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# The EU emissions trading scheme: protection via commodification?

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Market-oriented approaches to protecting nature like the European Union Emissions Trading Scheme (EU ETS) are often either uncritically embraced or dismissed as neoliberal policy developments that facilitate accumulation and further subject nature to the perversities of markets. I cast doubt on both interpretations. Hewing closely to Karl Polanyi's own logic, I show that market-oriented schemes like the EU ETS are better characterized as Polyanian countermovements that are, in fact, helping to "re-embed" the European economy in more ecologically sustainable relationships with nature. The more general corollary is that Polyanian countermovements reacting to the disembedding effects of markets may themselves include market mechanisms. Ironically, though, it is exactly the embedding effects of market-oriented environmental policy that may undermine its effectiveness for addressing global-scale ecological problems like climate change.

**Keywords:** Cap-and-Trade, European Union Emissions Trading Scheme, EU ETS, Commodification, Countermovements, Polanyi, Environmental Regulation

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## The EU emissions trading scheme: protection via commodification?

Contemporary environmental policy in Europe and beyond is riddled with irony. The central paradox is this: markets—those dynamic and resilient means of organizing modern economic life that are linked to so much ecological destruction—are increasingly being used as tools for *protecting* nature. Markets in nature, in short, are being fabricated to protect nature from markets. The situation is ripe for a Polyanian analysis and, equally, for extending his theoretical approach in light of these developments. In brief, Polanyi's ([1944] 2001) original accounting of the perversities of market institutions and mobilizations in reaction to them can help us understand how and why civil society groups and states are creating new and market-oriented means of protecting nature, even as his insights also demand that we rethink oversimplifications about the relationship between markets, on the one hand, and social (and environmental) protection, on the other.

I use the case of the European Union Emissions Trading Scheme (EU ETS) to deepen our understandings of these patterns of "protection via commodification"—that is, cases where market-like institutions are intentionally fabricated to provide social and ecological protections. The takeaway is this: using markets in nature to protect nature from markets is fraught with challenges and the results are likely to be both politically and ecologically imperfect. Nonetheless, it is not clear either a) empirically, that market-oriented regulatory schemes like the EU ETS primarily facilitate accumulation and generate "disembedding" social and ecological effects—indeed, I find evidence of the opposite; or b) analytically, that Polanyi's own insights and analysis preclude regulatory market-making as a means of "re-embedding" economic

activity in social institutions and working towards politically agreed upon goals, like reducing carbon emissions or “greening” the economy.

Instead, exactly in line with Polanyi’s original insights, the case of the EU ETS will make clear that markets in things like “carbon credits” are by no means “natural” economic creatures; that their form and effectiveness is contingent on the dynamics of what Polanyi called the “double movement”; and that building intricate and complex systems of social control over things like carbon pollution, even if by so-called “economic” or “market” means, is central to the project of “re-embedding” economic activity in complex, livelihood-sustaining social institutions. Put differently, carbon markets and schemes like the EU ETS are very far, indeed, from the “free” markets in land (nature), labour, and money that Polanyi saw as evoking counter-movements (see also Lederer, 2012; Vaissière & Levrel, 2015; Vatn, 2015; Rea, 2017). Rather, social institutions like carbon markets and the EU ETS in particular *are themselves* instantiations of Polanyian counter-movements. The failure of these institutions to provide robust ecological protection—to substantially reduce carbon emissions, for example—is reflective of larger inequities in power and influence that exist between carbon producers and polluters, on the one hand, and loosely pro-environment, pro-climate factions, on the other—not, as it were, the result of commodification processes and reactions to them that are inherent to market-making itself.

My argument begins with a brief overview of the basic dynamics and apparent ironies of modern environmental policy, wherein markets are understood as both central causes of ecological harm and, at the same time, increasingly called upon and designed to address these same ecological problems. Next, in the second section, I provide a brief review of the historical development and basic guiding principles of market-oriented environmental policy as a whole. I follow this discussion with a brief history of the development of the EU ETS in particular in the third section. After discussing the current functioning of the EU ETS in the fourth section, I return to Polanyi, using his insights to understand the EU ETS in empirical terms in the fifth section and in analytical terms in the sixth section. I conclude by discussing the broader implications of my account, which shows that market-oriented forms of environmental protection may, indeed, be thought of as Polanyian counter-movements but that, almost paradoxically, it is exactly this fact that may undermine their effectiveness as “solutions” to global-scale ecological challenges like climate change.

### **Polanyian dynamics—and ironies—in contemporary environmental policy**

Contemporary environmental policy seems to have a deeply ambivalent relationship to markets. On the one hand, actually-existing markets—in real estate, land development, agricultural goods, and most notably, fossil fuels—are increasingly understood as root causes of global-scale environmental problems. The social-ecological prognosis is not good. Natural scientists are evermore confident that planetary warming driven by the combustion of fossil fuels will reshape global-ecological dynamics in transformative and, at least for some people and species, catastrophic ways—and not far into the future, but soon, probably within the next 40 years (IPCC, 2018). Worse, at least as national economies are currently structured, human prosperity itself seems to be tightly coupled with carbon emissions (York, Rosa & Dietz, 2003; Jorgenson & Clark, 2012; Jorgenson, 2014) and therefore with the destructive economic-ecological dynamics that will continue to accelerate global warming and, ironically, undermine human—and non-human—prosperity in the long run. At the same time, good-old-fashioned land development and resource use—bound up with but distinct from carbon emissions and global warming *per se*—seems to be threatening the continued existence of biological life itself. Some ecologists warn that we seem to have entered the sixth mass extinction in all of Earth’s history, with contemporary rates of species loss comparable to rates not seen since the annihilation of the dinosaurs

65 million years ago (Dirzo et al., 2014; Ceballos et al., 2015; Ceballos, Ehrlich & Dirzo, 2017).

In Polanyian terms, we can think of these disturbing trends as one side of the double movement. Processes associated with modern economic growth and, in particular, using markets to manage and allocate natural resources (including the climate itself) has led to the depletion of fish stocks, the levelling of forests, the destruction natural habitats, the related decimation and even extinction of species, and to such severe pollution of the atmosphere with greenhouse gasses that human beings are becoming a geologic force unto ourselves, changing the course and character of life on Earth<sup>1</sup>. Despite growing public and political concern, these dynamics show few signs of relenting. 2018, only a few short years after the landmark Paris Agreement to reduce global greenhouse gas emissions around the world, saw the highest levels of carbon emissions in human history (Quééré et al., 2018).

But per Polanyi's thesis, there is another half to the double movement—a countermovement, as it were—concerned with remaking human economic relationships with nature in more ecologically sustainable ways. The most iconic of these efforts to ecologically “embed” the economy are now nearly a half-century old,<sup>2</sup> made visible in the creation of environmental ministries in western Europe, British Commonwealth nations, and the United States in the early-to-mid 1970s; in the passage of keystone environmental statutes that provide the bedrock of contemporary environmental protection; and in the diffusion of these policies and practices around the globe (Frank, Hironaka & Schofer, 2000; Gottlieb, 2005; Uekötter, 2014). Early exemplar laws aimed at ecologically embedding the economy include the Clean Air (1970), Clean Water (1972), and Endangered Species (1973) Acts in the United States; the Nature Conservation Act (1970) in Norway; the Federal Pollution Protection Act (1974), Drinking Water Regulation (1975) and Federal Nature Protection Act (1976) in Germany; the Forest Act (1975) in Austria; the Control of Pollution Act (1974) in the United Kingdom; and the Wildlife Act (1976) in Ireland. The analytical parallels between the creation of environmental ministries in the 1970s and the earlier founding of central banks as detailed in Polanyi's original analysis (cf. (Polanyi, [1944] 2001, 201–4)) are especially striking: both developments are clear examples of politically-driven efforts to control and “embed” markets in social institutions—institutions focused on political-economic control of money flows in the case of central banks, and institutions focused on political-ecological control of resource flows in the case of environmental ministries.

