Weidenbaum and DeFina, 1978).

From the late 1960s on, economists started to play an increasingly pivotal role in the overall move to rationalize public policy, should it be in the military, scientific or environmental fields. In institutions such as the OECD, the White House or the EPA, they became the new experts endowed with such missions as rationalizing public budgeting (cf. the “Planning Programming Budget System”), carrying out environmental cost-benefit analyses or formalizing and optimizing resource management methods in economics terms.

Meanwhile, environmental economics became a prominent field within neoclassical economics. Its role, as explained in the landmark book *The Economics of Environmental Policy*, was to “to bring environmental resources back into the economic system so that their use can be subject to the same sorts of constraints that now influence the use of other resources – land, labor, and capital” (Freeman et al., 1973: vi). In other words, the idea was “to view the environment as an asset or a kind of nonreproducible capital good that produces a stream of various services for man” (Freeman, Haveman, Kneese, 1973: 20). Precursory to the 2005 Millennium Ecosystem Assessment Report, “environmental services” were already divided into four categories: the capacity of the environment to absorb human wastes and toxic compounds, its life-support functions (with respect to all different species), its cultural and recreational amenities as well as its resource provision function (wood, food, etc.) (Freeman, Haveman, Kneese, 1973: 21–22). Within this framework of neoclassical economics, the value of natural commons could not be taken into account by economic agents in the decisions they made unless it was translated into an economic signal. The desired ‘price-signals’ could only appear provided there were private or public owners likely to maintain natural ‘assets’ in good condition and willing to sell the related ‘services’. Such an argument involved embedding the environment within the framework of economic analysis, as well as demonstrating the extent to which market economy was more adapted and efficient to do so. Finally, it amounted to showing how policy-making could harness economic incentives and market mechanisms in order to solve the much talked-about ‘market failures’.

Such economist framings of environmental issues started to be promoted in order to curb environmental regulation initiatives. A new ‘Law and Economics’ department was created at the Chicago School which in the 1960s would serve as a crucible for the formation of neoliberal thinking. As a research field, ‘Law and Economics’ would try and apply transaction costs economic analyses to law and regulation areas. It would also attempt to preset government or parliament initiatives by providing projected calculations of their economic costs and benefits. In the 1970s, the Law and Economics School campaigned to ban all public initiatives directed to health or environmental protection that would not have successfully passed the test of its economic analyses. After Chicago, similar ‘Law and Economics’ centers were created in numerous US

universities with the generous financial help of the ultra-conservative Olin Foundation – a support amounting to hundreds of millions of dollars.

These centers would engage in multiple reports, conferences and public meetings. They would also hold training sessions and invite judges. As time went by, thousands of them had been exposed to these trainings, which hit the centers’ target to influence jurisprudence and play on the central role given to courts in the US legal system.

Such ideological campaigns within academia started to pay off: the idea that environmental protection was irrational from an economic viewpoint became increasingly well-received, and environmental agencies started to be considered more and more as rigid, costly and inefficient bureaucracies. Researchers and think tanks coined the pejorative term “command and control” in order to designate public authorities’ environmental regulations (Malloy, 2010; Short, 2011). According to members of the Law and Economics Movement, “command and control” was.

“a popular label for the traditional (and contemporary) mode of legislative intervention in environmental problems (...) [which] typically proceeds by imposing rigid standards of conduct on individual pollution sources (...) backed up by sanctions designed to assure full compliance with such standards by each source” (Krier and Stewart, 1980: 15).

In the early 1970s, numerous economists started to try and take over environmental policy as their privileged field of expertise at scientists’ expense. The 1970 Clean Air Act, for instance, established health-based primary standards for air quality. They aimed at preventing potential hazards to human health and did not involve any consideration for the economic costs, benefits or impacts of these technical standards. While industries vigorously attacked such stringent regulations, economists from universities and public agencies also criticized regulations on air and water quality based on technical norms for being too “mechanical” and command-and-control. They suggested instead to apply economic incentives, should it be taxes or tradable quotas, which they considered as more subtle and efficient “non-mechanical innovations” (Krier and Montgomery, 1973: 103; Lane, 2012).

