**1AC**

**Resolved: The United States Federal Government should substantially increase prohibitions on anticompetitive business practices by energy companies by**

* **expanding the scope of its core antitrust laws to account for “total welfare”**
* **establishing a “green antitrust policy” by establishing an upstream carbon fee on greenhouse gas emissions, with all revenue reimbursed as dividends to the population, that rises with the federal estimates of the Social Cost of Carbon.**

This means the tax would start at $51, the SCC of the Biden admin and raise at 1-2%/year

**The consumer welfare relies on a “market failure” approach that is impossible to prove and fails to address systemic risks like climate change. Only expanding the scope of the CWS to account for total welfare can address systematic failure.**

**Miazad 21** (Amelia Miazad is Founding Director and Senior Research Fellow of the Business in Society Institute at Berkeley Law., “PROSOCIAL ANTITRUST”, Prosocial Antitrust (March 11, 2021). Available at SSRN: https://ssrn.com/abstract=3802194 or http://dx.doi.org/10.2139/ssrn.3802194)

While courts **routinely dismiss noneconomic or “non-welfare” justifications**, precisely what procompetitive reasons come into play is, as Justice Stevens famously stated, “an absolute mystery”.242 As Professor John Newman points out, the “relevant case law reveals multiple competing approaches and seemingly irreconcilable opinions” on what constitutes “beneficial”.243 After all, whether a particular activity is beneficial necessarily begs the question— beneficial to what end? Professor Newman traces this confusion to the use of three different tests by courts:

Under the “market failure” approach, a valid justification is present if—and only if—the challenged restraint alleviates a market failure. Alternatively, the “competitive process” approach attempts to condemn restraints that harm (and bless restraints that benefit) “competition” itself or the so-called “competitive process”. Lastly, the “type of effect” approach appears to offer a shortcut: simply identify the effects of the challenged restraint, then ascertain whether they align with a pre-approved typology of virtuous marketplace effects (e.g., higher output, lower prices, etc.).244

This Article agrees with Professor Newman’s doctrinal, normative, and practical arguments in favor of the market failure test.245 Most contemporary courts also hold that “alleviating a market failure is an acceptable procompetitive justification.”246 But the market failure test is fundamentally at odds with the market reality of **increasing universal ownership**. Two limitations explain its inability to account for systematic and portfolio-wide risks. First, the market failure test relies on the prevailing consumer welfare standard.247 That generally means that a particular restraint of trade must alleviate a market failure by increasing consumer surplus in order for courts to deem it a valid procompetitive justification.248 By fastening market failure to consumer welfare, the market failure test becomes indistinguishable from the “type of effect” approach, which also focuses on measurable impacts on consumers including output and price. Second, **the market failure test assumes the perspective of a single market, preventing it from capturing portfolio-wide systemic risks like climate change.**

To be clear, this Article is not arguing that antitrust law should abandon the consumer welfare standard and expand its purview to encompass noneconomic impacts. Rather, it argues that **the consumer welfare standard is too narrow to account for economic impacts on a portfolio-wide level.** The **total welfare standard** is most closely aligned with the market reality of universal ownership, although it has been largely abandoned by courts.249 It seeks to maximize the total surplus of all participants in a market, including consumers and producers. The total welfare test’s aggregate value approach is more closely aligned with universal ownership, but it also analyzes an individual market—as opposed to market-wide impacts— because a so-called “general equilibrium analysis” is impractical. Developing a standard that aligns with the market reality of concentrated ownership is beyond the scope of this Article. This Article does argue, however, that **the current consumer welfare standard impedes collaboration to address systematic economic risks**, as the next Part explores

**Climate change is a system disruptor and a risk amplifier---only mitigation prevents biodiversity loss, marine ecosystem collapse, resource wars, global food scarcity, and extreme weather events. Uniquely—has disparate impacts.**

**Pachauri & Meyer 15** (Rajendra K. Pachauri Chairman of the IPCC, Leo Meyer Head, Technical Support Unit IPCC were the editors for this IPCC report, “Climate Change 2014 Synthesis Report” <http://epic.awi.de/37530/1/IPCC_AR5_SYR_Final.pdf> IPCC, 2014: Climate Change 2014: Synthesis Report. Contribution of Working Groups I, II and III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change [Core Writing Team, R.K. Pachauri and L.A. Meyer (eds.)]. IPCC, Geneva, Switzerland, 151 pp)

SPM 2.3 Future risks and impacts caused by a changing climate

Climate change will **amplify existing risks** and **create new risks for natural and human systems**. Risks are unevenly distributed and are generally greater for disadvantaged people and communities in countries at all levels of development. {2.3}

Risk of climate-related impacts results from the interaction of climate-related hazards (including hazardous events and trends) with the vulnerability and exposure of human and natural systems, including their ability to adapt. Rising rates and **magnitudes of warming** and other changes in the climate system, **accompanied by ocean acidification**, increase the risk of severe, pervasive and in some cases irreversible detrimental impacts. Some risks are particularly relevant for individual regions (Figure SPM.8), while others are global. The overall risks of future climate change impacts can be reduced by **limiting the rate and magnitude of climate change**, including ocean acidification. The precise levels of climate change sufficient to trigger abrupt and irreversible change remain uncertain, but the risk associated with **crossing such thresholds increases with rising temperature** (medium confidence). For risk assessment, it is important to evaluate the **widest possible range of impacts**, including low-probability outcomes with large consequences. {1.5, 2.3, 2.4, 3.3, Box Introduction.1, Box 2.3, Box 2.4}

A large fraction of species faces **increased extinction risk** due to climate change during and beyond the 21st century, especially as climate change interacts with other stressors (high confidence). Most plant species cannot naturally shift their geographical ranges sufficiently fast to keep up with current and high projected rates of climate change in most landscapes; most small mammals and freshwater molluscs will not be able to keep up at the rates projected under RCP4.5 and above in flat landscapes in this century (high confidence). Future risk is indicated to be high by the observation that natural global climate change at rates lower than current anthropogenic climate change caused significant ecosystem shifts and species extinctions during the past millions of years. **Marine organisms will face progressively low**er **oxygen levels** and high rates and magnitudes of ocean acidification (high confidence), with associated risks exacerbated by rising ocean temperature extremes (medium confidence). **Coral reefs and polar ecosystems are highly vulnerable**. Coastal systems and low-lying areas are at risk from sea level rise, which will continue for centuries even if the global mean temperature is stabilized (high confidence). {2.3, 2.4, Figure 2.5}

Climate change is projected to undermine food security (Figure SPM.9). Due to projected climate change by the mid-21st century and beyond, global marine species redistribution and marine biodiversity reduction in sensitive regions will **challenge the sustained provision of fisheries** productivity and other ecosystem services (high confidence). For wheat, rice and maize in tropical and temperate regions, climate change without adaptation is projected to negatively impact production for local temperature increases of 2°C or more above late 20th century levels, although individual locations may benefit (medium confidence). Global temperature increases of ~4°C or more 13 above late 20th century levels, combined with increasing food demand, would pose large risks to **food security globally** (high confidence). Climate change is projected to reduce renewable **surface water and groundwater resources** in most dry subtropical regions (robust evidence, high agreement), **intensifying competition for water among sectors** (limited evidence, medium agreement). {2.3.1, 2.3.2}

Until mid-century, projected climate change will impact human health mainly by exacerbating health problems that already exist (very high confidence). Throughout the 21st century, climate change is expected to lead to **increases in ill-health** in many regions and especially in developing countries with low income, as compared to a baseline without climate change (high confidence). By 2100 for RCP8.5, the combination of high temperature and humidity in some areas for parts of the year is expected to compromise common human activities, including growing food and working outdoors (high confidence). {2.3.2}

In urban areas climate change is projected to increase risks for people, assets, economies and ecosystems, including risks from **heat stress**, **storms** and **extreme precipitation**, **inland and coastal flooding,** **landslides**, **air pollution**, **drought**, **water scarcity**, **sea level rise** and storm surges (very high confidence). These risks are amplified for those lacking essential infrastructure and services or living in exposed areas. {2.3.2}

Rural areas are expected to experience major impacts on water availability and supply, food security, infrastructure and agricultural incomes, including shifts in the production areas of food and non-food crops around the world (high confidence). {2.3.2}

**Aggregate economic losses accelerate with increasing temperature** (limited evidence, high agreement), but global economic impacts from climate change are currently difficult to estimate. From a poverty perspective, **climate change impacts are projected to slow down economic growth**, make poverty reduction more difficult, further erode food security and prolong **existing and create new poverty traps**, the latter particularly in urban areas and emerging hotspots of hunger (medium confidence). International dimensions such as trade and relations among states are also important for understanding the risks of climate change at regional scales. {2.3.2}

Climate change is projected to increase displacement of people (medium evidence, high agreement). Populations that lack the resources for planned migration experience higher exposure to extreme weather events, particularly in developing countries with low income. **Climate change can indirectly increase risks of violent conflicts** by amplifying well-documented drivers of these conflicts such as poverty and economic shocks (medium confidence). {2.3.2}

**Climate change is a regressive social inequity**

**Levy & Patz 15** (Barry S.LevyMD, MPH Jonathan A.PatzMD, MPH, “Climate Change, Human Rights, and Social Justice”, Annals of Global Health Volume 81, Issue 3, May–June 2015, Pages 310-322)

The environmental and health consequences of climate change, which disproportionately affect low-income countries and poor people in high-income countries, **profoundly affect human rights and social justice**. Environmental consequences include increased temperature, excess precipitation in some areas and droughts in others, extreme weather events, and increased sea level. These consequences adversely affect agricultural production, access to safe water, and worker productivity, and, by inundating land or making land uninhabitable and uncultivatable, **will force many people to become environmental refugees**. Adverse health effects caused by climate change include heat-related disorders, vector-borne diseases, foodborne and waterborne diseases, respiratory and allergic disorders, malnutrition, collective violence, and mental health problems.

These environmental and health **consequences threaten civil and political rights** and economic, social, and cultural rights, including rights to life, access to safe food and water, health, security, shelter, and culture. On a national or local level, those people who are most vulnerable to the adverse environmental and health consequences of climate change include poor people, members of minority groups, women, children, older people, people with chronic diseases and disabilities, those residing in areas with a high prevalence of climate-related diseases, and workers exposed to extreme heat or increased weather variability. On a global level, there is much inequity, with low-income countries, which **produce the least** greenhouse gases (**GHGs**), being more adversely affected by climate change than high-income countries, which produce substantially higher amounts of GHGs yet are less immediately affected. In addition, low-income countries have far less capability to adapt to climate change than high-income countries.

**Mitigation is the silver bullet increasing levels of climate change exponentially increase its negative consequences**

**Letzter 19** (Rafi, Staff writer for Live Science citing – Katharine Mach, a climate scientist at the University of Miami and one of several lead authors of the IPCC report., Lini Wollenberg, a University of Vermont climate researcher and leader of the CGIAR Research Program on Climate Change, Agriculture and Food Security, Colin Carlson, an ecologist at Georgetown University who studies how climate change influences infectious diseases, 9/26/19, “Are We Really Running Out of Time to Stop Climate Change?”, https://www.livescience.com/12-years-to-stop-climate-change.html)

But ultimately, all the researchers Live Science contacted said these **problems become less catastrophic with less warming**. Holding the world to a 1.5-C warming increase by the end of the century creates much more manageable short- and long-term problems than holding it to 2 C of warming, which is much less harmful to Earth than 3 C, which is much more survivable than 4 C, which is still less catastrophic than 6 C … and so on. None of those possible futures necessarily leads to a charred, lifeless global desert in our lifetimes. But **each increase is** almost **unimaginably more dire for life on this planet than the one preceding it.**

"**It's always worth it to prevent more warming,"** Mach said.

With regard to the spread of mosquito-borne diseases, Carlson said, "**We can stop it.** **Mitigating climate change is truly the silver bullet**. Sometimes it is as simple as, 'If we stop climate change, we can stop a lot of the bad health impacts that are coming.'" (Though the devil is in the details, he added. **The level of disease reduction will depend on how fast the carbon-mitigation project moves**, and its effects won't be felt immediately or equally everywhere.)