But efforts to make economic relationships with nature more ecologically sustainable did not stop in the 1970s. The pro-environment countermovement has persisted well into contemporary times and may have even regained some of its original urgency as publics and policymakers—and military generals<sup>3</sup>—have come to appreciate the threats to livelihoods and even national security posed by climate change.

The twist is this: many recent efforts to more sustainably embed markets in ecological systems themselves rely on market-like mechanisms and institutional architectures. These policy developments are often referred to as “market-based instruments” (MBIs); they

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<sup>1</sup> The driving role of humans in these planetary changes is the basis for naming the current geologic epoch the Anthropocene. For discussions of this idea, see e.g. Carey (2016; White, Rudy & Gareau, 2016).

<sup>2</sup> See Kaup (2015) on the concept of ecological embeddedness, and more broadly, using Polanyi to understand how economies and markets are always embedded in material nature as well as social institutions.

<sup>3</sup> Complex linkages between climate change and national security are often noted but relatively poorly understood Barnett (2003; Scheffran et al., 2012). Nonetheless, militaries around the world, including in the United States and Europe, are increasingly interested in the security implications of a changing climate (e.g. (Department of Defense, 2015; Caušević, 2017)); more research is needed on the ways that military concerns may influence climate policy.

represent clear and concrete manifestations of the paradoxical policy shift towards protection via commodification—that is, using markets in nature to protect nature from markets.

### **Market-based instruments in context**

Originally little more than theoretical constructs and pipe-dreams of environmental economists (e.g. Coase, 1960; Dales, 1968a, 1968b), market-based environmental policy instruments have surged in popularity in Europe and North America since the 1980s (for reviews and synthetic accounts, see e.g. Golub, 1998; Jordan, Wurzel & Zito, 2003, 2013; Meckling & Jenner, 2016). Attempts to slow deforestation and protect nature in and around land development and infrastructure projects, for instance, depend more and more upon market-oriented ecological offsetting schemes, where natural ecosystems are restored or “improved” in one location in order to “make up” for ecological harm someplace else nearby. This offsetting approach is particularly deeply institutionalized in the United States and in Germany (Rundcrantz & Skärbäck, 2003; Wende, Herberg & Herzberg, 2005; Robertson, 2006; Darbi et al., 2010; Lave, 2012; Mazza & Schiller, 2014; Rea, 2017; Vaissière, Levrel & Scemama, 2017).

Various payments for ecosystem services schemes are also increasingly prominent examples of MBIs, although such schemes may be somewhat more common in the Global South. At the core, the idea here is that nature and ecosystems provide valuable “services” that help sustain human life and economic productivity. Those ecological services, in turn, can be valued in pecuniary terms when set in relation to the costs of having to replace them with conventional “gray” (i.e. made of concrete) infrastructure, for example, having to build a wastewater treatment plant that would replace the “natural” ecological work that a functioning wetland and watershed might do if properly protected and managed. With this logic in mind, landowners and users can be compensated directly in proportion to the quantity and quality of the ecologically beneficial actions they take on their land by, for example, reducing levels of grazing, retaining forest and riparian cover, upgrading wastewater disposal systems, and so on (Kroeger & Casey, 2007; Engel, Pagiola & Wunder, 2008; Ingram et al., 2014).

Still another class of MBIs are various “green taxes.” Taxing things like carbon pollution or land development, the argument goes, should discourage ecologically destructive behaviour while also generating revenue to support “ecologizing” the economy. Like other MBIs, green taxes do not compel shifts in ecologically destructive behaviour, but instead shift the incentive structures and rates of profitability in markets, thereby encouraging—but not formally requiring—individuals and organizations to behave in more ecologically sustainable ways.

In the context of climate, the quintessential MBIs are cap-and-trade schemes, which rely on the creation and exchange of peculiar, state-fabricated commodities like “carbon credits” in order to account for and to ultimately reduce greenhouse gas pollution. In theory, these schemes work to reduce emissions—and thereby to help “ecologize” modern market economies—in three steps.

First, by legally fabricating and allocating a finite number of emissions entitlements to emit greenhouse gases, cap-and-trade schemes effectively “cap” net greenhouse gas emissions in regulated industries (e.g. large-scale electricity production, aviation, etc.) across a specific jurisdiction (e.g. the European Union). These schemes, in other words, put an upper

limit on the amount of pollution that can be emitted in certain areas and in specified industrial sectors. Penalties are imposed on firms or utilities who violate the cap.

Second, by commodifying and allowing the relatively unencumbered exchange of emissions entitlements, cap-and-trade schemes create a market in rights to pollute that incentives reducing emissions in two ways. First, firms and utilities may have to purchase their emissions credits from the state to begin with, usually by way of an auction, making pollution expensive. Second, even when credits are allocated or “grandfathered” to polluters for free, firms and utilities that have excess entitlements, perhaps because they have reduced emissions, can sell them at a profit to firms that have too few entitlements to meet their emissions needs. This again creates an incentive to reduce emissions, but this time by making emissions reduction profitable. Cap-and-trade, in short, pairs penalties for emissions with rewards for emissions reductions.

Third and finally, by steadily reducing the number of entitlements in circulation (lowering the emissions “cap”), a cap-and-trade scheme creates incentives to further reduce emissions, since, basic economic theory posits, the price for emissions entitlements should steadily grow as entitlements become increasingly scarce. In principle, as an emissions cap approaches zero the price for emissions credits should skyrocket—but those increased costs should be offset by reduced demand as firms switch to alternative non-polluting technologies (e.g. wind, solar, hydroelectric, and even nuclear energy sources).

Like other MBIs, cap-and-trade schemes are evermore prominent. Nations and sub-national units as diverse as California, Quebec, Tokyo, Korea, New Zealand, India, and China have all made cap-and-trade schemes central to their climate policy. The World Bank estimates that, including China, roughly 25% of total global greenhouse gas emissions are now covered by some kind of carbon pricing instrument, including both carbon taxes and cap-and-trade schemes (World Bank, 2016). One of the earliest and most significant cap-and-trade schemes is the European Union Emissions Trading Scheme. Indeed, the EU ETS is an archetypical market-oriented approach to regulating carbon emissions and, by extension, a paradigmatic case of the contemporary trend of using markets in nature, broadly defined, to protect nature from markets. Framed in more explicitly Polanyian terms, the EU ETS is a clear example of the paradoxical, market-oriented turn in the modern pro-environment countermovement.

### **A brief history of the EU ETS**

With the possible exception of China’s recently implemented national-level cap-and-trade scheme, the European Union Emissions Trading Scheme is the largest and most significant carbon market in the world. The Scheme applies to about 45% of all greenhouse gas emissions in Europe stemming from roughly 11,000 “heavy energy-using installations,” which include electricity-generating plants and large-scale industrial facilities. Emissions from air travel in the European Economic Area (the EU plus Iceland, Liechtenstein, and Norway) were added in 2012. Emissions from the transport and agricultural sectors remain conspicuously outside EU ETS coverage. Still, the Scheme covers roughly 5% of annual greenhouse gas emissions world-wide and accounts for approximately one-third of *all* emissions covered by any sort of carbon pricing instrument across the globe (World Bank, 2016).