A growing number of voices from within liberal think tanks as well as law and economics university departments started to denounce public environmental regulations as instruments lacking sensitivity either to variations in time and space or to the specificity of each company’s situations. Technical norms being uniforms, and uniformity being “inherently inefficient”, technical approaches could not reach environmental quality targets at the least cost (Krier and Montgomery, 1973: 97). According to William Baumol, “it [could] be shown that, unlike any system of direct controls” [i.e., regulation], a pricing system based on emission fees or on tradable permits “promises, at least in principle, to achieve decreases in pollution or other types of damage to the environment at minimum cost to society” (Baumol, 1972: 319).

As criticism grew further, economists and many pro-industry think tanks soon condemned the government for acting as an anti-economic machine. Policy-making was depicted as sub-optimal compared to the efficiency achieved within a free market. Such views were drawing a lot from the works of neoliberalism pioneer Friedrich Hayek, who had argued that “central direction of all economic activities present a task that cannot be rationally solved under the complex conditions of modern life” (Hayek, 1935: 2). These attempts to discredit policy-making were taken to another level as of the end of the 1970s, with the paradigm of adaptive environmental management. For ecologists and environmental managers defending this paradigm, “solutions... cannot come from further command and control (regulations) but must come from innovative approaches involving incentives leading to more resilient ecosystems, more flexible agencies, more self-reliant industries, and a more knowledgeable citizenry” (Holling and Meffe, 1996: 328). These discourses were therefore establishing a narrative picturing innovative firms as being blocked in their efforts to curb pollution by inefficient central bureaucracies. Regulation was presented as the core of

environmental problems while firms were placed at the heart of its solutions.

2.5. Story-telling: privatizing nature to save it

Under Harold Demsetz' and Armen Alchian's leadership, the 'New Resource Economics' school would radicalize its critique of environmental public regulation and focus both its analyses and prescriptions on the private property rights on environmental goods (Alchian and Demsetz, 1973). While doing so, this school extended the theses of Friedrich Hayek or of the Chicago School, but also those of Ronald Coase who had made a case about markets of rights being superior to policy-making when it came to environmental management (Coase, 1960). The 'New Resource Economics' school was also taking further an argument made in a famous article, "the tragedy of the commons" (Hardin, 1968). In this paper, Garrett Hardin had intrinsically equated commons management with resource mismanagement – a theory which would be invalidated two decades later by the works of Nobel-prize winner Elinor Ostrom. Walking in Hardin's footsteps, the 'New Resource Economics' school argued that managing the environment collectively was fundamentally incompatible with sustainability: privatizing nature was thus the best way to preserve it.

A similar conclusion was reached by another research group revolving around Terry Anderson, Richard Stroup and John Baden (Anderson and Leal, 1991). Based at the Montana State University, the group held its first symposium in 1979 on the 'economic costs of environmental regulation'. Thanks to the financial support of the Cato Institute, it would organize in the following years numerous workshops and conferences, converting hundreds of judges, decision-makers and academics to the tenets of 'free market environmentalism'.

In line with these schools, Anne Gorsuch, head of the EPA under Reagan, would later declare at the 1982 Nairobi UN conference on the environment that:

"Individual ownership of property... free and well-developed markets in products and capital are powerful incentives for resource conservation. These institutions best promote the use of renewable resources and the development of substitutes for nonrenewable resources, ensuring continued resource availability and environmental quality" (Gorsuch, 1982).

3. The emergence of tradable permits markets

3.1. The seventies: tinkering pollution rights market mechanisms

It is within this ideological context – as the neoliberal counter-revolution was opposing both environmentalist movements and regulations and as 'free-market environmentalism' apostles were taking strong positions in universities – that some economists developed the first models of markets for trading pollution rights. A first market instrument concept was sketched by Thomas Crocker, a Ph.D. candidate in economics at the University of Wisconsin-Milwaukee. Crocker engaged in a theoretical description of how a cap-and-trade market for pollutant emissions would work, and related – with no empirical data – his model to the case of fertilizer plants in Florida (Crocker, 1966).