The science points relentlessly to one reality: **The best way to deal with climate change is to start cutting emissions now.** It's easier to stop warming by keeping CO2 in the ground now than it is to pull carbon out of the air later. **And mitigation makes adaptation much more effective.**

**AND--short term mitigation matters--the impact is exponential and increasing.**

**Desjardins 13** – member of Concordia university Media Relations Department, academic writer, citing Damon Matthews; associate professor of the Department of Geography, Planning and Environment at Concordia University, PhD, Member of the Global Environmental and Climate Change Center

(Cléa, “Global Warming: Irreversible but Not Inevitable,” http://www.concordia.ca/now/what-we-do/research/20130402/global-warming-irreversible-but-not-inevitable.php)

Carbon dioxide emission cuts will **immediately affect** the rate of future global warming Concordia and MIT researchers show Montreal, April 2, 2013 – There is a persistent misconception among both scientists and the public that there is a delay between emissions of carbon dioxide (CO2) and the climate’s response to those emissions. This misconception has led policy makers to argue that CO2 emission cuts implemented now will not affect the climate system for many decades. This **erroneous line of argument** makes the climate problem **seem more intractable** than it actually is, say Concordia University’s Damon Matthews and MIT’s Susan Solomon in a recent Science article. The researchers show that **immediate decreases** in CO2 emissions would in fact result in an **immediate decrease** in the rate of climate warming. Explains Matthews, professor in the Department of Geography, Planning and Environment, “If we can successfully decrease CO2 emissions in the near future, this change will be felt by the climate system when the emissions reductions are implemented **– not in several decades**." “The potential for a **quick climate response** to prompt cuts in CO2 emissions opens up the possibility that the climate benefits of emissions reductions would occur on the same timescale as the political decisions themselves.” In their paper, Matthews and Solomon, Ellen Swallow Richards professor of Atmospheric Chemistry and Climate Science, show that the onus for slowing the rate of global warming falls squarely on current efforts at **reducing CO2 emissions**, and the resulting future emissions that we produce. This means that there are critical implications for the equity of carbon emission choices currently being discussed internationally. Total emissions from developing countries may soon exceed those from developed nations. But developed countries are expected to maintain a far higher per-capita contribution to present and possible future warming. “This disparity clarifies the urgency for low-carbon technology investment and diffusion to enable developing countries to continue to develop,” says Matthews. “Emission **cuts made now** will have an **immediate effect** on the rate of global warming,” he asserts. “I see more hope for averting difficult-to-avoid negative impacts by accelerating advances in technology development and diffusion, than for averting climate system changes that are already inevitable. Given the enormous scope and complexity of the climate mitigation challenge, clarifying these points of hope is critical to motivate change.”

**Antitrust is historically a weapon of the elite, but it can be revitalized for public goods like climate change**

V. **Sodano** **2010.** University of Naples Federico II, Department of Agricultural Economics. “Food system and climate change: the false premises of antitrust Policy”

Introduction

According to recent estimates (IAASTD, 2008), the global food system is currently accountable for at least 30% of the global GHG emissions that cause climate change. Considering also emissions by indirect activities associated with food production and distribution, such as home storage and refrigerators, waste disposal, transportation by final consumers and so on, this estimate may rise dramatically to as high as nearly 50% of total emissions (Grain, 2009). Agribusiness corporations, backing a model of food production and distribution that functions by converting oil into food, are largely responsible for these huge emissions. Influencing the behaviour of food TNCs in such a way as to shift towards a more sustainable food model may greatly contribute to tackling global warming. Actions to induce food corporations to assume a more sustainable form of conduct come from both the private and the public sector. On the private sector side initiatives come from consumers (individuals and consumer associations), environmental associations and non governmental organizations. On the public sector side, there are at least three kinds of intervention: (1) direct regulation, based on a command-and-control approach; (2) ‘soft regulation’, including self-regulation, use of incentives, awards and accreditation systems, market-based initiatives, disclosure obligations and educational campaigns; (3) definitions of duties of corporations, through corporate law and competition policy. The paper stresses that, given that **reducing GHG emissions is comparable to a public good**, **only state intervention may be expected to be effective**. Moreover, given that corporations cannot be granted the same moral status as natural persons, even soft regulation, which requires some form of corporate social responsibility and therefore of corporate morality, cannot be effective. With regards to state intervention the paper analyzes the role of **competition policy**, showing how it **can help in fighting global warming, provided that it overcomes** the over thirty year lasting dominance of **the ‘Chicago paradigm’**. Global warming mitigation: the role of public and private sector It is a matter of fact that induced climate change is representative of a tragedy of the commons, a typical collective action problem. Maintaining a stable climate has the structure of a public good exhibiting both the property of non excludability and non rivalry. The free riding problem, i.e. the fact that non contributors can benefit from others’ GHG reductions without taking on costs themselves, prevents private rational actors from engaging in mitigation efforts. Beyond being a public good, the protection of a stable climate that fits human biological and economic needs, **can be considered to be a human right**. In particular, it is of the kind of second generation human rights, i.e. economic and social rights, grounded in the notion that government has affirmative obligations to protect individuals from deprivation of the basic material necessities of life. In the case of public goods, economic and social theories based on rational choice models hold that the market (i.e. the private sector) fails to supply them. Therefore**, the only effective provider is the state**, as the latter has the precise political mandate to accommodate for general public welfare against scattered private interests. With regards to human rights the general view is that the state has the ultimate duty to uphold them. The state can intervene either directly or indirectly. Direct interventions include: public investments in global warming mitigation; setting compulsory standards in defence of low emission production and consumption activities; imposing human rights duties on corporations for climate change and environmental harm; implementing tort liability laws that make private actors pay for damage to climate and environment. Indirect interventions include: market based incentives aimed at promoting private climate friendly behaviour; embracing a voluntary corporate social responsibility (CSR) approach that shifts the burden of public interest onto corporations, which are deemed to possess other-regarding preferences and moral values. In this paper it is claimed that only direct intervention can be effective because, in the case of market-based instruments, it may apply the same sources of market failure that the intervention seeks to correct. The voluntary CSR approach is not viable because it hinges on the false premise that corporations have the same moral status as natural persons. The moral status of corporations endorsed by scholars like French (French, 1984) is to be rejected when the three necessary conditions for moral agency are examined: the ability to intend an action; the ability to perform an action; the ability to autonomously choose an intentional action. In the case of conglomerate collectives, such as corporations, these conditions are not fulfilled (Ronnegard, 2006: 82) and therefore they do not qualify as moral agents conceived as distinct from their members. Consequently, corporate moral responsibility attributions to collectives as distinct from their corporate members are illegitimate. Competition policy and climate change: the perspective of the Chicago school Given that only direct intervention by the state can assure adequate levels of global warming mitigation, the issue to be addressed is what role competition policy, among other forms of public intervention, can have in promoting corporate climate friendly behaviour. Competition policy originated in the US in 1890 with the Sherman Act. In the European Union the first antitrust regulation was set by the treaty of Rome in 1957. There are commonly described three historical phases of US antitrust law implementation, the first dating from 1890 to 1940, the second from 1945 to 1975 and the third from 1970 to the present (Viscusi et al., 2005). These three phases have been characterized by different economic and political theories incorporating two different ideologies of the market and the state: the evolutionary vision and the intentional vision (Page, 2008). The evolutionary vision views the market, framed solely by laws on property and contracts, as a mechanism for facilitating free exchanges among countless individuals in the pursuit of their best interests. In this vision, the market without state intervention naturally tends to a perfect competition ideal form destroying monopoly. On the contrary, the intentional vision views the market as a mechanism within which powerful interests can coerce consumers, labour and small businesses. In this vision markets tend toward monopoly unless government intervenes. The political economic theories corresponding to these two visions are the laissez-faire and the welfare state theories. The more the intentional vision is preferred to the evolutionary vision, the greater is the scope and the enforcement of antitrust law, and vice versa. The Sherman Act and the first period of antitrust law implementation embodied a compromise between the two visions. Notwithstanding the faith in the market, coherent with a strong liberal theory of the state, it was recognized as a matter of fact that monopolies and extreme economic power concentrations actually occur in the real world, producing social inequalities and injustice. At that time, state intervention was intended as a way to promote social justice and mediate among class conflicts in society. In the second period, the intentional view prevailed. Stemming from the disillusionment with markets during the Great Depression, the New Deal initiated the era of the welfare state based on the idea, supported by the growing economic literature on market failure, that economic state intervention should be legitimated by efficiency more than by equity concerns. The years between 1950 and 1970 are the golden era of antitrust legislation. The view of the markets taken up by the Court was that of recognition that coercion is the reality of market relationships. That is to say that in contrast with the previous ideological faith in the freedom of contracts, it was acknowledged that in a market transaction each party may be forced by the bargaining power of the other to accept unfair payments and obligations. Along with these views, the then prevailing theory of industrial organization, the structure-conduct-performance paradigm, facilitated a strong enforcement of antitrust legislation, holding that the mere measure of market share was sufficient to witness the presence of market power and monopoly inefficiencies. By the mid-1970s the evolutionary view completely dismissed the intentional view with the uprising of the so called Chicago school of antitrust. Chicago scholars applying neoclassical economics maintained that unfettered markets always lead to the best social outcomes. They pointed out that many of the practices that the courts had been viewing as harmful to competition and economic welfare, such as vertical restraints, may instead improve economic efficiency. Moreover they contested the structuralist view by claiming that a firm’s large market share may signal superior efficiency and that, consistently with the contestability theory (Baumol et al., 1982), freedom of entry is the only parameter to be scrutinized by antitrust laws. The general wisdom of the Chicago school was that state intervention and regulation is always harmful to the general interest. The Chicago ‘revolution’ has made competition policy a useless instrument for reaching goals of general interest such as providing public goods and promoting social justice. **In order to make competition policy a useful instrument against global warming,** it is necessary to reject some assumptions of the **Chicago antitrust school** and revive instead the conventional wisdom of the previous approaches in the wake of the intentional view. Among the assumptions to be scrutinized are those related to the three following issues: the theory of the firm; the nature of corporation; the goals of antitrust policy. The Chicago approach endorses a neoclassical theory of the firm where the firm is defined by a technical production function. The neoclassical theory of the firm, even in its modern neo-institutional version that accounts for transaction costs, explains a firm’s behaviour exclusively through the efficiency argument (exploitation of scale and scope economies). According to Chicago scholars, large size and above-normal returns must be due to efficiency differentials between firms. In their world made of equilibria and complete contracts, power-seeking behaviours are not conceivable (Raghuram and Zingales, 1998). Organizational, institutional and cognitive problems addressed by alternative theories (such as managerial, evolutionary, property rights, and behavioural theories) are dismissed as trivial. With regards to the legal debate on the nature of corporations (the latter defined as economic organizations whose members are granted limited liability by incorporation statutes), the Chicago view is consistent with the Nexus-of-Contracts theory, which contrasts the two alternative theories, namely the Legal Fiction and the Real Entity theories (Ronnegard, 2006). The Nexus-of-Contracts theory depicts the corporation as a web of contracts among all the members, which implies that it should not be regarded as a separate legal entity from the shareholders and that rights and duties can be defined only with regards to its members. Because the corporation is the result of a free contract, it is not dependent upon state grants and the same act of incorporation (granted by the state) is only a shorthand way of obtaining a contractual situation equivalent to that which could materialize through the private contracting of individuals. This conception of corporation is based on a libertarian ideology that says that corporations ought to merely be a commercial instrument for furthering the ends of the incorporating parties. Because corporations are not autonomous entities, any moral status (and therefore social responsibility) is ruled out, and because they are not a ‘creature’ of the state but the result of free contracts, they cannot be given rules and duties by the state. Therefore, one cannot expect them to provide public goods, such as climate stabilization, either voluntarily or compulsorily. Finally, as regards the goals of antitrust, the Chicago school states that antitrust policy ought to deal only with **consumer losses** due to high prices and/or output restrictions (Burns, 2006). Any equity concern about wealth distribution or unfair business practices is dismissed. For instance, in the Chicago view low final prices generally signal efficiency and practices like predatory pricing, reciprocal selling and cross-subsidization by conglomerates, unfair procurement contracts, and so on, are given little attention. All these three sets of assumptions entail that corporations pertain to the private more **than to the public sphere** and that antitrust pertains to the economic more than to the political sphere. In consequence, corporations should not be required to seek public goals (like providing public goods such as climate stabilization) and antitrust should not be required to seek goals like equity and justice (among which climate justice) but should only pursue economic efficiency in terms of low consumer prices. Competition policy and climate change: reversing the false premises of the Chicago school Stemming from the intentional vision, and in opposition to the evolutionary vision of the Chicago school, **the previous assumptions can be reversed in such a way as to justify a wider scope of antitrust policy** able to encompass the goal of climate stabilization. **The first** hypotheses to be reversed **are those** **concerning** the theory of **the firm** and the nature of the corporation. Firms cannot be described purely as technical production functions but as institutions (as economic theory had to acknowledge after the seminal work of Coase of 1937) that in some way substitute the market with power as means of resource allocation. Like states, firms exercise power in various forms, either inside their organizational boundaries or outside, over their competitors, their suppliers, their customers and the same state, through lobbying and bribing. Modern corporations are firms which, through the limited liability and other rights granted by the state (such as unlimited life span, unlimited asset acquisition, complete flexibility and mobility in business conduct, constitutional rights equal to those of natural persons), possess even superpowers (Nace, 2003; Korten, 2001), i.e. powers that cannot be enjoyed by a single individual and even less (because of territorial limits) by a single state. Because corporations are legal persons, with specific rights granted by the state, their nature cannot be described through the Nexus-of-Contract theory endorsed by the Chicago School. Their nature is better described by the Legal Fiction theory. The Legal Fiction theory essentially says that the corporation is merely an abstract creation of law which is granted to an association of individuals. The corporation is an artificial legal entity with an existence distinct from the incorporating members and exists entirely at the discretion of the state. The Legal Fiction theory differs from the Nexus-of-Contract theory which does not recognize the corporation distinct from its members and does affirm that it is independent from the power of the state because it is the result of free contracts by individuals. The Legal Fiction theory also differs from the Real Entity theory that considers corporations to be real, social organisms that possess a will and life of their own, with characteristics that are distinct from their individual members. Similar to the Nexus-of-Contracts theory, the Real Entity theory rejects the notion that corporation is a creation or grant from the state. However, differently from the Nexus-of-Contracts theory, the Real Entity theory claims that corporations ought to be granted legal rights as natural persons, rights which are owed to the corporation itself as a separate organism and are not derived from the rights of the individual members. The Legal Fiction theory is the only theory on the nature of corporations that is consistent with the advocacy of an antitrust regulation aimed at directly controlling and limiting the scope of activity of corporations. Because corporations are legal persons they can be given rights and duties. Nevertheless, because they are not natural persons, as instead envisaged by the Real Entity theory, they do not automatically enjoy basic rights (like the rights to free speech and due process of law) and do not possess moral responsibility. Because they are creatures of the state, they do not have their own life and in the divide between the private and public sphere they can be put somehow on the public side. Shifting from the idea of corporations as private efficiency-seeking organizations to the idea of corporations as social bodies enjoying large powers by virtue of state grants allows us to recognize that corporations may have an important role in addressing general social problems like global warming. Two arguments must be considered. First, because the power of corporations, including the power to affect global warming, depends on state grants, state regulations and obligations imposed on corporations in order to contribute to climate stabilization cannot be considered as illegitimate limitation to private freedom (as envisioned by Chicago scholars and neo-liberalists). Such regulations and obligations should instead **be considered a due act of governance** involving subjects (state regulators and corporations) that both pertain to the public sphere. Secondly, obligations imposed on corporations may be of the kind of human rights duties in case of environmental harm (Mabaquiao, 2002). It is worth noticing that rights are, after all, a response to the problem of power; in particular human rights are asserted in order to protect individuals from abuse of power by states. When one recognizes that many TNCs are really as powerful as or more powerful than many states, it does make sense to treat them as duty-holders, with the same obligations as the states to uphold human rights (Sinden, 2007). It is also important to notice that, because according to the Legal Fiction theory corporations do not possess moral responsibility, we cannot rely on CSR or voluntary codes of conducts as ways to protect the public from environmental harm and any power abuse made by corporations. The second set of hypotheses to be reversed is that concerning the definition of the scope of antitrust policy. It is general wisdom that antitrust policy should prevent excesses in exercise of power by large firms. The difference between the Chicago School and alternative approaches based on the intentional view is with the kind of power at stake. The Chicago school only considers market power in the form of high consumer prices. Alternative approaches instead look at different kinds of power: the bargaining power towards suppliers and employees; the power to choose technologies and products with different environmental impacts; the power to influence the political arena; the power to ‘capture’ regulators; the power to influence cultural and social values; and even more. If antitrust policy has to deal with all these kinds of power then it must widen its scope, adding to the economic goal efficiency, social and political goals, such as business fairness, distributive equity, environment protection, enforcement of human rights and so on. In this perspective, **antitrust policy should provide incentives** (either positive or negative) **for business firms to pursue public goals**, **such as global warming mitigation.** Conclusion The global food system is populated by many large TNCs (Etc.Group, 2008). These corporations have de facto become a key part of the fabric of global environmental governance. In their role as investors, polluters, experts, manufacturers, lobbyists and employers, corporations are central players in environmental issues. While necessary, voluntary action on the part of corporations and consumers is not alone sufficient to mitigate the worst effects of global warming. However, in the food sector, voluntary actions have been weak and sparse so far (Cogan, 2006). For instance in the Ceres report (CERES, 2008), which rates firms by their achievements in climate-related corporate governance, there are no companies from the food sector among the top ten firms. Among the bottom twelve there are instead three food giants: ConAgra, Bunge, and PepsiCo. Climate stabilization, as in general environmental protection, is a public good and as such is not provided by the private sector but needs public intervention. Among the many kinds of public intervention, the paper has focused on antitrust legislation. At its origin, antitrust legislation was conceived as a means to mitigate power wielded by large corporations in society. With the spread of neo-liberalism from the mid-1970s, the Chicago School radically changed the meaning and the scope of antitrust laws, with drastic changes in its enforcement (Mueller, 2009). The general claim of this paper is that it **is necessary** to go back to the original spirit of antitrust legislation which endorses an idea of corporation as an artificial powerful legal entity created by the state in order to serve the public interest. Only in this way can large firms, in particular TNCs in the food sector, **be expected to comply with environmental regulations and guarantee human rights.**