Like the general principle of using markets in nature to protect nature from markets, the historical development of the EU ETS is filled with a certain level of irony. Meckling (2011) provides a comprehensive political account of the development of the Scheme, but in the briefest of terms, the EU ETS grew out of European and North American efforts to comply

with the 1997 Kyoto Protocol, an international agreement to reduce greenhouse gas emissions which itself grew out of the United Nations Framework Convention on Climate Change negotiated in Rio de Janeiro in 1992. The Kyoto Protocol was to go into force in 2005; as compliance mechanisms for greenhouse gas emissions reductions were negotiated into the Protocol in the early and mid-1990s, many European nations and the European Commission itself pushed for a carbon tax. A carbon tax, the argument went, would raise public revenue, send a clear and steady price signal to reduce emissions across industrial sectors, and would be comparatively simple to administer (Meckling, 2011, 77–80).

A large coalition of transnational business interests and pro-market NGOs, however, led by the U.S.-based Environmental Defense Fund and U.K.-based British Petroleum, and buttressed by support from administrators and politicians in the pro-market Clinton administration in the United States, pushed hard for compliance with Kyoto via something like a cap-and-trade scheme (Meckling, 2011, ch. 4). This more thoroughly market-oriented approach to reducing emissions, they argued, offered greater flexibility for nations and industries to meet net emissions reductions goals (Meckling, 2011, 90–91) since an entity with surplus emissions credits could sell those excess credits to another entity struggling to meet emissions reductions goals, providing a path to net compliance without requiring uniform levels of pollution reduction across firms, industries, or nation-states. A carbon tax, by contrast, at least simply applied, would substantially disadvantage nations and industries (e.g. the U.S. or coal-fired electricity production) where emissions reductions were harder to achieve for either political or technological reasons. Cap-and-trade also added an economic carrot to a carbon tax's stick: by way of grandfathering initial credit allocations, firms would at first face no new costs for their carbon pollution and further, they would be able to profit from any early emissions reductions since they could sell excess emissions credits to other firms and industries who needed them. All of these arguments were grounded in no small part in the success of the U.S.-based market in sulphur dioxide emissions, which had first emerged in the early 1980s and which U.S. administrators and business interests held up as an example of the possible effectiveness of a cap-and-trade scheme (Meckling, 2011, 81). The U.S., after all, had been very successful in reducing sulphur dioxide emissions and thereby helping to reduce harmful things like smog and acid rain, which were especially acute problems in the 1980s and 90s.<sup>4</sup>

The ironic twist is that shortly after European negotiators acquiesced to the demands of U.S. and transnational business interests by agreeing to use a cap-and-trade scheme—not an emissions tax—in order to comply with the Kyoto Protocol, the U.S. backed away from the agreement and, in fact, never ratified the treaty (McCright & Dunlap, 2003; Meckling, 2011)<sup>5</sup>. Europe, then, found itself embracing what was, in effect, an American policy instrument even while the U.S. itself refused to implement the very same policy within its national borders. The European Parliament passed legislation to create the EU ETS in late 2003; the Scheme formally went into effect in 2005, in time to comply with the Kyoto Protocol.

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<sup>4</sup> For a thorough political and administrative history of the development of the U.S. market in sulphur dioxide emissions, see Cook (1988) and also (Ellerman et al., 2000).

<sup>5</sup> Any hope for U.S. ratification of Kyoto, already a long shot, evaporated when the conservative George W. Bush, rather than staunchly pro-environment Al Gore, narrowly won the presidency in 2000.

### The EU ETS in practice

When the EU ETS went into effect in 2005, each of the 15 EU member states at the time were allowed to allocate emissions allowances to firms and utilities free-of-charge based on those facilities' historic emissions levels. This free allocation process, called "grandfathering," was intended to assuage fears of sudden market disruptions like spikes in energy prices that could be driven by electricity suppliers, for example, suddenly passing on the newly added cost of emissions credits to commercial users and consumers. It also satisfied a key tenant of the pro-carbon trading (and anti-carbon tax) business coalition that had pushed for the EU ETS in the first place: that new regulations for emissions would impose little-to-no new cost for emitters, at least at first (see e.g. Meckling, 2011, 121).

During this first, pilot phase of the EU ETS, which lasted from 2005 to 2007, emissions credits (formally, European Union Emissions Allowances or EUAs) fetched between €25 and €30 per tCO<sub>2</sub>tonnes of carbon dioxide) on the open market. As more accurate emissions data became available, however, it became clear that the EU had allocated far too many emissions credits and the price for Phase I credits collapsed (Ellerman & Buchner, 2008; Newell, Pizer & Raimi, 2013)<sup>6</sup>.

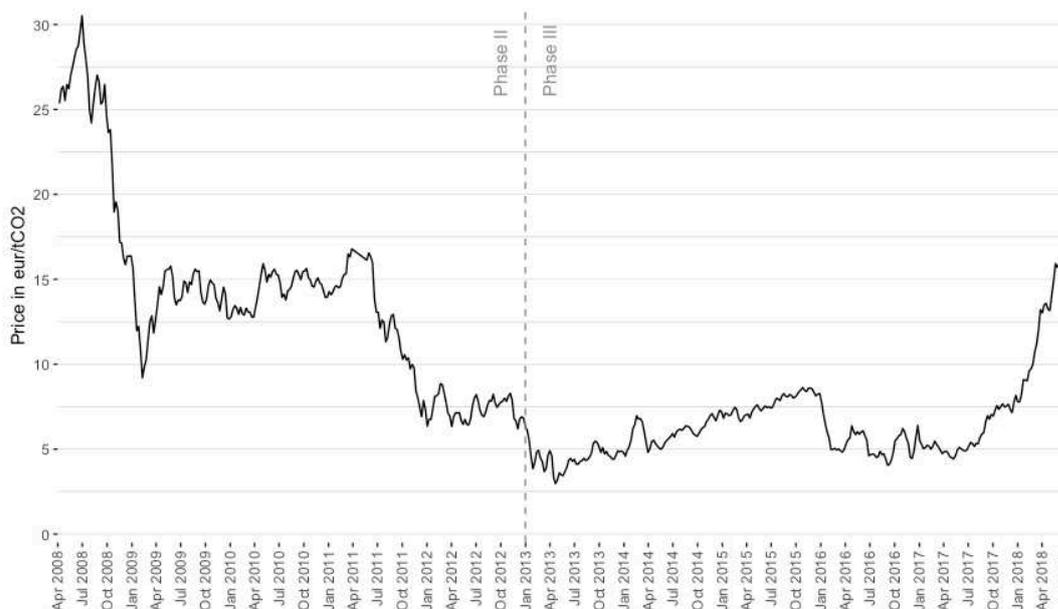
Partly in response to this oversupply, in the second phase of implementation, from 2008 to 2012, the EU reduced the number of available emissions credits by 6.5% and increased the penalty for non-compliance from €40 to €100/tCO<sub>2</sub>eq (tonnes of carbon dioxide equivalent). The EU also allowed nations to auction—rather than to freely grandfather—up to 10% of emissions credits, meaning that states could begin to generate public revenue by selling EUAs to regulated firms and utilities.

In Phase II of implementation, however, the EU also allowed regulated facilities to purchase emissions credits generated internationally through things like reforestation projects and other emissions reductions programs generally located in the Global South, mostly by way of the Kyoto Protocol's Clean Development Mechanism (Wara, 2007). This new source of credits, in combination with the overall reduction in emissions linked to the 2008 economic crises, again contributed to a substantial oversupply of emissions credits (Newell, Pizer, & Raimi, 2013). The price of EUAs, while temporarily steady at around €15/tCO<sub>2</sub>eq between 2009 and 2011, once again declined sharply, dropping to about €7/tCO<sub>2</sub>eq in early 2012 and to less than €5/tCO<sub>2</sub>eq in 2013, which also marked the start of the third phase of EU ETS implementation. Mostly because of problems of oversupply, the price for EUAs remained very low—less than €8/tCO<sub>2</sub>eq—until early 2018. Figure 1 charts these price trends from early 2008 (the start of Phase II) to present.