In this theoretical model, public authorities would set an overall maximum emission volume (a "cap") which was then divided into certain amounts of "quotas" allocated to companies. Companies that produced more emissions than what their allocated quota had to purchase rights from the firms which on the contrary would have managed to curb their emissions. The Canadian economist John H. Dales replicated the idea and developed it in a more systematic way, while applying it to agricultural water pollution in the Great Lakes District (Dales, 1968a). In the idyllic vision of a quota market that was set forward, price equilibrium was naturally reached in so far as firms emitting under their quota level were supposed to sell to those emitting more. In order to achieve the overall objective, authorities did not have to

regulate each source nor to know in advance how much effort in terms of emissions limitation every firm had to put in.

David Montgomery would take this idea to Harvard and later to CalTech, translating it into complex equations to defend its feasibility as well as economic efficiency (Montgomery, 1972; Tietenberg, 2010). Montgomery followed Demsetz and the 'New Resource Economics' School on the premise that environmental mismanagement "happens precisely because no individual holds a well-defined and exclusive right to use the resources in question" (Krier and Montgomery, 1973: 89). But he and his colleague James Krier blamed Demsetz for lacking confidence in property and market when he had preferred state intervention to private property in "situations involving large numbers of people placing conflicting demands on nonexclusive resources – air, water, scenic beauty, peace and quiet, and so forth" (Krier and Montgomery, 1973: 91). Marketable permit systems, they argued – loosely using newly developed and rather theoretical marketable permit systems as evidence – outperformed standard regulation even in the case of nonexclusive resources management such as air pollution. As Dales insisted, "to live is to pollute" (Dales, 1968b: 1). And the information cost of central regulation was deemed so high that flexible and decentralized permits market exchanges between polluters would always – "at least in principle" (Baumol, 1972: 319) – be more efficient to curb excessive pollution amounts than regulation and technical norms.

On the clean air ground then, the EPA was caught in at crossfire of attacks and legal battles launched by polluting industries, but also of campaigns aimed at discrediting the State in favor of the market, without mentioning the State governors' protests against the 'federal hydra', but also criticism leveled by economists' and think tanks' against the costs of 'command-and-control' regulation. The 1970 Clean Air Act stipulated that US states had to comply with National Air Ambient Quality Standards (NAAQSs) before 31 May 1975. However, many states were not up to standards yet and the EPA found itself under pressure to defer the deadline and give some flexibility to its regulations on air and water quality for the sake of economic growth (Lane, 2012). In December 1975, the agency allowed each company to compensate for potential increases in polluting emissions on a new site by cuts on another site it would hold in the same area, with the overall goal to achieve no net increase in the amount of any air pollutant" (US EPA, 1975: 58,416). This turn was part of what became known as EPA's 'bubble policy'. Emissions produced by firms and soon after by States (and later by the whole planet with the carbon markets established since 2005), rather than being analyzed chimney by chimney and site by site, were considered globally, as one and only source 'bubble'.

The following year, a new device – the so-called 'offset' mechanism – was launched in a another attempt to safeguard air pollution reduction objectives from the attacks of industrial interests. This new mechanism authorized US firms to compensate for polluting emission sources in a given production unit by cutting emissions in another unit located in a different geographical area where air quality standards were not met (US EPA, 1976: 55524).

During Carter's presidency, a new report encouraged the introduction in environmental policy of tradeable rights which would be more "compatible with the market forces that govern business decisions" (PARA, 1981). On its side, the EPA continued to ease offsetting procedures by allowing companies to capitalize potential 'surpluses' created by emissions cuts in the form of 'credits' held for future use.