**It is not enough to come up with answers to the issue of climate change without a possible path towards achieving sustainable development through economic and political means. Strength of integration of economics into climate policy is key.**

**Polasky 19** (Stephen Polasky, aThe Beijer Institute of Ecological Economics, Royal Swedish Academy of Sciences, SE-104 05 Stockholm, Sweden; Catherine L. Kling, Simon A. Levin, View ORCID ProfileStephen R. Carpenter, View ORCID ProfileGretchen C. Daily, Paul R. Ehrlich, Geoffrey M. Heal, and Jane Lubchenco)

The environmental sciences have documented large and worrisome changes in earth systems, from climate change and loss of biodiversity, to changes in hydrological and nutrient cycles and depletion of natural resources (1⇓⇓⇓⇓⇓⇓⇓⇓⇓⇓–12). These global environmental changes have potentially **large negative consequences for future human well-being**, and **raise questions about whether global civilization is on a sustainable path** or is “consuming too much” by depleting vital natural capital (13). The increased scale of economic activity and the consequent increasing impacts on a finite Earth arises from both **major demographic changes**—including population growth, shifts in age structure, urbanization, and spatial redistributions through migration (14⇓⇓⇓–18)—**and rising per capita income and shifts in consumption patterns**, such as increases in meat consumption with rising income (19, 20).

**At the same time, many people are consuming too little**. In 2015, ∼10% of the world’s population (736 million) lived in extreme poverty with incomes of less than $1.90 per day (21). In 2017, 821 million people were malnourished, an increase in the number reported malnourished compared with 2016 (22). **There is an urgent need for further economic development to lift people out of poverty**. In addition, rising inequality resulting in increasing polarization of society is itself a threat to achieving sustainable development. Eliminating poverty (goal 1) and hunger (goal 2), achieving gender equality (goal 6), and reducing inequality (goal 10) feature prominently in the United Nation’s Sustainable Development Goals (23). A recent special issue in PNAS on natural capital framed the challenge of sustainable development as one of developing “economic, social, and governance systems capable of ending poverty and achieving sustainable levels of population and consumption while securing the life-support systems underpinning current and future human well-being” (24).

The discipline of economics arguably **should play a central role in meeting the sustainable development challenge**. The core question at the heart of sustainable development is how to allocate the finite resources of the planet to meet “the needs of the present, **without compromising the ability of future generations to meet their own needs”** (25). A central focus of economics is how to allocate scarce resources to meet desired goals; indeed, a standard definition of economics is the study of allocation under scarcity. More specifically, economics studies the production, distribution, and consumption of goods and services, which are both a key driver of development (increasing standards of living through providing food, housing, and other basic human requirements) and a main cause of current changes in earth systems. Economics, combined with earth system sciences, **is crucial for understanding both positive and negative impacts of alternatives and the trade-offs involved**. Economics, **combined with other social and behavioral sciences**, is crucial for understanding **how it might be possible to shift human behavior toward achieving sustainable development.** Economics has well-developed fields in development economics, ecological economics, environmental economics, and natural resource economics, with large bodies of research relevant to the sustainable development challenge. **The application of economic principles and empirical findings should be a central component in the quest to meet the aspirations of humanity for a good life given the finite resources of the earth**.

Indeed, an extensive body of work by economists provides key insights into aspects of sustainable development. At its best, this work integrates work by other natural and social sciences into a policy-relevant framework and demonstrates the rich potential for collaborations among economists, natural scientists, and other social scientists on sustainable development challenges. For example, economists have developed integrated economic and climate models to address important climate change policy questions, such as how much and how fast greenhouse gas emissions should be reduced (26⇓⇓⇓⇓–31). In 2018, William Nordhaus shared the Nobel Prize in economics, in large part for his seminal work on such models. These models have sparked large debates within economics over fundamental issues such as the proper discount rate (32⇓⇓–35), and with the natural sciences over the likely scale of damages from climate change (36, 37). Another Nobel Prize winner in economics, Elinor Ostrom, used economic models to highlight the importance of governance and institutions for sustainable use of common property resources (38⇓–40). Another important area of work by economists directly relevant to sustainable development defines and measures inclusive wealth (13, 41⇓⇓⇓⇓⇓⇓⇓–49). Ken Arrow, yet another Nobel Prize winner in economics, was a leader in this field. It is also notable that the intellectual roots of inclusive wealth trace to work in the 1970s of two Nobel Prize winners in economics, William Nordhaus and James Tobin (50). Inclusive wealth is a measure of the aggregate wealth of society, including the value of natural capital along with the values of human capital, manufactured capital, and social capital. Inclusive wealth is a sufficient statistic for showing whether or not global society is on a sustainable trajectory. For the past two decades, the Beijer Institute of Ecological Economics, part of the Royal Swedish Academy of Sciences, has held annual meetings bringing together leading economists and ecologists to discuss issues at the intersection of ecology and economics, which have resulted in a number of high-impact papers (51). The idea for a forum to highlight work in economics on environment and sustainable development originated at one of these meetings.

Despite these examples and many others, the center of gravity in the analysis of sustainable development remains in the natural sciences, **and the center of gravity in economics remains far removed from the challenge of sustainable development**. The natural sciences that form the core of earth systems science, including ecology, geology, climatology, hydrology, and oceanography, are a logical place to start to build understanding of the current state and the evolution of earth systems. Natural scientists have taken the lead in prominent analyses of pathways to achieve sustainable development. For example, Pacala and Socolow (52) outline feasible methods using existing technology to reduce greenhouse gas emissions to secure a livable climate. Foley et al. (53) analyze how to meet growing food demand without expanding the footprint of agriculture. Costello et al. (54) suggest how extensive fishery reform could result in improved productivity and ecosystem health. Tallis et al. (55) analyze how to improve material standard of living for a growing population in ways that simultaneously sustain biodiversity, reduce greenhouse gas emissions, and reduce water use and air pollution. These works show that it is feasible to achieve multiple sustainable development goals with existing technology. The harder challenge is combining what is feasible in a biophysical sense **with the difficult economic, political, and social hurdles that prevent society from getting to sustainable outcomes** (55). In other words, natural science understanding **is necessary but not sufficient to achieve sustainable development.**

While natural science understanding is insufficient on its own to achieve sustainable development, the same is true of economics. Economists alone do not have the knowledge base supplied by the natural sciences necessary to understand the complex ecological systems within which the economic system operates and on which economic activity causes impacts. **Progress in sustainable development requires collaboration** between social scientists, including economists and natural scientists. Of course, **achieving sustainable development requires institutions and political alignment that go well beyond assembling the science knowledge arising from integrated scientific knowledge.**

Numerous examples show the incomplete nature of collaboration between economists and other disciplines engaged in the analysis of sustainable development. To take one recent example, there were no economists involved in a special section on “Ecosystem Earth” published in Science in April 2017 that contained discussions of population, consumption, agricultural production, land use, human behavior, collective action, and policy (56). The lack of involvement by economists in ongoing discussions of sustainable development **leads to gaps in understanding production and consumption decisions, the resulting market outcomes that drive global environmental change, and how to regulate or reduce negative environmental impacts from economic activities.**

The incomplete engagement of economists mirrors the structure of the economics discipline. The fields of ecological, environmental, and resource economics are not core fields within economics. There are few ecological, environmental, or resource economics publications in flagship journals within economics. For example, in 2018 only two papers published in the American Economic Review listed classification codes for renewable resources and conservation, nonrenewable resources and conservation, energy economics, or environmental economics (57, 58). Only a small minority of the top economics departments have fields in ecological, environmental, or resource economics. In contrast, virtually every top economics program offers fields in labor economics, industrial organization, and international trade. Ecological, environmental, and resource economics programs often are in schools of the environment or natural resources, schools of public policy, or in departments of agricultural economics. In addition, economics is notable among academic disciplines for its relative isolation: “Though all disciplines are in some way insular…this trait peculiarly characterizes economics” (59). Compared with other social scientists, economists have far lower citation rates for work in other disciplines. Jacobs (60) found that the percentage of within-field citations in economics was 81%, versus 59% for political science, 53% for anthropology, and 52% for sociology. In addition, the core of the economics discipline is relatively isolated from the natural sciences that have played a large role in sustainability science to date, ecology, geology, climatology, hydrology, and marine biology. Network maps of disciplines using citations patterns often show economics and fields, such as ecology and geosciences, at opposite ends of the spectrum (figure 3 in ref. 61).

**Given the large role of economic activity in causing rapid change in earth systems, and the scale of the sustainable development challenge, there is an urgent need for more rapid integration of economics into the core of sustainable development, and for more rapid integration of sustainable development into the core of economics.**

**The plan is necessary—corporations are driven by profit incentives and allowing mergers and monopolies make solving the climate change impossible—they maintain perverse incentives that need to be reigned in. Any alternative leads to collusion!**

**Schinkel and Treuren 21.** Maarten Pieter Schinkel and Leonard Treuren. “Green Antitrust: Friendly Fire In The Fight Against Climate Change” <https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3749147>

4 **Not less but more competition leads to greater sustainability** The central question of whether it should be expected that firms will produce more sustainably in an anticompetitive agreement than in competition squarely falls on economics to answer. It is reasonable to base the analysis on two standard premises. The first is that (potential) consumers care about sustainability. Eichholtz et al. (2010) document a higher willingness to pay for office buildings with sustainability labels. Casadesus-Masanell et al. (2009) report a higher willingness to pay for T-shirts made with organic cotton. In a survey of the literature Kitzmueller and Shimshack (2012) conclude that willingness to pay depends in general positively on the degree of corporate social responsibility a firm engages in.23 More recently, Aghion et al. (2020) find that **green innovation is positively correlated with consumers’ stated sustainability preferences**.