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<sup>6</sup> Pilot-phase credits also could not be used beyond 2007, which prevented firms from "banking" credits for future use. This also contributed to the price collapse.

Figure 1: European Union Emissions Allowance (EUA) price, April 2008 to January, 2019.



Source: ICE Futures Europe via Sandbag (<https://sandbag.org.uk/carbon-price-viewer/>). Visualized by the author.

The economic and regulatory corollary of nearly a decade of consistently low prices for emissions credits was that the EU ETS put only minimal economic pressure on firms, utilities, and states to reduce emissions output and to do things like adopt renewable energy sources (e.g. wind and solar). Emissions reductions have been relatively dismal if measurable; most studies examining Phase II of the Scheme suggest that emissions reductions attributable to the EU ETS *per se* (as opposed to, e.g., declines in overall economic output) are in the range of 2% to 4% of net capped emissions, which, given that the EU ETS covers approximately 45% of EU emissions, translates into reductions of roughly 1%-2% of total emissions across the entire EU economy (Laing et al., 2013; Newell, Pizer & Raimi, 2013). Bel and Joseph (2015), for instance, estimate that of the 294.5 megatons of greenhouse gas reduction across 25 EU nations from 2005 to 2012, only between about 34 and 41 megatons of greenhouse gas reductions can be attributed to the EU ETS itself. This translates to reductions of between 1.6% and 2.0% of capped emissions and only 0.7% to 0.9% of total EU emissions. Even only considering emissions reductions themselves, the roughly 40 megatons of emissions reductions attributable to the EU ETS amount to a very modest 12% to 14% of the 294.5 megatons of total reductions observed between 2005 and 2012. In keeping with the nature of a carbon-fuelled economy, most emissions reductions in Europe over that time period came simply from reduced economic output linked to the global recession.

Worse, there were several instances of severe fraud, cheating, and perverse incentives that emerged from the EU ETS during Phase II, including some related to the Scheme's linkages to the Kyoto Protocol's Clean Development Mechanism (Wara, 2007; Nield & Pereira, 2011). Infamously, for example, high levels of emissions reductions credits awarded for destroying HFC-23, which is a chemical by-product of producing refrigerants and which is 10,000 times more potent as a greenhouse gas than carbon dioxide, led some firms to *increase* production of the chemical so that they could then destroy it and win profitable credit allocations that they could, in turn, sell to participants in the EU ETS (Newell, Pizer & Raimi, 2013). In other cases, the EU ETS saw large thefts of emissions credits from

emissions registries and tax frauds related to cross-border exchanges of emissions credits (Kogels, 2010; Nield & Pereira, 2011; Grubb, 2012).

Still, nearly 15 years after its initial implementation, the EU ETS remains steadfastly in place in Europe and, in fact, continues to occupy the position of global flagship of emissions reductions and cap-and-trade schemes. Despite its flaws—and partly because of them—the Scheme is looked to as a model to learn from and to improve as new cap-and-trade schemes develop around the world (Grubb, 2012; Frédéric, Oskar & Philippe, 2014). And to the extent that the EU ETS showed weaknesses in the first and second phases of implementation, they seem to have been largely shored up. In the current and third phase of implementation, which began in 2013 and which stretches through the end of 2020, the EU allowed more than 40% of emissions allowances to be auctioned rather than grandfathered, at last transforming the EU ETS into a substantial source of public revenue for EU member states (I discuss this in more detail below). Encouragingly, regulators seem also to have finally gotten a firm grip of problems of oversupply, cheating, and fraud. The price of EUAs has steadily climbed since mid-2017 and now stands at around €25/tCO<sub>2eq</sub>—a level not seen for more than a decade (Figure 1). These higher prices should put increasingly heavy market pressure on regulated industries to reduce emissions, perhaps at rates far greater than witnessed in phases I and II of implementation.

Looking to the future, prospects for the EU ETS look relatively bright. The fourth phase of the scheme is scheduled to go into effect at the start of 2021 and will extend until 2028, nearly another decade into the future. With EUA prices substantially higher and problems of oversupply finally receding, the EU ETS stands to generate even larger sums of public revenue—and, if proponents are right, to more robustly incentivize emissions reductions. Protection via commodification, it seems, is here to stay, at least for the near-term in Europe—and evermore around the world, e.g., in China.

### **Returning to Polanyi, part I: empirics**

How should we understand this market in rights to pollute—this market in rights to harm nature—in light of Polanyi's original arguments, penned 75 years ago? On the one hand, the political construction and expansion of markets in things like carbon credits seems like the socially corrosive “disembedding” force that Polanyi so fretted about. Efforts to re-embed economic—and ecological—life in social institutions, Polanyi ([1944] 2001, 3–4) tells us, develop in direct *response* to these heavily interventionist market-building efforts—they do not include more market-making itself!

Seen from this point of view, the EU ETS can appear like a concerted effort by business interests and capitalists to expand markets into new and “green” economic realms and which ultimately facilitates capital accumulation at the expense of the greater social and ecological good. And if there is any doubt that business interests have, indeed, pushed for the development of markets in nature—and the EU ETS in particular—see once again Meckling (2011), who shines a light on the critical role of business interests in advocating for and helping to institutionalize this particular cap-and-trade scheme.

As Smith (2007) puts it, then, nature itself might be becoming an “accumulation strategy.” At the very least, the growth of markets in nature, including the EU ETS, and the broader trend towards protection via commodification, would seem to be linked to the widely remarked reassertion of class power by business interests and capitalists that characterizes the past four decades (Harvey, 2005; Streeck, 2014) and that can be understood in relation to the larger patterns of neoliberalization discussed by scholars of political economy (e.g.

Prasad, 2006; Crouch, 2011; Peck & Theodore, 2012; Mann, 2013). Fraser (2014, 552) summarizes this line argument aptly, especially as it relates to carbon markets:

*the neoliberal cure for the ills of markets in nature is more markets—markets in strange new entities, such as carbon emission permits and offsets, and in even stranger meta-entities derived from them, ‘environmental derivatives’, such as the carbon emissions ‘tranches’, modeled after the mortgage-backed collateralized debt obligations that nearly crashed the global financial order in 2008... (citing (Lohmann 2010)).*

In short, this view suggests, protection via commodification really is an oxymoron: at the core, it is a project of accumulating wealth in the (only thinly veiled) guise of “protecting” nature from economically- and market-driven harm. Things like the EU ETS are examples of “accumulation by conservation” (Büscher & Fletcher, 2015).

But in purely empirical terms, the closer one looks at these fabricated markets in nature, and the EU ETS in particular, the less these schemes look like sites of capital accumulation for accumulation’s sake. True, the market in carbon emissions credits affords opportunities for profit-making. But cap-and-trade schemes generate large sums of public revenue primarily by way of states auctioning emissions allowances to polluters. In fact, in concrete, dollars-and-cents terms, and as other researchers have recently pointed out, the world of “green” capitalism and the financialization of nature has mostly failed to materialize in any meaningful sense; it seems to exist more in a world of pure rhetoric and in the eyes of concerned scholars than it does in real financial markets and investment portfolios (Dempsey & Suarez, 2016; Lave, 2018). Even the “market” character of the EU ETS and many comparable market-oriented governance institutions is complex and muddled at best; most careful students of these institutions question whether they should be thought of as markets at all and suggest alternative classifications (e.g. Lederer, 2012; Vaissière & Levrel, 2015; Vatn, 2015; Rea, 2017; Vaissière, Levrel & Scemama, 2017). In the case of cap-and-trade schemes in particular, many of these schemes are more like complex systems of environmental taxation than they are like markets. What is more, the revenue these “marketized” taxation schemes generate can be—and increasingly *is being*—used to fund projects specifically aimed at “greening” production processes, transportation systems, and means of energy generation.