3.2. From Reagan to Bush administrations: environmental deregulation and new markets for pollution rights

Environment would prove to be a key stage in the ideological battle between Reagan and Carter in 1980 during the run-up to presidential elections. In his inaugural speech Reagan committed "to check and reverse the growth of government which show[ed] signs of having grown beyond the consent of the governed" (Reagan, 1981a). More

specifically, he campaigned for environmental constraints to be eased in several sectors such as the mining, manufacturing, oil, food and forest industries. Depicting EPA regulators as enemies of growth and jobs, he concluded that “if they had their way, you and I would have to live in rabbit’s holes or birds’ nests.” (The Pittsburgh Press, 8 October 1980).

At the same time, the Heritage Foundation issued its *Mandate for Leadership* report which severely blamed environmental regulations. According to it, existing policies were leading the country to economic suicide, they were lacking scientific grounds, had been adopted without considering realistically the businesses involved and were also inefficient with respect to bureaucracy (Heatherly, 1981).

Soon after he had been elected, Reagan gave key positions to selected authors of the report issued by the Heritage Foundation. He also proceeded to implement 60% of the 2000 measures recommended in it as of the very first year of his term. Finally, his administration cut the EPA budget by almost 29%. The agency had to cancel entire programs and fired 1462 of its employees between 1980 and 1982, while also lifting bans on fertilizers and easing sulfur-dioxide regulation (despite the outcry from Canadian authorities where forests were being severely affected by acid rains), etc.

Beyond its being very active on the front of environmental deregulation, the Reagan administration also promoted the implementation of a “more innovative and flexible regulatory and economic framework” to manage the environment and resources “wisely with the help of free market. As we do, we will create a healthful environment in a healthy economy” (Reagan, 1981b: iii–iv). In 1982, the set of instruments from the 1970s that had been intended to bring flexibility while dealing with air pollution was merged into a new consistent system, forming a real federal market for trading emission allowances. Such a new system would allow polluting industries to negotiate, sell or purchase ‘emission reduction credits’ that were certified and issued by private or federal operators (US EPA, 1982).

From then on, companies had a choice: they could either invest in order to control their emissions better and receive credits in return, or they could purchase these credits from another firm that had lower conformity costs. A new market was also created for lead pollution, to the great satisfaction of refineries. At a global level, under the pressure of the USA, a provision creating a market for polluting rights was included in the 1987 Montreal Protocol on CFCs and the protection of the ozone layer. On the other hand, conservation NGOs that attempted to counter the environmental backlash were attacked by conservative think tanks which asked the Republican Congress to cut their subsidies.

During the Reagan Era, an increasing number of EPA staff, members of the ‘big ten’ environmental NGOs and of the Democrat Party became advocates of market-based instruments. These were seen as a way to contain the wave of environmental deregulation without causing an uproar on the side of business interests’ representatives. Several years after the Conservation Foundation had announced for its part in 1978 the “end of environmental mobilization”, the Environmental Defense Fund (EDF) also converted itself to ‘market-oriented incentives’ in order to achieve “greater environmental and economic benefits, at a lower social and economic cost”, as stated in a famous editorial written for the Wall Street Journal (Krupp, 1986).

A few hours after this text had been published, Krupp received a phone call from Boyden Gray, working as an advisor to Georges H. W. Bush. Soon after, two senators, one Republican (John Heinz) and one Democrat (Timothy Wirth) — (both of whom had wives sitting at EDF’s board of directors) launched the ‘Project 88’. This initiative was intended to promote, during the 1988 presidential campaign, ways of ‘harnessing market forces to protect our environment’ that could be implemented by the next president, should he be Democrat or Republican. The project rallied companies, economists in favor of markets for polluting rights, NGOs such as EDF or the Conservation Foundation as well as think tanks like Resources for the Future (Stavins, 1988).

Elected in 1988, Georges H. W. Bush, although a former oilman and pro-business advocate, pledged to be “the environmental President”. It

seemed possible to solve this equation by developing new environmental markets around sulfur or wetlands for instance. An EDF economist worked closely with the White House to design a nitrogen oxide and sulfur dioxide quota emission market for coal power plants’ operators.