A second premise is that, no matter how noble the initiatives may appear, **firms are ultimately driven by profit motives**. Rate of return incentives can certainly lead to intricate and forward-looking firm behavior, for instance investing in a good public image in order to attract more consumers. Running up short term losses with a CEO passionate about corporate social responsibility can therefore still be consistent with long term profit maximization. Yet under pressure of shareholders and investors, **firms are interested in sustainability initiatives first and foremost to increase their profitability**, in particular **through buyers’ higher willingness to pay**.24 The latter are the revenue returns to sustainability investments, which are costs. Therefore, companies will strive for profit-maximizing price increases and sustainability advances, for which cost-minimization is a necessary condition. That these incentives lead to little green is reflected in the literature on greenwashing. Firms certainly like to have a “green” public image, but when consumers cannot assess the true extent of their sustainability investments, they only undertake the minimum.25 In general, we should expect no less, and no more, from for-profit enterprises, both in competition and in coordination.

The relationship between competition and sustainability is studied in a limited but recently growing literature. The current **consensus** is that competition increases investments in sustainability, with firms investing in sustainability because it lowers their costs or allows them to stand out to consumers. Green, in other words, **is a dimension of product differentiation**. Bansal and Roth (2000), Porter and Kramer (2006), and Roulet and Bothello (2020) point out that corporate social responsibility (CSR) can be a strong competitive advantage. Graafland (2016) finds in survey data that price competition does not influence companies’ environmental performance ratings. Simon and Prince (2016) show that a reduction in industrial concentration in the United States is associated with a reduction in toxic releases at the factory level. Fernández-Kranz and Santaló (2010) and Flammer (2015) find that competition has a positive effect on CSR at the firm level, in studies of variation in import duties and concentration. Aghion et al. (2020) show that the positive relation between consumers’ stated sustainability preferences and the probability that a firm engages in green innovation increases with the degree of product market competition. This suggests that as pro-environment attitudes become more common over time, **the role of competition in fostering green innovation will only increase.** Ding et al. (2020) link antitrust policy to sustainability by showing that **stricter competition law regimes are positively associated with CSR, and that this link is stronger in countries where consumers indicate stronger pro-environment attitudes.**

Few papers study the relationship between horizontal agreements and sustainability directly. They relate to the literature on exempting research joint-ventures, which can increase R&D investments above competitive levels if spillovers of innovations are so large that unilateral investments are discouraged.26 For this reason, there is a broad exemption clause available for R&D joint-ventures, including for research into more sustainable production methods. However, with limited spill-overs, **competition is the stronger driver of R&D**. There is concern, therefore, that **mergers reduce innovation**.27 Importantly, sustainability initiatives of the kind considered for exemption, such as investments in cleaner technology or better quality of live for farm animals, have little or no spillover from one company to another. These cases, and the current green antitrust debate about advancing a transition to more sustainable ways of manufacturing, are primarily about the implementation of existing cleaner technologies, rather than about innovation.

Schinkel and Spiegel (2017) analyze the link between anticompetitive agreements and sustainability in a two-stage duopoly model where firms first select investments in sustainability and subsequently compete on the product market. They find that allowing the firms to coordinate their sustainability efforts **leads to the lowest sustainability levels**. Sustainability is a product attribute that consumers care about, and hence is used by firms to compete and attract each other’s customers. Treuren and Schinkel (2018) generalize these findings to more firms and remaining competition. Note that when firms coordinate prices and sustainability investments, **sustainability levels are still lower than in competition**. This means that if coordinating their sustainability investments allows the **companies to collude on prices** as well, a risk we noted above, **sustainability does not benefit from coordination.**

**Even a total shift in individual attitudes about climate change would benefit from a more competitive economic environment.**

**Schinkel and Treuren 21.** Maarten Pieter Schinkel and Leonard Treuren. “Green Antitrust: Friendly Fire In The Fight Against Climate Change” <https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3749147>

Proponents of green antitrust policy point out that today’s corporate leadership increasingly pledges allegiance to take responsibility for stakeholders more widely, including for their environment.28 They view profit-driven firm analysis as outdated, and Friedman’s appeal to it as an ancient belief.29 Green CEO’s may not even be controllable by shareholders anymore if they wanted to. Importantly, however, if firms operate with an intrinsic motivation to produce more sustainably too, **investments typically remain higher in competition than with sustainability agreements**, and the difference may even become larger. In Schinkel and Treuren (2021), the level of sustainability investments features directly in each firm’s objective function, besides in the profits part. Since intrinsically motivated investments are independent of the competitive regime, they are higher in absolute value in both competition and coordination. Moreover, **coordination reduces the additional intrinsically motivated green investments**, since the loss of profit due to increasing sustainability beyond the normal profit maximizing level is larger for firms who **jointly decide on sustainability**. That an intrinsic motivation to do green **makes anticompetitive agreements not more, but rather even less suitable to promote sustainability investments underlines our warning not to lean too far in sympathies for initiatives to take corporate social responsibility jointly.**

**AND it’s sufficient – Establishing a basis for “green anit-trust” creates government leverage for large-scale climate action**

**Schinkel and Treuren 21.** Maarten Pieter Schinkel and Leonard Treuren. “Green Antitrust: Friendly Fire In The Fight Against Climate Change” <https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3749147>

7 **Green antitrust** excuses government failure to regulate In the classical economic approach, damaging side-effects of market interactions are seen as externalities. **The solution is to force market participants to internalize these externalities.** The social costs of pollution, for example, then become part of the production costs to be expressed in the product prices. Higher prices decrease demand and thereby environmental damage, while higher costs incentivize firms to look for more sustainable production methods. This way, market forces are harnessed to benefit the environment. Through competition, an optimal allocation of production and consumption will result, based on a society’s preferences for the climate relative to consumption goods. The efficient allocation of scarce resources over alternative means then remains firmly based on consumer sovereignty, i.e. the preferences of the people.36 Care for the future has a prominent place in this framework. Welfare of future generations is taken into account, for instance through the intergenerational altruism and bequest motives of the current population.37 **This is** also **how the future can** consistently enterinto **competition authorities’ assessments** of green efficiencies. It is first and foremost a government task to ensure that the social costs of production are reflected in the private costs of manufacturers. **This can be done through taxation, or by ensuring that private property rights for climate-related issues are well defined, such that private parties will ensure that the costs of their use will be priced in.** **Where this is hard to achieve,** for instance because the source of pollution remains disputed, **governments can use direct regulation** **to force firms to produce in a more sustainable way**. Unsustainable production, like under-provision of public goods, is a well-understood market failure, but it is a government failure that well-known solutions have only been sparingly used in the last several decades. Trying to remedy this government failure by creating a market failure – market power – seems a response that is itself doomed to fail. To begin with, trying to have private market power advance public interests is orthogonal to key lessons of classical public economic theory. **One way of seeing this green antitrust policy is as mandating private companies to increase their prices by an overcharge, i.e. “tax” a private good**, **and to use that money to finance a compensating public good**; sustainability. Samuelson’s rule prescribes that public good provision should be increasing with the utility that people derive from the public good. But for an anticompetitive sustainability agreement, the higher the willingness to pay for sustainable products, the less sustainability the corporate cooperative needs to deliver to compensate consumers for a given product price increase. After all, consumers with a high appreciation for green can be made indifferent with less of it, compared with consumers that appreciate green little. There is no reason for a green corporate cooperative to invest more of its extra revenue in sustainability than it is minimally required to do: the rest it can pocket as profit. Government, though certainly imperfect, at least strives for optimal taxation and break-even public good provision. Companies with market power instead have an incentive to maximize their margin. In addition, green antitrust policy runs the risk of exacerbating government failure. That governments keep failing to live up to their **mandate to guarantee the public interest** has many reasons, including public choice incentives ranging from regulatory laziness to outright corruption. Being able to point to industry self-regulation, in the form of sustainability agreements in restriction of competition, is another perfect excuse for governments not to take up their regulatory responsibility. Why the effort to regulate, after all, if government officials can simply rely on private initiatives to help meet sustainability goals? This is exactly how Chicken (2015) entered the stage: the Dutch cabinet did not want to improve by regulation the abysmal circumstances in which poultry is reared, because it would apply to all chicken, including the vast majority bred for export purposes. Yet there was strong public pressure to act. The problem was conveniently redirected towards the ACM, which was subsequently reproached for refusing to exempt the meagre initiative. The green antitrust movement therefore insists on a turn that, once taken, risks leading us down a path where competition authorities are accused of standing in the way of sustainability initiatives, behind which accusations firms can hide as an excuse for not becoming more sustainable. That is barking up the wrong tree: where there is a need for coordinated implementation of more sustainable production, government should regulate it, and firms with such green initiatives should lobby the designated public authority for effective regulation, rather than the competition authorities for protection from competition.

**Emissions mitigation policy as an early mover is key to future abatement and preventing lock-in – solves leakage and green paradox.**

**Arroyo-Currás et al 15** (Tabaré Arroyo-Currás, Potsdam Institute for Climate Impact Research, Nico Bauer, Elmar Kriegler, Valeria Jana Schwanitz, Gunnar Luderer, Tino Aboumahboub, Anastasis Giannousakis, Jérôme Hilaire, “Carbon leakage in a fragmented climate regime: The dynamic response of global energy markets’, Technological Forecasting and Social Change Volume 90, Part A, January 2015, Pages 192–203)

5. Conclusions

Given the challenges to international cooperation on mitigating climate change, a number of climate policies have been implemented by various countries and regions, while others remain on the sideline. The heterogeneity of climate policy approaches has given rise to an internationally fragmented climate policy regime. Subsequently, global emission externalities such as carbon leakage have emerged as an important topic within the climate change mitigation debate.

This study illustrates the incidence and consequences of carbon leakage as an effect of early action in a fragmented climate policy regime. For this analysis, the REMIND integrated assessment model of the global economy, energy sector and the climate system is used to evaluate the environmental effectiveness and economic implications of unilateral and joint mitigation efforts. Overall, the main scope of this paper is to examine the role of carbon leakage via the energy channel, i.e. the increase in fossil fuel use in regions with weaker or non-existent climate policies due to more stringent mitigation action in other regions. The study also includes the capital market channel of carbon leakage.

We derive four main findings from our study. First, a reference policy scenario extrapolating fragmented action at current levels of ambition into the future will reduce emissions only modestly compared to the idealized case of immediate cooperative action on reaching a 450 ppm CO2e stabilization target (compare Blanford et al. [35]). Therefore, **a pioneering region adopting more stringent emission reductions may be needed to strengthen climate mitigation**. We show that the main impact on **additional emission reductions** does not come from the early mover action itself, but from the rest of the world following up with strengthening their abatement effort **post 2030**. Thus, a pioneer in adopting more stringent mitigation action needs to be particularly concerned with its ability to induce others to follow.

Second, the carbon leakage rate via the energy channel **is limited to below 16%** of the additional emission reductions from more stringent abatement action by pioneering regions. This result holds for different sizes and compositions of the early mover coalition. The carbon leakage mechanisms include the reduction of coal use in pioneering regions, or indirectly in other regions via knock-on substitution effects from reduced gas use in abating regions, leading to increased coal consumption in the rest of the world. While the type of mechanism and the regions that increase their fossil fuel consumption vary with the early mover coalition, **the general result of limited leakage stands**. This implies that carbon leakage, at least via the energy channel investigated here, **is not strongly impacting the emission reduction gains from early mover action**, and **does not permanently increase the lock-in into fossil fuel infrastructure in other regions**. It therefore does not provide a strong counter-argument against adoption of more stringent mitigation efforts by pioneering regions.

Compared with the scientific literature that mainly focused on the competitiveness channel the upper limit of 16% **carbon leakage rate due to the energy market channel is small** (Babiker [36]; Babiker [37]; Bernstein et al. [38]; Bollen et al. [39]; Burniaux and Oliveira-Martins [40]; Burniaux and Truong [41]; Gerlagh and Kuik [42]; Kuik and Gerlagh [43]; Light et al. [44]; Manne and Richels [45]; McKibbin et al. [19]). In the REMIND model the representation of international fossil fuel markets is highly flexible and fossil based energy **conversion technologies can easily replace alternatives**. Hence, fossil fuel suppliers can, in principle, find new demands easily, if demand is reduced due to unilateral climate policies. Carbon leakage via the energy market channel is mainly limited **due to trade costs of fossil fuels and demand for final energies in non-abating countries**. In the present study also the carbon prices of the moderate climate policies dampen the carbon leakage. Studies focusing on the competitiveness channel usually depend on the choice of trade elasticities with higher elasticities implying larger carbon leakage rates. In this study fossil energy trade is not limited in a similar way, and therefore limitations should imply even smaller carbon leakage rates.