Seen through a Polanyian lens, then, the EU ETS might be more usefully thought of as a financial engine for ecologically embedding the economy—not a disembedding market institution comparable to, for example, the ecologically destructive markets in land, timber, fish, fossil fuels, and nature more generally that can be linked to many contemporary environmental problems. In the first three years of Phase III (2013-2015) of the EU ETS, for instance, the Scheme generated €11.8 billion in public revenue, or nearly €4 billion annually on average (Den et al., 2017). This is equivalent to about 3% of the annual budget of the European Union as a whole—not an enormous fraction, but for a single revenue stream, a consequential amount.

Even more importantly for a Polanyian analysis, €9.6 billion (82%) of that three-year total revenue stream was used for public projects specifically focused on issues of energy and climate—that is, on projects aimed broadly at ecologically “embedding” the economy. In particular, €7.9 billion of the €9.6 billion funded domestic and EU-specific climate and energy-related work; the remaining €898 million was funnelled into international climate and energy-related projects. Of the funds spent in the EU itself, 40.6% (€2.89 billion) went towards renewable energy projects while 27.4% (€1.95 billion) went to improving energy

efficiency and another 10.9% (€774 million) to financing more sustainable transport systems. A hodgepodge of other categories make up the balance of public, environmentally-focused spending financed by the EU ETS: funding for carbon capture and storage, research and development to promote higher levels of energy efficiency and to develop new low-carbon technologies, administrative fees for managing the EU ETS in the first place, and so on (Den et al., 2017, 19).

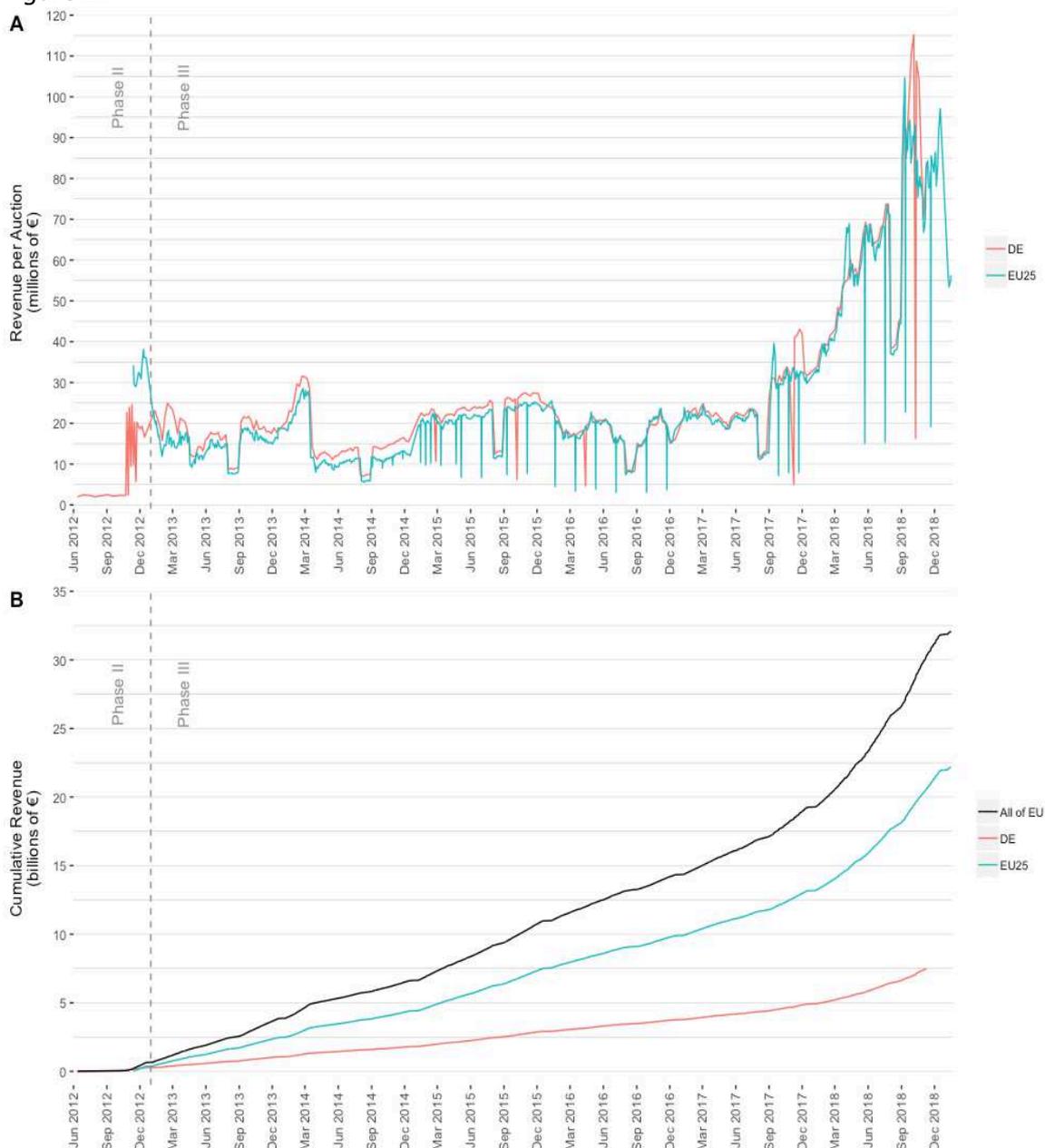
Further, as regulators and administrators have addressed problems of oversupply, fraud, and cheating; as the EU has lowered the overall emissions cap<sup>7</sup>; and as the price of EUAs has steadily grown (see again Figure 1), the rate of revenue generation under the EU ETS has accelerated. Figure 2A documents this growth in per-auction revenue from the start of Phase III of the EU ETS to present (June 2012 to January 2019); Figure 2B shows the accelerating growth of net revenue. The EU ETS generated €12.85 billion in 2018 alone—equivalent to 8% of the entire EU budget of €160.1 billion for the same year—which is more public money than the Scheme generated in the first three years of Phase III combined. As of this writing, in mid-January of 2019, the EU ETS has generated over €32 billion of public revenue in its third phase of operation, the vast majority of it used for projects intended to reduce fossil fuel use and, more generally, to help address the problem of climate change.<sup>8</sup>

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<sup>7</sup> In Phase III, the EU planned to reduce the allotment of emissions credits by 1.74% each year. This rate for reduction was aimed at achieving a 21% reduction in CO<sub>2</sub>e<sub>q</sub> emissions by 2020 relative to a 2005 baseline.

<sup>8</sup> The channelling of funds to energy and climate-related projects is not a coincidence. Directive 2003/87/EC of the European Parliament mandates that at least 50% of EU ETS revenue generated through auctioning be used for "climate and energy" related activities. Article 10 of the EU ETS Directive further stipulates the kinds of "climate and energy" projects that meet the 2003/87/EC mandates.

Figure 2:



(A) Per-auction and (B) cumulative revenue generated by the sale of emissions allowances (EUAs) under Phase III of the EU ETS, June 2012 to January 2019. Germany (DE) and Poland (not shown) auction allowances independently of other EU nations under the EU ETS. EU25 denotes the 28 EU member states less Germany, Poland, and the United Kingdom. "All of EU" includes all 28 EU member states (including Germany and Poland) except the United Kingdom.

Source: European Energy Exchange (EEX); data available at <https://www.eex.com/en/market-data/environmental-markets/auction-market/european-emission-allowances-auction/european-emission-allowances-auction-download>. Visualized by the author.