As a result of pressures exerted by the energy sector, the first draft of the Clean Air Act amendment did not stipulate any ‘cap’ nor any overall national emission level for sulfur dioxide. However, this had caused an uproar among environmental NGOs and the Canadian government. Bush decided to head back and set ambitious targets: emissions were to be cut by 8.8 million tons by 2000, compared to the 1980 level of 18.8 million tons (Conniff, 2009). The Amendment to the Clean Air Act was eventually passed in 1990. According to the provisions of the law, companies that had migrated to new technology in order to emit at a lower level than what their pollution rights were allowing them to were entitled to sell their credits to other businesses. Every year, the level of polluting rights set on the basis of the 1980 referential would decrease. For its part, the EPA was only in charge of measuring the level of power plants’ emissions and of distributing penalties in case any given limit was exceeded. A friend of Boyden Gray ventured into the business of tradeable pollution rights, while Boyden gave him a helping hand by convincing a State-owned company – the Tennessee Valley Authority – to purchase from it the first emission rights, therefore marking the launch of the whole market (Conniff, 2009).

The initiative was a great success: between 1990 and 2000, emissions were reduced by 40%, with a one million dollar decrease in costs for companies in comparison with previous regulations. Much noise was made about this success story being a victory of market-based policy. However, such a discourse was overlooking the fact that the bar for global emission quotas had been set at a particularly high and ambitious level. This was also downplaying the importance of the 2000 dollar penalty incurred for each ton of emission produced above the quota (Hays, 1998: 280–287). All in all, the law still presented a strong command-and-control dimension...

Market-system advocates were also forgetting that at the same time, the European Union had managed to cut its emissions by 70% (thus doing better than the USA) by using traditional regulation and therefore without the help of a market for sulfur dioxide.

3.3. Biodiversity offsetting: the birth of ecological conservation market mechanisms

Property rights and market instruments were not only being promoted as a cure-all for polluting emissions but for other fields of environmental management as well. Indeed, they also turned out to be considered in areas such as forest and wildlife conservation. As soon as 1973, a few voices raised from within the “New Resources Economics” School asking for US forests in the public domain to be privatized. Robert Smith, who coined the term “free-market environmentalism” in 1979 (Smith, 1979) and who was later to serve as director of environmental studies at the Cato Institute and as an EPA senior executive under Reagan, advocated the superiority of private property in biodiversity conservation policies. Observing that dairy cows had survived much better than bison, he came to the following conclusion:

“Any resource held in common – whether land, air, the upper atmosphere and outer space, the oceans, lakes, streams, outdoor recreational resources, fisheries, wildlife, or game – can be used simultaneously by more than one [...]. No one has an incentive to maintain or preserve it [...] if we are to resolve the tragedy of the commons and preserve our natural resources and wildlife, we must create a new paradigm for the environmental movement: private property rights in natural resources and wildlife” (Smith, 1981: 456–457 and 468).

In a context of environmental backlash, these views, under the motto “each part of planet Earth must have a protector” (Fred. L. Smith, head of the Competitive Enterprise Institute (CEI), quoted by Fumento, 1992) would pave the way to projects of “securitizing the biosphere” (Chichilnisky and Heal, 2000). With the rise of market

mechanisms first developed for managing fish resource, air and water, this also made thinkable something nobody had thought of before in the 1960s: private conservation banking and marketable conservation credits for biodiversity offsetting.

Habitat banking and species banking instruments, the two biodiversity offset market systems currently in operation in the USA, were formally put in place in the 1990s (Robertson, 2006; Vaissière and Levrel, 2015). However, their origins can be traced back to the 1975–1985 period. In 1972, Section 404 of the Federal Water Pollution Control Act (later known as the Clean Water Act) gave the federal government a full regulation power over land-use. Any developer wishing to build on wetlands had to obtain a permit from the US Army Corps of Engineers. The latter, following consultation with the EPA's regional office would then allow them to proceed, or reject the permit altogether. In a third scenario developers would be granted building permits provided they created a certain amount of wetland to compensate for the loss the original ones (Robertson, 2004).