Third, we observe that the re-allocation of emissions due to carbon leakage depends mostly on the energy system structure of the region that takes abatement action i.e. whether the region is a fossil resource importer (e.g. Europe), exporter (e.g. the United States) or de facto carbon intensive economy (e.g. China). We conclude that carbon leakage is a dynamic effect that mostly depends on (i) demand response of fuel importers to price changes, (ii) inter-fuel substitution possibilities and (iii) transportation cost barriers in the fossil fuel market.

Regarding the economic implications of fragmented climate action we confirm the assertion that early mitigation action leads to short-run GDP losses for the first movers, but **delayed implementation of the carbon tax can lead to larger losses after the introduction of the tax.** The larger tax shock can act as a significant barrier to take more stringent action and therefore delaying action might further impede the adoption of more ambitious carbon tax levels in the long run. We also find reallocation of GDP between early mover and late-comer regions triggered by the international capital market, but this is not a major driver of carbon leakage. This result is, however, different to the result of McKibbin et al. [19] who identified the converse effect on carbon leakage for the US.

Several caveats apply to the analysis here. First, the REMIND version used for this study does not take into account bilateral fossil fuel trade, but assumes a global pool trading scheme. Considering bilateral (or multilateral) trading reduces the flexibility of fossil fuel owners to redirect their supplies as some regions reduce their demand. Hence, this improvement might lead to lower leakage rates. Second, the study focused only on the energy channel of carbon leakage, although macro-economic substitution effects between energy, capital and labor were accounted for. Expanding the analysis of dynamic leakage in staged accession scenarios to a larger set of leakage channels, particularly including the re-allocation of energy intensive industries, would help to **better constrain the full carbon leakage effect**. It is worth mentioning that technology spillovers related to technology learning are not observed in this study.

We conclude from the results that the value of individual regions or coalitions adopting more stringent climate action rises or falls with their ability to induce others to follow suit. Thus, while global cooperation on climate mitigation may prove illusory in the short run, **credible and strong mitigation action by major countries can help to keep the door open for future global action to stabilize climate change as carbon leakage effects are limited**.

**Even small carbon price increases impact behavior—changes consumption patterns**

**Hsu 11** (Shi-Ling Hsu, Professor of Law at University of British Columbia – previously Associate Prof at George Washington School of Law, Senior Attorney & Economist for the Environmental Law Institute The Case for a Carbon Tax: Getting Past our Hang-ups to Effective Climate Policy, Island Press Page 139-142)

While curmudgeons may grudgingly concede that a high carbon tax like that in Sweden would reduce emissions, a smaller one like the British Columbia carbon tax is a different matter. When the British Columbia government introduced its carbon tax in 2008, it admitted that its modest price effects would not have a substantial effect on car- bon dioxide emissions in the province. 41 More action was needed, and was in fact contemplated as the British Columbia government also en- acted a companion program laving the foundation for a cap-and-trade program as part of British Columbia's participation in the California- led Western Climate Initiative. But the carbon tax is indeed so small that one wonders if it really was meant to accomplish anything. The BC carbon tax was designed to ramp up from about $9 per ton of C02 in 2008 to about $30 in 2012. This translates into about 2.4 cents per little of gasoline, up to about 7.2 cents per liter in 2012. Gasoline prices fluctuate a great deal more than that, spiking in 2005 in the aftermath of Hurricane Katrina to more than $1.12 per liter, only to see a higher spike in the summer of 2008 to nearly $1.50, fol- lowed by a dip just a few months later to below 80 cents. 42 In Vancou- ver, gas stations even commonly lower the price by three and a half cents at nighttime. Does an extra 2.4 cents—or even 7 cents—per liter really change behavior very much?

It is a fair question. The standard economic answer is that a price increase will lead to a decline in consumption. It could take a while, but higher prices always lead to lower consumption, all other things being equal. So for the household wondering if it will drive less be- cause of a small increase in the price of gasoline, the answer could well be no, but there are many, many other consumers that could be right at the margins of making a consumption decision. Price elasticity is the term that economists use to denote how much of an adjustment con- sumers, in the aggregate, can be expected to make in response to a price change. Consumption of commodities respond not only to changes in the price of the commodity itself—measured by the own- price elasticity—but also changes in the prices of other goods that may be substitutes or affect the economic environment some other wav— measured by the cross-price elasticities. Finally, consumption of com- modities can change to varying degrees as income changes— measured by the income elasticity. Bread and milk have low income elasticities. Sports cars and cosmetic surgery have high income elasticities.

Most energy analysis is conducted on own-price elasticities, al- though income also figures very prominently in energy consumption. There are short-term and long-term elasticities—adjustments that are made in the relatively short term—on the order of a few months—and those that are made for the longer term. Long-term elasticities are in- variably greater, since at any given time, the timing may or many not be right for any individual household to make an adjustment. Over a longer period of time, there arise more and more times during which an adjustment—some decision that might be affected by a price— seems appropriate. For example, a family that has just purchased a new sport-utility vehicle would not contemplate replacing it even if gaso- line prices rose sharply. One would expect very few adjustments of that sort. However, over a five- or ten-year period, as the sport-utility vehi- cle starts to age and incur more maintenance costs, and as it nears the end of its useful life, a replacement decision is more likely to take into account gasoline prices. As the same family contemplates what they will buy to replace that sport-utility vehicle, the family has a wider ar- ray of options available than it does when it has a brand-new shiny SUV. And in the aggregate, over a longer period, more and more households are likely to arrive at that decision point at which they con- template replacing an aging vehicle, and more adjustments are likely to be made. As long-term elasticity takes into account this greater number of adjustments, it would naturally be larger than short-term elasticities.

Among commodities, fossil fuel usage is one of the more studied phenomena, **and the likelihood that people adjust to even small price changes in fossil fuel price is so well-established that it almost rises to the level of an economic maxim**. While one might ask oneself whether a family might change their mind about anything if the carbon price is as small as $9 per ton of C02 (translating into 2.4 cents per liter at the gas pump), there are a myriad of other decision makers that could well change their behavior. As argued above, the University of British Columbia is just such an entity. Facing a tax liability that would be consid- ered small by industrial standards, but significant to an academic institution or a medium-sized business or industry, it set about finding ways to reduce its reliance on fossil fuels for powering the campus.

For decades, economists have been studying the aggregate responses to change in energy prices. The range of estimates can be quite large, as some studies are limited to certain regions or countries, and some ate limited in time, so the economic environment in which price changes are studied can be quite varied. As an empirical matter, it is safe to say that long-term elasticities are indeed greater than short- term elasticities. It is also likely that industrial and commercial consumers have larger long-term elasticities than residential consumers. 43 So it might be misleading for individuals to examine their own personal situation and ask themselves, "would I turn down my thermo- stat if the price of natural gas went up by 5 percent?" The point is how much, in the aggregate, all consumers of energy change their behavior, and on this score, industrial and commercial consumers, which ac- counted for half of all energy consumption in the United States in 2008 (with residential accounting for 22 percent), 44 would provide a different answer.

**Pragmatism is better than purity**

Frederic C. **RICH**, J.D., University of Virginia School of Law, practiced at Sullivan & Cromwell LLP (1981-2014), Vice Chair of the Land Trust Alliance, head of the Environmental Leaders Group in New York State, **16** [*Getting to Green*, 2016, p. 196-198]

Bill Clinton recently said of the U.S. Constitution, "[I]t ought to be subtitled: 'Let's make a deal.'"10 He's right. But the Green movement has for decades been led by policy experts who are confident that their policies present the best solutions to environmental issues and who often are unwilling to consider alternatives, or accept incremental progress when a comprehensive solution is not possible. Green advocates have appeared to many to prefer confrontation to compromise, and Green colleagues are often harsh in criticizing others [END PAGE 196] who accept partial solutions or show willingness to deviate from the movement's ask in order to show some progress.11

Even after the fact, Green orthodoxy often paints landmark compromises as failures. David Brower, longtime head of the Sierra Club, came to regret the deal that saved Dinosaur National Monument because it involved a compromise that permitted a single dam at the spectacular Glen Canyon.12 Rejection of compromise is deeply embedded in the DNA of the more radical part of the movement. Earth First!, for example, has as its slogan "No compromise in the defense of Mother Earth." And although the rest of the movement does not share the approach of these more radical groups, their rhetoric echoes in the consciences of mainstream Greens. As a result, among Greens **purity** too often is prized above **pragmatism**. The former president of the Izaak Walton League complains bitterly about some of his colleagues in the Green movement, where, he says, "people often want to be viewed as the most holy defender of the faith, rather than the most effective at making progress."13

The Green movement has had a particular problem accepting incrementalism, although recent history is filled with examples, such as the **gradual tightening of fuel efficiency and auto emissions standards**, that are **successful models** of exactly this approach. In some cases opposition to incremental gain is strategically sound, or is simply a tactic designed to improve and broaden the scope of a law or rule. But when it results in positive legislation or regulation being stalled or killed, with no realistic hope of anything better replacing it, then **it is a mistake**. When motivated by pure politics, such as the desire to deny the Republicans an environmental victory, then it is a betrayal of our environmental mission for partisan gain.

Greens also sometimes seem to take pride in spewing out "big thinking" without regard to its political feasibility. Gus Speth, for example, wrote, "If someone says these proposals are impractical, [END PAGE 197] or politically naïve, then I would respond that we need impractical answers."14 These habits—reluctance to compromise, distrust of incrementalism, and insufficient attention to pragmatism—have **contributed to the movement's failures** and resulted in missed opportunities to make at least some progress on climate change. Any well-managed organization should insist that results define success. If the perfect policy is dead on arrival as a political matter, **then compromise**. The environmental movement is funded by its supporters to make a difference in the environment. So figure out what is achievable and go for that, even if it means you are negotiating with yourself, compromising before you sit down at the table with the other side, or "thinking small," all of which have been cardinal sins in many NGO cultures. **Incremental progress is progress, and progress is what is urgently needed**.

**Working within the system is necessary to solve particular instances of climate change—there’s no guarantee revolution will solve**

-It’s too late to solve the whole environmental crisis, but can work to mitigate the damage

-No guarantee the alternative’s regression to socialism won’t have same environmental problems

Christian **PARENTI**, professor of sustainable development at the School for International Training, Graduate Institute, **13** [“A Radical Approach to the Climate Crisis,” *Dissent*, Summer 2013, http://www.dissentmagazine.org/article/a-radical-approach-to-the-climate-crisis]

Several strands of green thinking maintain that capitalism is incapable of a sustainable relationship with non-human nature because, as an economic system, capitalism has a growth imperative while the earth is finite. One finds versions of this argument in the literature of eco-socialism, deep ecology, eco-anarchism, and even among many mainstream greens who, though typically declining to actually name the economic system, are fixated on the dangers of “growth.”

All this may be true. Capitalism, a system in which privately owned firms must continuously out-produce and out-sell their competitors, may be incapable of accommodating itself to the limits of the natural world. However, that is not the same question as whether capitalism can solve the more immediate climate crisis.

Because of its magnitude, the climate crisis can appear **as the sum total of all environmental problems**—deforestation, over-fishing, freshwater depletion, soil erosion, loss of biodiversity, chemical contamination. But halting greenhouse gas emissions is a much more specific problem, the **most pressing subset** of the **larger apocalyptic panorama**.

And the very bad news is, time has run out. As I write this, news arrives of an ice-free arctic summer by 2050. Scientists once assumed that would not happen for hundreds of years.

Dealing with climate change by first achieving radical social transformation—be it a socialist or anarchist or deep-ecological/neo-primitive revolution, or a nostalgia-based localista conversion back to a mythical small-town capitalism—would be a very **long and drawn-out**, maybe even **multigenerational, struggle**. It would be marked by years of **mass education** and organizing of a scale and intensity not seen in most core capitalist states since the 1960s or even the 1930s.

**Nor is there any guarantee** that the new system would not also degrade the soil, lay waste to the forests, despoil bodies of water, and find itself still addicted to coal and oil. Look at the history of “actually existing socialism” before its collapse in 1991. To put it mildly, the economy was not at peace with nature. Or consider the vexing complexities facing the left social democracies of Latin America. Bolivia, and Ecuador, states run by socialists who are beholden to very powerful, autonomous grassroots movements, are still very **dependent on petroleum** revenue.

A more radical approach to the crisis of climate change begins **not with a long-term vision** of an alternate society but with an honest engagement with the very compressed timeframe that current climate science implies. In the age of climate change, **these are the real parameters of politics**.