In simple empirical terms, then, it is difficult to understand the EU ETS as an exemplar of the kind of market-making and associated social and ecological dislocation Polanyi wrote about. At least in terms of directly observable environmental outcomes and public funds, the Scheme seems instead to be something closer to a financial engine of ecological embeddedness, driving admittedly small reductions of emissions and, perhaps more significantly, funding public work—however insufficient when taken alone—intended to help “ecologize” human economic relationships with nature.

### Returning to Polanyi, part II: analysis

The “embedding” character of the EU ETS, however, is not only a matter of modest emissions reductions and generating public funds to help reduce pollution and decarbonize the economy. That is, these processes of ecological embedding are not only a matter of the empirical, materially visible effects of the EU ETS that somehow stand in analytical tension (or contradiction) with the overall “market” character of the Scheme and the pathologies that, per Polanyi, should flow from these market features. The embedding work done by the EU ETS is also *analytically* consistent with a Polanyian explanation—provided that we follow Polanyi’s own logic carefully and take his argument seriously.

The core of Polanyi’s thesis in *The Great Transformation* is not that markets *per se* are problematic institutions that “disembed” people from the social fabric and cause social and environmental ills. His argument is rather more specific. Polanyi posits that treating three specific “fictitious commodities”—land, labour, and money—as commodities *per se*—that is, allocating and pricing land, labour, and money in line with the principles supply and demand as governed by carefully engineered and politically fabricated “free markets”—is apt to produce all sorts of social ills. Such a “commodity fiction,” Polanyi ([1944] 2001, 138) wrote, “disregarded the fact that leaving the fate of soil and people to the market”—really, leaving the fate of *nature* and people to the market—“was tantamount to annihilating them” (*ibid.*, 137).

Polanyi was emphatic on this point:

*Robbed of the protective covering of cultural institutions, human beings would perish from the effects of social exposure; they would die as the victims of acute social dislocation through vice, perversion, crime and starvation. Nature would be reduced to its elements, neighborhoods and landscapes defiled, rivers polluted, military safety jeopardized, the power to produce food and raw materials destroyed (ibid., 76).*

The trouble at the root, Polanyi argued, is that although they may be treated as such in modern market economies, “labour, land, and money are obviously *not* commodities” (*ibid.*, 75)—that is, they are not “objects produced for sale on the market” (*ibid.*). (This is a crucial point; I return to it below.) Rather, Polanyi argues, these goods are foundational sources of sustenance for human life and livelihoods and are therefore necessary for the maintenance of a dignified, healthy, and sustained human existence. Land, for instance—which Polanyi (*ibid.*, 75) points out is but “another name for nature”—“invests man’s life with stability; it is the site of his habitation; it is a condition of his physical safety; it is the landscape and the seasons” (*ibid.*, 187). Using politically engineered “free markets” to allocate land to individuals and organizations per the price mechanism, then, absent more complex, culturally and normatively moderated institutions, risks denying people access to a basic source of both material and spiritual sustenance and security. In even starker terms, using market-determined price as the primary means of valuing and allocating land and nature in the economy risks undermining the conditions necessary for the very maintenance of human existence—it risks destroying “the power to produce food and raw materials” and thereby risks destroying the conditions necessary for the material and social reproduction of human life itself.<sup>9</sup>

<sup>9</sup> Some readers will recognize a parallel here with O’Connor (1988) and his articulation of the second contradiction of capitalism. Arguably, though, there is a distinction: Polanyi is concerned with the ways that a price mechanism and market exchange can unequally and unsustainably allocate resources. O’Connor is concerned with the ways that production *per se*—that is, resource use itself—can have the same effect. The outcomes are analogous, in other words, but the mechanisms are not. See e.g. Silver (2003; Burawoy, 2007, 2010) for more on the relationship between these exchange-focused (Polanyian) and production-focused (Marxian) modes of analysis.

Fortunately, Polanyi argues, people react to the social and ecological dislocations wrought by treating land, labour, and money as commodities valued and allocated in terms of their money prices. This is the theoretical basis for the “double movement,” described earlier. Historically, Polanyi ([1944] 2001, 136) argues, “the market expanded continuously” by way of “an enormous increase in continuous, centrally organized and controlled interventionism” (ibid., 146). But as he also points out, “this movement was met by a countermovement checking the expansion in definite directions,” in particular, by “checking the action of the market in respect to the factors of production, labour, and land” (ibid., 136-7). In short, where market allocations of land, labour, and money result in social and ecological dislocations, people fight back by attempting to re-embed economic activity in more complex social institutions that rely on more than just market-determined price to value and allocate goods and services.

Returning to the EU ETS, then, Polanyi’s theorization points us to a key analytical question: do the market-like dynamics of the EU ETS (and similar institutions) treat foundational elements of economic life as commodities whose market-driven exchange risks undermining the conditions required to reproduce and sustain a dignified human existence? Or are they better conceived as political-ecological “reactions” to the disembedding effects of *other* markets in fictitious commodities? In essence, are institutions like the EU ETS better characterized as manifestations of the movement of the market, or as countermovements that develop in response to it?

Only the latter position, it turns out, provides theoretically stable and analytically tenable ground. To be sure, the perversities of markets can develop out of cap-and-trade schemes and other forms of market-oriented environmental regulation; the case of HFC-23, discussed above, offers an instructive case in point. But just as “labour, land, and money are obviously *not* commodities” (ibid., 75) in the Polanyian sense, things like carbon credits are obviously *not fictitious* commodities as conceived in Polanyi’s original sense. Polanyi’s theorization itself illuminates why this is true.

To begin with, it is crucial to understand what Polanyi means when he refers to “commodities,” and therefore to understand what he means when he asserts that “labour, land, and money are obviously *not* commodities” but are instead their “fictitious” counterparts. Polanyi’s terminology is somewhat confusing and even muddled here; the confusion stems from two basic points.

First, Polanyi’s use of the term “fictitious” is at least a little misleading. After all, in a very real sociological sense, all commodities are in some way or another “fictitious” in that they are socially, politically, and legally constructed by states and so on. I will not belabour this point here; social analysts since at least Marx—and economic sociologists more recently—have very thoroughly elaborated the political and cultural foundations of markets and commodities (for reviews, see e.g. Fligstein, 1996; Fourcade & Healy, 2007; Fligstein & Dauter, 2007).

Second, Polanyi is actually not referring to this general social construction of commodities when he introduces the concept of the “commodity fiction.” As with his entire theoretical account, he is again referring to something much more specific. In fact, contra colloquial understandings of the term “commodity,” in Polanyi’s account, merely assigning a money price to a good or a service and then buying or selling it is not enough to make that good a commodity *per se*. To the contrary, as Polanyi (1957) himself teaches us, all manner of goods and services, including “fictitious” ones, can be—and historically have been—priced

and exchanged in ways that do not require them to be “commodities” in his narrower sense of the term.

Instead, for Polanyi, commodities are goods and services priced and exchanged in a very specific way—in particular, ones that are “produced for sale on the market” Polanyi ([1944] 2001, 75). Here again, Polanyi confusingly smuggles a more specific concept into relatively generic language: by “market” in this definition he is referring not simply to any system or site of exchange—what might be more properly called a “marketplace” by economic historians<sup>10</sup>—but to the politically and legally fabricated “self-regulating market” governed principally by a price mechanism—an economic institution that, as Polanyi himself so carefully documents, is an entirely utopian construct with very particular historical roots in the politics and ideology of the nineteenth and twentieth centuries (ibid., 144–157).