Indeed, since the 1972 Clean Water Act, developers had been complaining about regulations that were slowing down development projects in wetlands and had got them mired in long as well as tedious legal disputes with NGOs. As it was contemplating a potential rollback or “flexibilization” of wetland regulations, the Reagan administration encouraged in 1982 the launch of a pilot-program to develop the first ‘mitigation bank’. The project was implemented in Louisiana, in a partnership with the Tenneco Oil Company and under the supervision of the Fish and Wildlife Service. Such a program would allow Tenneco to compensate for its future impact on wetlands by purchasing a nature reserve and taking over its management, thus generating ‘habitat credits’. But such ‘credits’ could also be sold to other developers required by the administration to proceed to compensatory mitigation measures for the habitats their project would deteriorate (U.S. Fish and Wildlife Service (USFWS), 1984). Other such pilot projects in collaboration with the private sector were initiated soon after in other states, and New Jersey became the first state to pass a wetland offsetting legislation in 1986 (Robertson, 2000: 471).

While the Reagan administration encouraged such offsetting market-based mechanisms, several field reports in 1980s evidenced that many mitigation sites proved to be either inexistent or highly

degraded (Robertson, 2004:363). This put federal regulators in the crossfire of attacks from both environmentalists who were blaming wetland loss, and from business interests who would complain about a rigid and slow permit system. In this tensed context that EPA finally took action to replicate and upscale Tenneco project and promote market-based incentives as the way forward. In 1987, the agency convened a ‘National Wetlands Policy Forum’, hosting officials from numerous state governments as well as MPs, academics, federal agencies, conservation NGOs and business representatives. The Forum led to a series of recommendations including a “no net loss of wetlands” principle. Not surprisingly given that some participants (including Fred. Krupp from EDF) to the Forum were also active in debates around air pollution rights markets, the “no net loss” concept was derived from the “no net increase” motto in EPA’s ‘bubble policy’.

In the middle of his campaign in 1988, Bush took over the ‘no net loss’ slogan and used it for himself as a symbol to show that environment and free market could be successfully articulated. In November 1990, he passed the Water Resources Development Act that involved an offset market for wetlands and rivers which was launched in 1991. In 1995, biodiversity offsetting was extended to endangered species in California, before being deployed in 2003 at the federal level. Between 1996 and 2010, the number of ‘banks’ based on natural assets grew from 50 to 798. Nowadays, US ‘habitat’ and ‘species’ offsetting markets are worth almost 4 billion dollars (Madsen et al., 2011).

4. Conclusion

Over the last years, a growing body of research has investigated changing environmental policies in the last decades and the global rise of market-based instrument such as BO, payment for environmental services, ecotourism, REDD or carbon markets. Coming from economics, geography, anthropology, policy studies or science studies, etc., many social science scholars have analyzed this shift as a – conflicted and multifaceted – policy paradigm shift towards a “liberal environmentalism” (Bernstein, 2001), or even as a process of “neoliberalization of nature” (Robertson, 2006; Robertson, 2011; Castree, 2008; Büscher et al., 2014; Spash, 2015).