**Strategic use of market mechanisms to politicize the inequalities of the status quo is possible – radical system change alone is a demand for a clean slate we don’t have**

**Hoffman 16** (Andrew, Professor and director of the Erb Institute for Global Sustainable Enterprise at the University of Michigan, 2/15/2016, The Invisible Hand Won’t Solve the Climate Crisis. Capitalism Must Evolve., Evonomics, http://evonomics.com/the-invisible-hand-wont-solve-the-climate-crisis-capitalism-must-evolve/)

This binary framing masks the real questions we face, both what we need to do and how we are going to get there. Yet there are serious conversations within management education, research and practice about the next steps in the evolution of capitalism. The goal is to develop a more sophisticated notion of the role of the corporation within society. These discussions are being driven not only by climate change, but concerns raised by the financial crisis, growing income inequality and other serious social issues.¶ The market’s rough edges¶ Capitalism is a set of institutions for structuring our commerce and interaction. It is not, as some think, some sort of natural state that exists free from government intrusion. It is designed by human beings in the service of human beings and it can evolve to the needs of human beings. As Yuval Levin points out in National Affairs, even Adam Smith argued that “the rules of the market are not self-legislating or naturally obvious. On the contrary, Smith argued, the market is a public institution that requires rules imposed upon it by legislators who understand its workings and its benefits.”¶ And, it is worth noting, capitalism has been quite successful. Over the past century, the world’s population increased by a factor of four, the world economy increased by a factor of 14 and global per capita income tripled. In that time, average life expectancy increased by almost **two-thirds** due in large part to advances in medicine, shelter, food production and other amenities provided by the market economy.¶ Capitalism is, in fact, quite malleable to meet the needs of society as they emerge. Over time, regulation has evolved to address emergent issues such as monopoly power, collusion, price-fixing and a host of other impediments to the needs of society. **Today, one of those needs is responding to climate change**.¶ The question is not whether capitalism works or doesn’t work. The question is how it can and will evolve to address the new challenges we face as a society. Or, as Anand Giridharadas pointed out at the Aspen Action Forum, “Capitalism’s rough edges must be sanded and its surplus fruit shared, but the underlying system must never be questioned.”¶ These rough edges need be considered with the theories we use to understand and teach the market. In addition, we need to reconsider the metrics we use to measure its outcomes, and the ways in which the market has deviated from its intended form.¶ Homo economicus?¶ To begin, there are growing questions around the underlying theories and models used to understand, explain and set policies for the market. Two that have received significant attention are neoclassical economics and principal-agent theory. Both theories form the foundation of management education and practice and are built on extreme and rather dismal simplifications of human beings as largely untrustworthy and driven by avarice, greed and selfishness.¶ As regards neoclassical economics, Eric Beinhocker and Nick Hanauer explain:¶ Behavioral economists have accumulated a mountain of evidence showing that real humans don’t behave as a rational homo economicus would. Experimental economists have raised awkward questions about the very existence of utility; and that is problematic because it has long been the device economists use to show that markets maximize social welfare. Empirical economists have identified anomalies suggesting that financial markets aren’t always efficient.¶ As regards principal-agent theory, Lynn Stout goes so far to say that the model is quite simply “wrong.” The Cornell professor of business and law argues that its central premise – that those running the company (agents) will shirk or even steal from the owner (principal) since they do the work and the owner gets the profits – does not capture “the reality of modern public corporations with thousands of shareholders, scores of executives and a dozen or more directors.”¶ The most pernicious outcome of these models is the idea that the purpose of the corporation is to “make money for its shareholders.” This is a rather recent idea that began to take hold within business only in the 1970s and 1980s and has now become a taken-for-granted assumption.¶ If I asked any business school student (and perhaps any American) to complete the sentence, “the purpose of the corporation is to…” they would parrot “make money for the shareholder.” But that is not what a company does, and most executives would tell you so. Companies transform ideas and innovation into products and services that serve the needs of some segment of the market. In the words of Paul Pollman, CEO of Unilever, “business is here to serve society.” Profit is the metric for how well they do that.¶ The problem with the pernicious notion that a corporation’s sole purpose is to serve shareholders is that it leads to many other undesirable outcomes. For example, it leads to an increased focus on quarterly earnings and short-term share price swings; it limits the latitude of strategic thinking by decreasing focus on long-term investment and strategic planning; and it rewards only the type of shareholder who, in the words of Lynn Stout, is “shortsighted, opportunistic, willing to impose external costs, and indifferent to ethics and others’ welfare.”¶ A better way to gauge the economy¶ Going beyond our understanding of what motivates people and organizations within the market, there is growing attention to the metrics that guide the outcomes of that action. One of those metrics is the discount rate. Economist Nicholas Stern stirred a healthy controversy when he used an unusually low discount rate when calculating the future costs and benefits of climate change mitigation and adaptation, arguing that there is a ethical component to this metric’s use. For example, a common discount rate of 5% leads to a conclusion that everything 20 years out and beyond is worthless. When gauging the response to climate change, is that an outcome that anyone – particularly anyone with children or grandchildren – would consider ethical?¶ Another metric is gross domestic product (GDP), the foremost economic indicator of national economic progress. It is a measure of all financial transactions for products and services. But one problem is that it does not acknowledge (nor value) a distinction between those transactions that add to the well-being of a country and those that diminish it. Any activity in which money changes hands will register as GDP growth. GDP treats the recovery from natural disasters as economic gain; GDP increases with polluting activities and then again with pollution cleanup; and it treats all depletion of natural capital as income, even when the depreciation of that capital asset can limit future growth.¶ A second problem with GDP is that it is not a metric dealing with true human well-being at all. Instead, it is based on the tacit assumption that the more money and wealth we have, the better off we are. But that’s been challenged by numerous studies. ¶As a result, French ex-president Nicolas Sarkozy created a commission, headed by Joseph Stieglitz and Amartya Sen (both Nobel laureates), to examine alternatives to GDP. Their report recommended a shift in economic emphasis from simply the production of goods to a broader measure of overall well-being that would include measures for categories like health, education and security. It also called for greater focus on the societal effects of income inequality, new ways to measure the economic impact of sustainability and ways to include the value of wealth to be passed on to the next generation. Similarly, the king of Bhutan has developed a GDP alternative called gross national happiness, which is a composite of indicators that are much more directly related to human well-being than monetary measures. ¶ The form of capitalism we have today has evolved over centuries to reflect growing needs, but also has been warped by private interests. Yuval Levin points out that some key moral features of Adam Smith’s political economy have been corrupted in more recent times, most notably by “a growing collusion between government and large corporations.” This issue has become most vivid after the financial crisis and the failed policies that both preceded and succeeded that watershed event. The answers, as Auden Schendler and Mark Trexler point out, are both “policy solutions” and “corporations to advocate for those solutions.”¶ We can never have a clean slate¶ How will we get to the solutions for climate change? Let’s face it. Installing efficient LED light bulbs, driving the latest Tesla electric car and recycling our waste are admirable and desirable activities. But they are not going to solve the climate problem by reducing our **collective emissions** to a necessary level. To achieve that goal **requires systemic change**. To that end, **some argue for creating a new system to replace capitalism.** For example, Naomi Klein calls for “shredding the free-market ideology that has dominated the global economy for more than three decades.”¶ Klein is performing a valuable service with her call for extreme action. She, like Bill McKibben and his 350.org movement, is helping to make it possible for a conversation to take place over the magnitude of the challenge before us through what is called the “radical flank effect.”¶ All members and ideas of a social movement are viewed in contrast to others, and extreme positions can make other ideas and organizations seem more reasonable to movement opponents. For example, when Martin Luther King Jr first began speaking his message, it was perceived as too radical for the majority of white America. But when Malcolm X entered the debate, he pulled the radical flank further out and made King’s message look more moderate by comparison. Capturing this sentiment, Russell Train, second administrator of the EPA, once quipped, “Thank God for [environmentalist] Dave Brower; he makes it so easy for the rest of us to be reasonable.”¶ But **the nature of social change never allows us the clean slate that makes sweeping statements for radical change attractive.** Every set of institutions by which society is structured evolved from some set of structures that preceded it. Stephen Jay Gould made this point quite powerfully in his essay “The Creation Myths of Cooperstown,” where he pointed out that baseball was not invented by Abner Doubleday in Cooperstown New York in 1839. In fact, he points out, “no one invented baseball at any moment or in any spot.” It evolved from games that came before it. In a similar way, Adam Smith did not invent capitalism in 1776 with his book The Wealth of Nations. He was writing about changes that he was observing and had been taking place for centuries in European economies; most notably the division of labor and the improvements in efficiency and quality of production that were the result. ¶ In the same way, we **cannot simply invent a new system** to replace capitalism. Whatever form of commerce and interchange we adopt must **evolve out of the form we have at the present**. There is simply no other way. ¶ But one particularly difficult challenge of climate change is that, unlike Adam Smith’s proverbial butcher, brewer or baker who provide our dinner out of the clear alignment of their self-interest and our needs, climate change breaks the link between action and outcome in profound ways. A person or corporation cannot learn about climate change through direct experience. We cannot feel an increase in global mean temperature; we cannot see, smell or taste greenhouse gases; and we cannot link an individual weather anomaly with global climate shifts. ¶ A real appreciation of the issue requires an understanding of **large-scale systems** through “big data” models. Moreover, both the knowledge of these models and an appreciation for how they work require deep scientific knowledge about complex dynamic systems and the ways in which feedback loops in the climate system, time delays, accumulations and nonlinearities operate within them. Therefore, the evolution of capitalism to address climate change must, in many ways, be based on trust, belief and faith in stakeholders outside the normal exchange of commerce. To get to the next iteration of this centuries-old institution, we must envision the market through all components that help to establish the rules; corporations, government, civil society, scientists and others. ¶ The evolving role of the corporation in society¶ At the end of the day, the solutions to climate change must come from the market and more specifically, from business. The market is the most powerful institution on earth, and business is the most powerful entity within it. Business makes the goods and services we rely upon: the clothes we wear, the food we eat, the forms of mobility we use and the buildings we live and work in. ¶ Businesses can transcend national boundaries and possess resources that exceed that of many countries. **You can lament** that fact, **but it is a fact**. If business does not lead the way toward solutions for a carbon-neutral world, there will be no solutions.

**Economic valuation is key to the environment**

**Polasky 12** (Stephen, Professor of Ecological/Environmental Economics, University of Minnesota, Seth Binder, Summer 2012, Valuing the Environment for Decisionmaking, http://issues.org/28-4/polasky/)