Clarifying this understanding of commodities is crucial for putting Polanyi’s theory to work in contexts beyond the ones he originally wrote about in *The Great Transformation*. The most important implication is that the “commodity fiction”—and the associated social dislocation wrought by “self-regulating markets”—does not obtain directly or automatically when goods are merely assigned money prices and exchanged between parties. In Polanyi’s account, to be commodities *per se*, goods and services have to be priced and exchanged within an intentionally crafted “self-regulating” market system. And to be *fictitious commodities* in particular, goods and services (1) have to be valued and exchanged in a “self-regulating market” (like all Polanyian commodities) and (2) also have to be foundational components of social and economic life upon which human life and livelihoods depend, but which were never “produced for sale on the market” (ibid., 75) in the first place. Land (nature), labour, and money fit this bill: in modern, politically fabricated “free markets” these items are often valued and exchanged by way of a market-determined price mechanism, but as Polanyi points out, they are really just the ordinary and ancient bases of human existence:

*Labor is only another name for a human activity which goes with life itself... land is only another name for nature, which is not produced by man; actual money, finally, is merely a token of purchasing power which, as a rule, is not produced at all, but comes into being through the mechanism of banking or state finance. None of them is produced for sale. The commodity description of labor, land, and money is entirely fictitious (ibid., 75–76).*

Note, however, that in Polanyi’s theorization, efforts to protect people from the whims of the market—countermovements—absolutely do not require dismantling systems of exchange entirely, nor do they require abolishing the practice of valuing land, labour, or even money itself in pecuniary terms. Certainly, the establishment of central banking—one of Polanyi’s most well-developed examples of a countermovement (ibid., ch. 16)—did not do that! As Polanyi himself explains, the principle function of central banking was to rescue capitalism from itself (ibid., 201)—not to dismantle or replace it with a system where economic exchange or pecuniary valuation play little-to-no-role in the economy. The aim was only to insulate people from the *commodity fiction*—the pricing and valuation of currency by a “self-regulating market”—not to abolish commodities or systems of exchange in money altogether. Panels of independent economic experts—not “the free market”—

<sup>10</sup> See Neale (1957, 365–70) for a helpful discussion of the differences between the theoretical construct known as “the self-regulating market” as understood by economists, and actually existing sites of exchange popularly referred to as markets, i.e. “marketplaces.”

would determine the supply of money in a national economy in order to control inflation and interest rates and protect people from things like hyperinflation and currency collapse.

The same is true for labour protections. For Polanyi, establishing laws and programs to insulate workers from brutal fluctuations in wages and the availability of employment did not entail abolishing wages or dismantling “the labour market” itself (*ibid.*, ch. 14). To the extent that these protective countermovements “decommodified” money or labour (e.g. Esping-Andersen, 1990) they did so in an entirely Polanyian sense, not a colloquial one: they aimed to correct the problems of the commodify fiction by “reconstructing” (Klare, 1988; Block, 2013) the rules of exchange for labour such that the value and allocation of these goods was determined by a range of “non-market” processes and not only a price mechanism. In the case of labour protections, minimum wage limits and social insurance would moderate fluctuations in demand for labour and cushion the blow of unemployment. In a word, these social and political interventions made so-called “free markets” unfree, and very intentionally so. As Polanyi ([1944] 2001, 186) himself put it, “social legislation, factory laws, unemployment insurance, and, above all, trade unions” were exactly aimed at “interfering with the laws of supply and demand in respect to human labour, and removing it from the orbit of the market”—not, as it were, abolishing the pecuniary valuation and exchange of labour altogether.

And so it is as well with carbon credits, the EU ETS, and the newly created “market” in carbon-based pollution allowances (EUAs). To be sure, EUAs *are* commodities, in both a colloquial and a Polanyian sense: they are bought and sold in a marketplace (satisfying the colloquial definition) and they are also intentionally “produced for sale” in what can be thought of as a reasonable approximation of a “self-regulating market,” where the supply and demand of EUAs—and thus rights to pollute—are equilibrated by a price mechanism (satisfying the Polanyian definition).

But if EUAs certainly *are* Polanyian commodities, they are certainly *not* fictitious ones, and for three reasons. First, like all commodities, these entitlements to pollute are socially and legally constructed bundles of property rights fabricated and legitimated by states (Lederer, 2012; Vatn, 2015; Vogel, 2018). This legal and political “artificiality” may seem all the more striking given that EUAs are constructed almost literally out of thin air, but to argue that this makes EUAs fictitious commodities is to confuse the social construction of commodities in general, discussed above, with Polanyi’s more specific use of the term. That EUAs are administrative constructions not directly attached to any material good—buying and selling EUAs is, in practice, an exercise in pollution accounting; no “actual” goods are created or exchanged in this process—does not change the fact that ownership confers exclusive rights and entitlements—specifically, an entitlement to emit specified amounts of greenhouse gases. In principle, this is no different than the ownership of any “ordinary” physical commodity, like a car or an apple, which also confers exclusive rights and entitlements.

Second, EUAs and similar ecological commodities (e.g. carbon credits in other cap-and-trade schemes) have no fundamental link to the productive bases of modern economic life in the way that Polanyian fictitious commodities do. Critical discussions of emissions trading and carbon credits sometimes make reference to the “commodification of the atmosphere” or even to that of “nature” as a whole (e.g. Thornes & Randalls, 2007; Lohmann, 2011; Büscher & Fletcher, 2015); I have occasionally made use of such language in this very essay.

These rhetorical flourishes, however, leap past a crucial distinction: things like EUAs are commodified *entitlements to harm nature*, not commodified units of *nature itself*. This difference matters for understanding the effects of treating these two kinds of goods as commodities priced in a “free market.” The Polanyian argument is familiar enough by now: people require land and nature itself in order to maintain a dignified and healthy existence. Treating discrete units of nature as commodities that can be valued and allocated by a “self-regulating market” can have—and historically has had—devastating social and ecological effects. This is the problem of the commodify fiction.

By contrast, no human fundamentally depends upon the availability of carbon credits or EUAs for their material and spiritual sustenance, dignity, and health. A collapse in the price of EUAs may rob a small set of emissions traders of their quarterly profits or reduce the value of a small number of pensions for workers with green investments, but these market fluctuations do not risk sending the working class *en masse*, or even just the members of a particular industry, out onto the streets the way that a collapse in wages might, or the way that early enclosures of land did. True, where EUAs have little-to-no value—as they did for much of Phase II of the EU ETS—they exert little-to-no economic pressure on firms to reduce pollution. Unfortunate as this may be, the result is only returning the cost of polluting the atmosphere to near-zero, where it has been for most of human history. That is to say, a collapse in the price of *entitlements to harm nature* “only” returns the market in *nature itself* to the unregulated and ecologically destructive state that arises from treating nature as a commodity in the first place. Even in the most catastrophic market situations, like when the price of EUAs goes to zero, economic life basically returns to environmentally unfriendly business as usual.

Third and finally, it follows directly from the second point above that EUAs are explicitly engineered to interfere with—to make *unfree*—a market in actual fictitious commodities, namely, fossil fuels, just like labour protections and central banks were intended to interfere with markets in labour and in money. To be clear, units of fossil fuels themselves *do* seem to live up to Polanyi’s definition of a fictitious commodity: unlike commodified entitlements to emit pollution, discussed above, the maintenance of a healthy and dignified human existence *does* require a substantial amount of energy. At present, fossil fuels are the primary and often the only available energy source for maintaining this existence, and the production and use of these energy sources is principally governed by global “free markets” in crude oil, coal, and their numerous distillates and by-products. As discussed at the outset, subjecting these components of nature—fossil fuels—to the commodity fiction has contributed to serious social and ecological problems (O’Rourke & Connolly, 2003), including global climate change itself (IPCC, 2018).