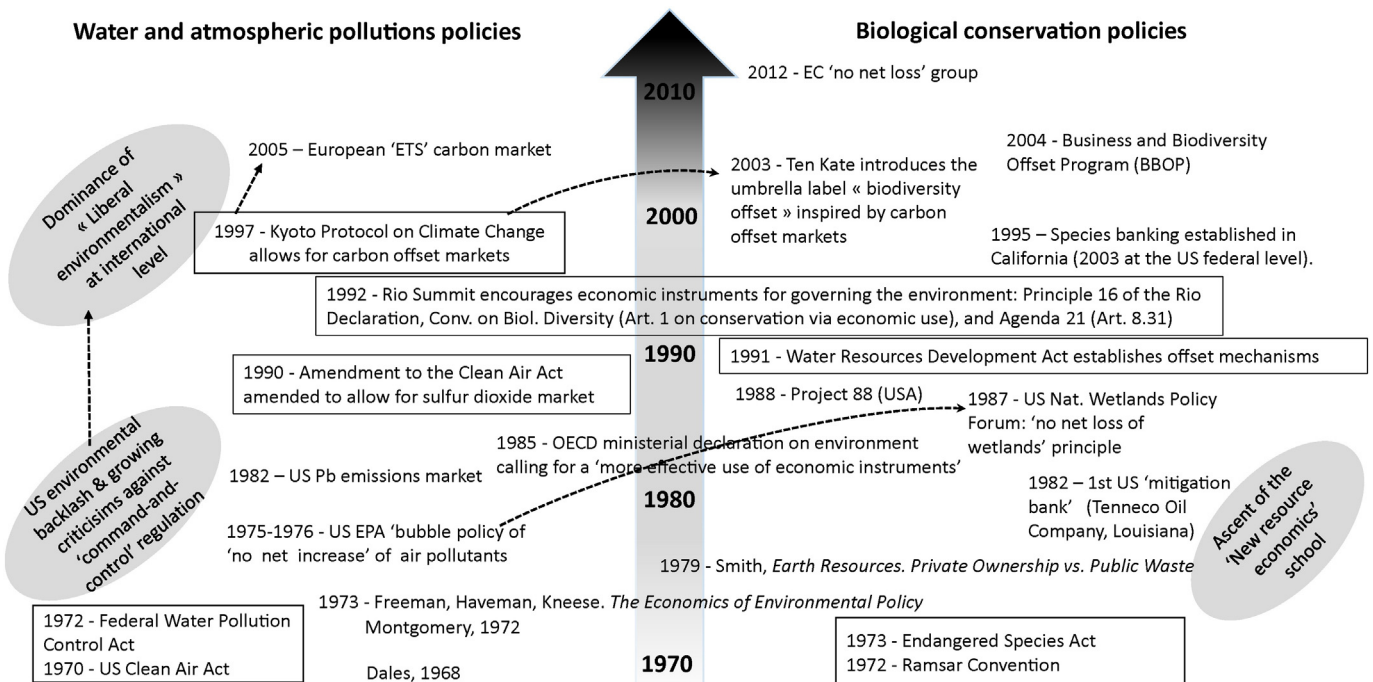


Fig. 1. Key steps in the rise of market-based instruments in environmental conservation.

Our historical exploration of the genealogy of BO in the United States does not seek to contribute to debates on what “neoliberalization of nature” may precisely encompass nor does it aim to assess the ecological performances of the new market-based policies. However, it clearly suggests a link between the emergence of BO and the 1973–1990 environmental backlash that has widely been associated to neoliberal policies. Indeed, it is clearly in these years and particularly in the context of environmental regulations’ roll back that market-based instruments emerged and became a prevailing tool in the US environmental policy. The “liberal environmentalism” policy paradigm was then firmly established in the USA by 1992, when the UN convened the Earth Summit in Rio (more in Mahrane and Bonneuil, 2014). The overall evolution from 1968 to 2015 is schematized in Fig. 1. Today, compensatory mitigation programs (including BO markets) are now mandated by legislation in more than 45 countries (Madsen et al., 2011). Further research may clarify how – and how much – US officials managed to promote “liberal environmentalism” discourses and instruments in international arenas (Bernstein, 2001; Mahrane and Bonneuil, 2014; Büscher et al., 2014), how diverse habitat and species “banking” practices got unified under the umbrella of a new global label such as “Biodiversity offset” (Lapeyre et al., 2014) and what were the conservationists’ and unorthodox economists’ criticisms addressed to BO (see the other articles of this special issue). A fruitful perspective would also be to compare from one country to another partly independent and contrasting national pathways towards market-based mechanisms for environmental conservation. Such an historical perspective can help strengthen conservation science’s reflexivity on the values and worldviews that can be embedded within apparently purely technical conservation instruments.

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