Virtually all important environmental management and policy decisions have a wide range of effects. For example, zoning or development decisions about land use can have a variety of environmental impacts (for example, on local water and air quality, the potential for flooding downstream, carbon sequestration, and habitat for wildlife) as well as economic and social effects (on economic development, jobs, and income). Similarly, decisions on limits on emissions of air pollutants or greenhouse gases can affect a range of environmental, economic, and social concerns. These results affect multiple groups who often have very different views about desired outcomes (for example, developers versus environmentalists). Effects differ across geography (upstream versus downstream) and time (current versus future impacts). Choosing among management or policy options that differ in terms of environmental, economic, and social outcomes with spatial and temporal components may at first glance seem overwhelmingly complex, with dimensions that seem incomparable. Good environmental management and policy decisionmaking, however, necessitates systematic evaluation and consideration of the effects of management and policy on the affected public. **Even though the quantitative valuation of these effects will never be perfect**, the outcome of **attempts to assess value provides important information to help guide decisionmaking**.¶ ¶ Decisions, decisions¶ ¶ Management and policy decisions typically involve difficult tradeoffs that bring improvements in some dimensions and declines in others. Ultimately, deciding whether to choose management or policy alternative A or B requires an evaluation of whether A or B is “better,” where better is determined by the objectives of the decisionmaker. It is easy to conclude that one alternative is better than another if it is better in all dimensions. But making comparisons in which one alternative is better in some dimensions but worse in others requires making difficult value judgments. For example, clearing land for housing development may result in higher incomes and more jobs but reduce habitat for species and worsen local water quality. Whether land clearing is the right decision will depend on whether an increase in incomes and jobs is valued more highly than maintaining habitat and water quality. But how can one really compare income versus habitat for species or jobs versus water quality? Comparing across these different dimensions seems like comparing the proverbial apples and oranges. Reaching an environmental management or policy decision, though, requires the decisionmaker to compare apples and oranges, either explicitly or implicitly.¶ ¶ For an individual, deciding which college to attend, where to live, or what job to take is often a hard choice to make, in large part because it involves changes in multiple dimensions simultaneously. Moving to a new job in a new city may be a better professional opportunity and offer a new set of cultural amenities, but is it worth disrupting family life, moving away from friends, and making adjustments to a new community? Though it is difficult to compare such alternatives, people do make these decisions all the time. In choosing an option, taking account of all the factors, people make a determination that one option is better than the other available options.¶ ¶ As difficult as such choices can be for an individual, making environmental management and policy decisions adds yet another level of complexity. Such decisions affect many people simultaneously and thus require finding a way to aggregate values across different people to reach a decision. Management and policy decisions can make some groups better off while making others worse off, requiring a different sort of apples-and-oranges comparison.¶ ¶ Two methods used in such multidimensional, multiperson decisionmaking contexts are economic benefit/cost calculations and multicriteria decision analysis (MCDA). Each of these methods transforms a complex multidimensional problem involving multiple people into a single dimension that can be used to rank alternatives. These methods act like a blender that mixes apples and oranges to produce a fruit smoothie. Decisionmakers can then decide which fruit smoothie they like the best.¶ ¶ Economics reduces multidimensional problems to a single dimension by measuring the value of changes in each dimension with a common metric, which is typically, but not necessarily, a monetary metric. Economist8s tend to prefer a monetary metric because it is a pervasive, intuitive, and easily observable measure of the values that people attribute to an array of everyday goods and services. In wellfunctioning markets, the price of a good or service reflects its marginal value to the buyer measured in terms of the common monetary metric: what the buyer is willing to pay to have the good or service. This fact makes the marginal values of many very different goods and services commensurable. The concept extends even to environmental attributes that do not have a market value, such as clean air, as long as people are willing to make tradeoffs in their consumption of some market goods in order to obtain other nonmarket attributes.¶ ¶ The ability to measure values with a common monetary metric rests on two key premises. First, individual willingness to pay for an item is assumed to accurately represent the value of that item to the individual: that is, how much better off the individual is with the item than without the item, measured in monetary terms. Second, the aggregation of values to the societal level requires that the correspondence between willingness to pay and well-being be comparable across individuals, so that a measure of societal value is equal to the (appropriately weighted) sum of values across all individuals in society. This comparability is necessary in order to do benefit/cost analysis resulting in a single number that summarizes social net benefits.¶ ¶ With the ability to produce an aggregate social net benefit calculation for any policy option, the economic benefit/cost decision rule is simple: Choose the option that maximizes social net benefits. This simple rule can be extended to account for uncertainty by maximizing expected social net benefits, where net benefits for individuals can include risk aversion (that is, a willingness to pay to avoid being subjected to uncertain outcomes). The decision rule can also incorporate constraints that restrict outcomes, so that they do not violate minimum environmental standards or basic human rights. As noted, however, the social net benefit calculation requires that individuals evaluate multiple dimensions with a single monetary metric of value and that these values be comparable across individuals. Without such interpersonal comparability, management or policy changes resulting in both winners and losers cannot be evaluated. In this case, only alternatives in which everyone is better off are clearly superior, and such alternatives are extremely unlikely to emerge.¶ ¶ Benefit/cost calculations have been applied to a wide variety of environmental policies. All recent presidents, both Democratic and Republican, have required agencies to evaluate the benefits and costs of regulations, including environmental regulations. Executive Order 12866 signed by President Clinton in 1993 states that agencies “shall assess both the costs and the benefits of the intended regulation” and “in choosing among alternative regulatory approaches, agencies should select those approaches that maximize net benefits” The Environmental Protection Agency (EPA) has done extensive benefit/cost calculations of regulations, particularly regulations under the Clean Air Act. The EPA estimated that the 1990 Clean Air Act would provide benefits of $2 trillion between 1990 and 2020 while imposing costs of $65 billion, a benefit-to-cost ratio of approximately 30-to-1. A prior study of the benefits and costs of the Clean Air Act from 1970 to 1990 found a similarly large benefitto-cost ratio.¶ ¶ The economic benefit/cost approach to maximizing social net benefits may be thought of as belonging to the broader class of MCDA methods, all of which require explicit or implicit weighting of various attributes of expected outcomes of management or policy decisions. Although some MCDA methods accommodate only quantitative attributes, others also permit qualitative attributes. Given attributes and weights, different MCDA methods take different approaches to evaluating alternatives. Some methods seek to identify the best alternative, similar to the economic approach of maximizing social net benefits, while others, such as goal programming, seek to identify alternatives that meet certain thresholds of performance. In goal programming, aspirational or minimally acceptable thresholds are set for each criterion, and alternatives are evaluated according to the priority-weighted distances by which criteria fall short of these thresholds. In general, MCDA methods seek to maximize a social welfare function of a particular, often implicit, form.¶ ¶ Setting relative values¶ ¶ To be operational, benefit/cost and MCDA methods require information on relative values (weights) for different dimensions of value affected by environmental management or policy. Economics and decision sciences tend to take different approaches to assembling information about values. In economics, the values of different management or policy options are derived from aggregating the net benefits to individuals in society for that option. In decision sciences, a variety of methods are used to assemble information on weights to assign to different dimensions.¶ ¶ The task of the economist in understanding relative values for an individual is far easier for marketed goods and services than for nonmarketed environmental attributes. For marketed goods and services, economists use observations on how much is purchased at a given price over a range of different prices to construct a demand function. The demand function summarizes information on the willingness to pay of the individual for the good or service. In competitive markets, the supply function reflects the marginal cost of producing the good or service. Demand and supply can be used to define economic surplus, which is the difference between the (marginal) willingness to pay given by demand and the marginal cost of production given by supply. Summing up this difference over the entire quantity traded is equal to economic surplus; that is, the value generated from the production and consumption of the good or service.¶ ¶ Some environmental changes directly affect marketed goods and services, and the value of these effects can be evaluated by assessing the net change in economic surplus in the affected markets. Take, for example, the potential effects of excess nutrients in a body of water that cause dead zones (areas of low oxygen), resulting in lowered fish and shellfish populations and reduced commercial harvests. With basic information about consumer demand and the costs of supply, economists can estimate the expected loss in economic surplus from the reduction in harvests. Adjustments to economic surplus calculations are necessary when market imperfections, such as monopoly pricing, taxes, or subsidies, result in price distortions so that prices are not a true reflection of the value of marketed goods and services.¶ ¶ The concept of economic surplus (value) also applies to environmental attributes, such as clean air or access to natural areas, for which there is no market. Valuing nonmarket goods and services is more difficult, because there is no readily observable signal of value that is comparable to a marke8t price. Economists have devised a suite of nonmarket valuation tools that can be applied to value nonmarketed environmental attributes. Some nonmarket valuation methods use observable expenditure on a different marketed good or service to draw an inference about the value of the nonmarketed environmental attribute of interest. For example, housing prices may reflect the increased willingness to pay for housing in locations with better environmental amenities, such as access to lakes and parks or better air quality. The choice of where to recreate can reveal information about the relative value of environmental amenities that vary across recreation sites. Other methods of estimating value record changes in expenditures, such as changes in the cost to treat drinking water with changes in water quality.¶ ¶ Economists cannot use observed expenditures to value all important changes to the environment. For example, if all of the lakes in a region are polluted and no one uses them for recreation, it will be difficult to assess the value of reducing pollution on recreational value, unless one is willing to make inferences from other regions. More fundamentally, there are limited or no directly observable expenditures or other behavioral clues for some environment attributes, particularly non-use benefits such as knowing that species exist. In Antonio Briceño, Overfishing, from the Millions of Pieces: Only One Puzzle Project, Digital c-print on Fuji Crystal Archival paper, 21 x 60 inches, 2010. the absence of observable behavior, economists use survey questions to ask people about values for changes in environmental attributes. Such “stated preference” methods include contingent valuation and conjoint analysis. The contingent valuation method presents survey respondents with a hypothetical change in the environment, such as a 10% increase in the size of humpback whale populations, and asks whether they would be willing to pay a specified amount for the change. Varying the specified amount and observing the proportion of people saying yes generates information analogous to a demand curve for marketed goods and services. In conjoint analysis, people are asked to rank a series of outcomes that differ in the quantities of various attributes. Conjoint analysis allows direct evaluation of how people trade off one attribute versus another, such as an improvement in air quality versus greater access to open space. If one of the attributes is income or expenditure, then the analyst can also estimate willingness to pay.¶ ¶ Some actions, such as emissions of greenhouse gases, cause changes in multiple dimensions that occur over extended periods. For example, a change in carbon storage in ecosystems that reduces atmospheric concentrations causes changes in climate forcing and ocean acidification, which in turn affect myriad other environmental attributes, including precipitation patterns, with effects on agricultural production, the probability and severity of flooding, and the health of marine resources, among others. Summarizing the value of all these changes into a single estimate of the social cost of carbon (SCC) requires complex integrated assessment models that predict both environmental and economic outcomes and attach estimates of the value of those outcomes. Further complicating matters, SCC estimates depend on levels of emissions that can be affected by the very policy choice that SCC is meant to inform. For this reason and others, such as the choice of social discount rate, the estimates of the SCC range from near zero to hundreds of dollars per ton of carbon.¶ ¶ Instead of the often-complex process of economic valuation, MCDA typically relies on a set of alternative methods for establishing relative values or weights on different criteria, to be chosen by the decisionmakers. The identification of weights may be done by introspection, deliberation, or negotiation—or some combination of the three—among stakeholders. Setting relative weights may also be done as part of an iterative process in which alternatives are evaluated, weights reassessed in light of the evaluation, and new criteria weights applied.¶ ¶ One example of how relative weights for different criteria are set in MCDA is through application of the analytical hierarchy process. In this process, decisionmakers are asked to determine a set of top-level criteria, and within each of these to determine the subcomponent criteria. They are then asked to rank the relative importance of criteria at each level of the hierarchy. For example, suppose a decisionmaker is evaluating policies aimed at controlling non–point-source pollution from agriculture with two overarching criteria of water quality and economic effects. If these criteria are assigned equal importance, then each receives a weight of 0.5. At the next level of hierarchy, suppose that the water quality criteria include water clarity, dissolved oxygen content, and temperature, and that the economic criteria include farm income and jobs. If the decisionmaker believes that water clarity is twice as important as dissolved oxygen, and dissolved oxygen is twice as important as temperature, their weights at this level of hierarchy are 4/7, 2/7, and 1/7, respectively. Suppose that jobs are ranked as twice as important as farm income, then the weights would be 2/3 and 1/3. The overall weights in the analysis would then be 0.5 times these values: 2/7 for water clarity, 1/7 for dissolved oxygen content, 1/14 for water temperature, 1/3 for jobs, and 1/6 for farm income.¶ ¶ A potentially important difference between economic and MCDA approaches to valuation is in whose values are incorporated. In principle, valuation in benefit/cost assessments includes the value of everyone affected by management or policy choices, though in practice there may be questions about whether economic valuation methods accurately reflect societal values. In MCDA, it is typically a smaller subset of people that is involved in setting relative weights. For local-scale problems, MCDA methods could include all affected parties in a deliberative process, but as the scale of the problem grows, this will not be possible. For larger-scale environmental problems, ranging up to global concerns such as climate change, there is the question of representation and whether those present adequately reflect the views of the wider public. In addition, relative weights in MCDA should not be treated as constant but should reflect changes in circumstances, something that is typically captured in economic valuation methods.¶ ¶ Weighty issues¶ ¶ Any environmental management or policy decision is likely to entail winners and losers. How should the distribution of benefits and costs across groups be treated in environmental management and policy decisions? Critics of benefit/cost analysis contend that reliance on economic valuation systematically disadvantages those with less money. Greater wealth means greater ability (and thus willingness) to pay, so benefit/cost analysis effectively gives more weight to those with more money (“voting with dollars”). One way to answer this criticism is to give a higher weight to the values of those with less wealth. Economists have found considerable evidence of diminishing marginal utility of income, meaning that the value of an additional dollar to a poor person is greater than to a rich person. This fact can be used to justify “equity weights” based on differences in wealth. For example, an equity weight argument would mean that otherwise equal damages from future climate change should be given greater weight in low-income countries than in high-income countries. In addition, if society is committed to protecting the interests of particular groups, it can constrain consideration of options to those that achieve specified distributional goals.¶ ¶ Since the effects of alternative environmental management and policy options will differ across generations, a fundamental challenge in valuing environmental management and policy decisions is how to aggregate benefits and costs that accrue to current and future generations (inter-generational distribution). For example, more aggressive climate change mitigation strategies impose costs on the current generation but generate benefits for future generations.Economists typically use discounting to aggregate benefits and costs over time. The standard economic rationale for discounting is that investments yield a positive expected real rate of return, so that having a dollar today is worth more than having a dollar in the future. Costs and benefits realized at different points in time are thus commensurable in present value terms after discounting.¶ ¶ The standard discounting approach works well for nearterm private investment decisions, but what about for longterm social decisions affecting the welfare of future generations? If one accepts the principle of equal moral standing of all generations, there would seem to be little ethical justification for discounting future welfare. Frank Ramsay, the father of economic approaches to discounting and growth theory, maintained that it was “ethically indefensible” to treat the welfare of current and future generations differently. However, to the extent that future generations are expected to be better off than the current generation, discounting can be justified as an intergenerational application of equity weights. By the same principle, if environmental conditions worsen significantly and future generations are expected to be less well off than the present generation, this would imply a negative discount rate; that is, discounting of present benefits relative to future benefits. As recent debates on climate change policy aptly illustrate, there is little agreement among economists, or between economists and others, on discounting.¶ ¶ Uncertainty is a central issue in environmental management and policy. Uncertainty enters at various steps in the link between management and policy choices and eventual effects on the value of outcomes. There can be uncertainty about how changes in management or policy affect choices made by individuals and businesses (behavioral uncertainty), how changes in human actions affect the environment (scientific uncertainty), and how consequent changes in the environment will affect human well-being (value uncertainty). Recent work on the value of ecosystems services illustrates each of these uncertainties. For example, the Conservation Reserve Program, which pays landowners for taking land out of production and restores perennial vegetation, can shift patterns of land use and, in turn, result in changes in carbon sequestration, water quality, and habitat provision. Program participation and the provision of services depend on the choices of individual landowners, which are uncertain. There are key gaps in the science linking land use to service provision, such as how changes in land use will affect changes in carbon storage in soil or populations of particular species, making provision uncertain even when behavioral uncertainty is ignored. There are also key gaps in information pertaining to the link between services and benefits, making value uncertain even if provision is known. The value of water quality improvement, for example, depends as much on who uses the water and for what purpose as on the water quality itself.¶ ¶ Economic approaches typically use an expected utility framework to deal with uncertainty, where the value of each potential outcome is weighted by its probability of occurrence. This approach summarizes expected social net benefits across dimensions, as discussed above, but also across all possible outcomes that could occur given a management or policy choice. Using the expected utility framework, however, requires information about probabilities as well as values under all potential outcomes. For environmental issues involving complex system dynamics, such as climate change or the provision of ecosystem services, the list of possible outcomes in the future may be unknown, much less how to specify probabilities or likely values for each of these outcomes. Beyond the challenge of scientific uncertainty, there may also be uncertainty about the preferences of future generation and how they will value various outcomes. Inability to objectively quantify probabilities or values requires modifying expected utility, such as by using subjective judgments to establish probabilities or values, or setting bounds on decisions thought to pose unacceptable risks (for example, safe minimum standards). A particular challenge to making decisions under uncertainty arises from consideration of catastrophic outcomes. It is difficult to set probabilities on such events because they are rare, but small changes in assumptions about these probabilities can lead to large changes in policy advice.¶ ¶ People make mistakes, often in systematic and predictable ways. They tend to be overly optimistic, biased toward the present, and averse to losses. They have trouble thinking through complex problems, especially those with uncertainty. Given these facts, some analysts question the validity of using valuation studies that rely on observed choices, survey responses, or even deliberative processes among affected parties as an important input for setting environmental policy**. The alternative**, however, **would be to delegate judgments about the relative value of outcomes to political leaders or scientific experts**. Elected leaders, at least in theory, should reflect public values. Environmental scientists, however, have no special claim to understanding public values. In either case, there is no guarantee that top-down decisions will reflect the underlying values of the public at large any better than an imperfect reflection of values gathered through valuation exercises.¶ ¶ In principle, economic valuation methods can estimate value for all environmental attributes, either through inferences from observable behavior or responses in stated preference surveys. In practice, however, it is generally not possible to get a complete economic assessment of all environmental values. Some values connected with the environment are notoriously difficult to assess in monetary terms. For example, what is the monetary value of conserving species with important spiritual or cultural value? Some critics contend that individuals are cognitively incapable of evaluating tradeoffs between utilitarian goods (such as commodities and ecosystem services) and moral goods (such as the existence of a species). There are sharp disagreements between psychologists and economists—and among economists themselves—on this point. Even when it is possible in principle to estimate monetary values, there may be insufficient data to do so. Nevertheless, economic methods can provide evidence about the value of many important environmental attributes.¶ ¶ The value of valuation¶ ¶ Though difficult, collecting information about the relative values of alternative potential outcomes, in all of their multiple dimensions, is vital to good environmental management and policy decisionmaking. Setting environmental policy is not simply a matter of applying the best science, as important as that is. **Environmental management and policy typically involve making decisions about tradeoffs** among multiple objectives about which society cares. **Making decisions about such tradeoffs involves making value judgments.** If these judgments are to improve human wellbeing, they should reflect the underlying values of individuals affected by the policy.¶ ¶ Economic valuation methods applied in the context of environmental management and policy seek to inform decisionmaking by collecting information about the value of alternatives to affected individuals and then aggregating these values to determine an estimate of social net benefits. In simple benefit/cost analysis, the management or policy option with the highest social net benefits should then be the preferred option. The great advantage of the simple benefit/cost approach is that it incorporates economic valuation methods to represent values of the affected public, summarizes this information into a single ranking, and uses this ranking to help guide policy. Valuation information can also be combined with other decisions rules, such as those that minimize the risk of bad outcomes occurring.