But again, as with all social and ecological dislocations that can be linked to the dynamics of “free markets,” people have mobilized to reconstruct the energy economy along more humane and sustainable lines. Historical efforts to regulate soot pollution early in the industrial era (Uekötter, 2009), modern efforts to “capture” carbon emissions, and broader movements to decarbonize the economy can all be understood as efforts to embed the energy economy in a more complex and ecologically sustainable set of institutions, and to blunt the effects of leaving energy production to “free” and heavily polluting fossil fuel markets. The EU ETS is no different: by capping net pollution levels and commodifying the right to emit greenhouse gases into the atmosphere, the Scheme aims to alter and regulate the dynamics of extant markets, especially in fossil fuels, first by imposing an upper limit on emissions in the first place, and second by creating incentives to reduce the pollution that is allowed.

The more basic point is this: fabricating markets in entitlements to harm nature, like the EU ETS, is fundamentally different than fabricating markets in nature itself. This argument stands on purely analytical grounds built out of Polanyi's own premises and insights; it does not grow out of empirical observations that might, for example, demand a retooling of the Polanyian perspective in light of contemporary patterns of protection via commodification. Instead, these market-oriented trends in policy are basically consistent with the dynamics of countermovements that Polanyi observed in the nineteenth and the first half of the twentieth centuries. The comparison to Polanyi's own account of the development of institutions for regulating money flows is again useful. Just as "central banking and the management of the monetary system were needed to keep manufactures and other productive enterprises safe from the harm involved in the commodity fiction as applied to money," institutional innovations like cap-and-trade—which, at the core, support markets and market economies rather than overturning them—are necessary to shelter nature, people, and capitalism itself "from the devastating effects of the self-regulating market" (Polanyi, [1944] 2001, 138) in nature, and the market in energy more specifically.

### **Conclusion: protection via commodification as countermovement**

Contemporary patterns of environmental protection are ever-more marketized; the European Union Emissions Trading Scheme is a paradigmatic case in point. It is tempting to categorize these developments as examples of post-1970s neoliberalism and, more precisely, the expansion of markets into new economic and ecological spheres with potentially deleterious social and ecological effects (e.g. Smith, 2007; Foster, Clark & York, 2009; Büscher, Dressler & Fletcher, 2014; Fraser, 2014; Büscher & Fletcher, 2015). Indeed, these new forms of governance *are* very much market-oriented and thus at least partly "liberal" inasmuch as they rely on market-like dynamics and economic incentives in particular—not just authoritative commands—to shape and constrain human relationships with nature. Further, these market-like forms of governance are not at all perfect. Like any form of regulation and governance, institutions such as the EU ETS are subject to problems of cheating and fraud, and can create perverse incentives and have unintended effects that undermine their protective intent.

Examined more closely, though, the EU ETS—and by extension, other comparable market-oriented regulatory institutions—seem much more like instantiations of Polanyian countermovements than they seem like the result of movements "of the market" focused primarily on expanding opportunities for capital accumulation and that have "disembedding" effects on economic and ecological life. This conclusion is founded upon empirical as well as analytical grounds.

Empirically, after a stumbling and disheartening start, the EU ETS seems to be generating small emissions reductions and, perhaps more significantly, increasingly large sums of public revenue that are being used to "green" and de-carbonize the European economy. The EU ETS is having modest "embedding" effects, in other words, particularly along ecological lines. Time will tell whether these trends continue, whether they have demonstrably positive and enduring ecological effects, and whether rising prices for emissions entitlements do, as environmental economists and administrators hope, encourage a switch from a carbon-fuelled to a low or zero-carbon European economy. Time will also tell whether other nation states follow suit. China's recent nation-wide adoption of cap-and-trade scheme is a telling development, but the proof of the policy will be in emissions reductions attributable to that cap-and-trade scheme. The adoption of a nation-wide, carbon-based cap-and-

trade scheme in the United States would also be telling, although no such development seems likely as long as conservatives dominate the government there.

Analytically, and following Polanyi's own logic, it turns out that commodified entitlements to harm nature—goods like carbon credits—do not have the same political and economic properties as commodified units of nature. In particular, using market-like mechanisms to price and allocate goods like carbon credits does not seem to have the same disembedding effects as using markets to price and allocate nature or land itself. An interesting implication is that Polanyian countermovements should be much less likely to emerge in response to these marketized forms of governance, since they do not depend so centrally upon the commodity fiction. Even more significantly, this reasoning suggests that marketized systems of environmental regulation, like the EU ETS, are themselves usefully conceived of as countermovements—that is, as political-economic reactions to the disembedding effects of commodifying land and nature itself.

The broader corollary of these observations is that the institutional results of Polanyian countermovements can themselves include market-like mechanisms, so long as those markets do not produce dynamics that might undermine the conditions for the social, economic, and ecological reproduction of human (and non-human) life. That is, we can think of the development of institutions like the EU ETS as the result of Polanyian countermovements so long as these institutions do not subject the actual productive bases of human lives and livelihoods to the commodity fiction, valuing and allocating basic things like nature, labour, and money by way of a price mechanism in a “self-regulating market.” Entitlements to pollute as traded under the EU ETS do not rise to this level; they are not Polanyian fictitious commodities. These commodified entitlements to pollute are instead socially and administratively constructed *real* commodities (at least in a Polanyian sense): they are fabricated for exchange in markets but are not, in any direct sense, foundational elements of economic (or ecological) life.

The sociological and historical implications of all these observations—empirical and analytical—are that new and market-oriented governance institutions like the EU ETS might be less like novel creatures of post-1970s neoliberalism than is commonly assumed (cf. Foster, Clark, and York 2009; MacNeil and Paterson 2012; Lohmann 2011; Büscher, Dressler & Fletcher, 2014; Fraser, 2014; Büscher & Fletcher, 2015; Bohr, 2016). Instead, these and other markets in nature might be closer relatives of mid-century regulatory Keynesianism, albeit wrapped up in a market-oriented institutional veneer. The EU ETS, after all, turns out to be a heavily interventionist regulatory institution engineered to help ecologically embed the economy—at least in terms of reducing greenhouse gas emissions—while also generating sizable sums of public revenue for social and ecological benefit. Carbon markets and emissions trading schemes could reasonably become critical components of newly developing “green” welfare states.

But regulatory Keynesianism does not imply revolutionary institutional transformations. Market-oriented forms of environmental governance like the EU ETS have so far generated relatively disappointing reductions in carbon pollution; these market-oriented approaches to ecologically embedding the economy may offer too little, too late by way of addressing the pressing challenges of climate change. As Carton (2014) points out in an insightful analysis, the problem does not seem to be that institutions like the EU ETS commodify nature and risk further subjecting ecology to the whims of free markets. The problem may in fact be the opposite: that these institutions help stabilize extant market economies and slow ecological destruction to politically tolerable but ecologically untenable rates. In more

explicitly Polanyian terms, projects of environmental protection via commodification might help to produce moderate levels of ecological embeddedness when, in fact, growing ecological crises demand much more rapid and far-reaching social and economic transformations (see e.g. Oreskes & Conway, 2014; Cipler, Roberts & Khan, 2015; Dunlap & Brulle, 2015; Ostrom, 2016; Nolan et al., 2018). Carbon markets, in short, may help to depoliticize responses to climate change (Felli, 2015; Dempsey & Suarez, 2016). This presents a new paradox: it is exactly their effectiveness as embedding institutions—not disembedding ones!—that may make market-oriented schemes like the EU ETS inadequate as solutions to the pressing problems presented by climate change. One can only hope that politics and countermovements of other sorts speed up the emissions reductions these market-oriented schemes have generated so far.

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