## 2AC

### Case

**Plan is key to broader environmental sustainability**

**Dolmans 21** (Maurits Dolmans, Cleary Gottlieb Steen & Hamilton LLP, The Dominance and Monopolies Review: Editors' Preface, 6-14, <https://thelawreviews.co.uk/title/the-dominance-and-monopolies-review/editors-preface>, y2k)

A third set of commentators believes that **competition** policy is **misdirected**, that the historic focus of competition law has been **too narrow**, and that the **c**onsumer **w**elfare **s**tandard should be **expanded** to take account of social, **industrial**, **environmental** and other considerations (sometimes referred to as 'hipster antitrust').

And a fourth critique, voiced by Maurice Stucke and Ariel Ezrachi, maintains that many of today's problems result from too much 'toxic' competition overall, driven by ideologues, lobbyists and privatisation, and that we need to promote a kind of 'noble competition', where rivals mutually strive for excellence.

To address these challenges, a dizzying array of reports has emerged, commissioned by governments in the US, EU, UK, Germany, France, Australia and elsewhere. And from those reports, a constellation of ideas has emerged to overhaul competition law, including: reorienting the goals of antitrust policy away from the consumer welfare standard towards a broader societal welfare test; reversing the burden of proof in merger control; per se bans on certain categories of conduct in the digital sector (including prophylactic controls on vertical integration); lowering the standard of judicial review to give competition authorities more leeway; injecting political oversight into competition law enforcement; loosening the standard to impose duties to share data with rivals; introducing market study regimes; allowing authorities to impose remedies without formally establishing an infringement; and establishing mandatory codes of conduct for digital platforms.

Where does this all leave busy practitioners and businesses that are trying to navigate the complex and constantly evolving rules concerning abuse of dominance? Helpfully, this ninth edition of The Dominance and Monopolies Review seeks to provide some respite, providing an accessible and easily understandable summary of global abuse of dominance rules. As with previous years, each chapter – authored by specialist local experts – summarises the abuse of dominance rules in a jurisdiction, provides a review of the regime's enforcement activity in the past year, and sets out a prediction for future developments. From those thoughtful contributions, we identify three main trends to watch out for over the next year.

**Sustainability and abuse of dominance**

The past year has seen sustainability become a new and **important focus** for **competition regulators**. The Dutch competition authority started the trend by setting 'sustainability' as a key priority and proposing a more permissible review for certain environmental agreements. The Hellenic Competition Commission followed, advocating for far-reaching policy changes to promote sustainability goals across all areas of competition policy. The European Parliament has called on the European Commission to 'urgently take the concrete action needed in order to fight and contain the threat of climate and environmental catastrophe before it is too late'. As Commissioner Vestager has noted, 'everyone is called upon to make our contribution to the necessary change – including enforcers'. The European Commission initiated a consultation, and the **O**rganisation for **E**conomic **C**o-operation and **D**evelopment held several events to discuss the **integration** of **climate and environmental goals** in competition policy. Chinese competition law already provides an explicit exemption for 'agreements between undertakings which they can prove to be concluded for . . . serving public interests in energy conservation, environmental protection and disaster relief'.

At core, the **cause** of the **climate crisis** is a **market failure**: the cost of **pollution** of **air**, **water** and **land**, and the **damage** wrought by greenhouse gas **emissions** to the climate today and in the future are generally not included in the **price** of goods and services. Because the market price of a polluting product **excludes** the social cost, production is **higher** than the **social optimum**, taking into account that **consumption** of natural resources now **exceeds** what the **regenerative capacity** of the Earth can **sustain**.

To address this market failure, the discussion around including environmental goals in competition law has, so far, mostly focused on state aid, horizontal cooperation and merger control. For example, it has been argued that the consumer welfare analysis in merger control could include whether the merger could be expected to raise or lower the environmental price that consumers pay, which is not reflected in the market price in monetary terms or in quality (which could take account of non-market externalities such as emissions). Likewise, horizontal guidelines could be revised to allow cooperation in pursuit of environmental goals, where individual producers are willing to invest in greening production, but may be held back by the fear that they will be undercut by those who do not invest, or by cheaper imports.

There is no inherent reason, however, why **sustainability** could **not** be incorporated into **an abuse of dominance assessment**, too. This could be done in a number of ways.

First, **pricing analysis** (for example, for loyalty rebates, predatory pricing, margin squeeze) could take into account the actual **costs** incurred by the **dominant company** and **by society**, including not only the total costs of production, but also the **environmental** cost. A company may be able to **price lower** than its rivals because it is employing **polluting** **or** **greenhouse** gas emitting technology, at great societal cost, which is not reflected in its traditional variable and fixed costs.

Second, **a dominant provider** with an incumbent polluting technology might commit an abuse by excluding **rival, greener technologies** by means **other** than competition on the **merits**. Such conduct should already violate dominance rules. In this case, however, 'competition on the merits' should be defined so as to exclude competition that relies on avoidable pollution or greenhouse gas emissions. Also, the assessment should take into account that consumer harm would be even higher from the abuse because of the exclusion of a greener technology. The theory would be not dissimilar to that pursued by the European Commission in its Car Emissions cartel investigation, albeit that case concerns horizontal collusion to restrict competition on innovation for emission cleaning systems.

Third, there may be sui generis **abuses** that involve **unsustainable business practices** that also restrict competition. For example, a dominant producer might employ **cheap** and **polluting means** of production, and thereby price cheaper than its rivals. **A dominant raw materials producer** might make misleading representations to an environmental agency to secure a licence to **extract minerals**. And a dominant **chemical producer** could **illegally dump products** in rivers, thereby gaining an advantage over rivals that dispose of **waster safely**. All these might conceivably be an abuse of dominance because they **distort** competition, via means **other** than competition on the merits. The fact that they may also infringe other laws is no bar to bringing an abuse of dominance claim, just as a dominant factory owner burning down a rival's factory can be both arson and an abuse of dominance. Rivals should have **a cause of action**, especially where **environmental rules** are **inadequate** or **insufficiently enforced.**

**Clarity of the signal requires pricing—the plan is uniquely symbolic.**

**Richardson & Fraas 13** – assistant professor at the University of South Carolina School of Law & both are Visiting fellows at Resources for the Future [Nathan Richardson, Arthur G. Fraas, May 9, 2013, Comparing the Clean Air Act and a Carbon Price, DISCUSSION PAPER, Resources for the Future]

Climate change is a global problem, and reducing emissions of the GHGs that cause it is a global responsibility. The United States, one of the largest emitters, has been slower than most other developed economies to commit to emissions reductions. Doing so would provide an **important signal and** could **influence other countries to follow** suit through bi- or multilateral agreements.

But this signal depends on the **strength and clarity** of US action. If US policy is relatively weak, or is perceived to be so, it will not be influential. Similarly, if US policy is meaningful but difficult to understand, other countries may undervalue it. The CAA is available off-the-shelf with powerful, flexible tools to achieve significant emissions reductions over the next decade. But the CAA is a complicated statute, especially for those with little experience with American law. It is incremental, technocratic, and relatively difficult to explain and understand. On the other hand, EPA does estimate and monitor emissions reductions associated with its regulations, and this monitoring—so long as it is credible—may make understanding the details of US regulation less important.

In any event, regulating sector-by-sector, over time makes it harder to make credible emissions reduction commitments. Even if CAA regulation is quite stringent, it may be harder to convince foreign negotiators that it will lead to more significant emissions reductions than it would be to convince them under new legislation with relatively modest goals—though of course new legislation might itself be complex and difficult to evaluate.

Questions to ask:

 Does new carbon legislation provide a ready basis for international negotiations?

 Will other countries be able to understand and value CAA climate policy? Are other countries taking a sector-by-sector, industry-by-industry regulatory approach that parallels CAA regulation?

VI. Conclusions

CAA provides the set of tools being used today to build climate policy at the federal level. New carbon legislation might be politically possible, and the prospects for such legislation appear to be greater over the long term.

New legislation has important advantages. The CAA is an old statute and was not designed with climate problems in mind or, with a few limited exceptions, with an appreciation of the ability of market mechanisms to address environmental problems cost-effectively. In comparison, a new policy setting a carbon price would be built around cost-effective market mechanisms. It could be simpler to administer and broader in scope, could access international emissions **either through offsets or by motivating negotiations**, and it could raise revenue. In addition, new carbon legislation could have symbolic advantages in that it could send a **strong and unmistakable signal** that the United States is addressing climate change. For these reasons and others, the ideal carbon policy would certainly reduce emissions at lower cost than a regulatory approach, especially over the long term.

**First—It’s the key carrot and stick strategy that encourages businesses to internalize the cost of emissions that incentivizes decarbonized tech.**

--carbon tax is the key to increasing the cost for companies to take the externality of climate change into account because they have to pay for each emission

--it increases the demand for GHG reducing tech because companies have incentives to invest in mitigation technology that makes industrial processes cheeper—the price on carbon is the key, not subsidies, because they effect the emission

--pure government R&D investment haphazardly is bad—not phasing it in creates a drain from other key sectors.

**Newell 15 –Prof of Energy & Environmental Economics at the Nichols School – Duke University. Director of the Duke University Energy Initiative. Formerly head of the EIA, responsible for national energy statistics** [Ricard G. Newell, “The Role of Technology Policy Alongside Carbon Pricing,” from Implementing a US Carbon Tax: Challenges and Debates, eds. Ian Perry, Adele Morris, and Roberton C. Willilams III] page 179-184]

Substantial reductions in U.S. greenhouse gas (GHG) emissions will require largescale innovation and adoption of GHG-reducing technologies throughout the U.S. economy, including technologies for increased energy efficiency, renewable energy, nuclear power, and carbon dioxide (CO 2) capture and storage. In the context of a policy regime that places a price on GHG emissions - either in the form of a carbon tax or market-based trading system - advanced energy technologies hold the potential to significantly lower costs and expand options for meeting GHG mitigation goals. While the importance of new technology in solving the climate problem is widely understood, there is considerable debate about what specific public policies and programs are necessary to bring about these technological changes as effectively and efficiently as possible.

The proposed climate technology innovation strategy presented in this chapter is based on the simple principle that, within a market-based economy, success is maximized if policies directly address specific market problems. In addressing such problems, policies should be designed to harness the power of private sector incentives for societal gain, and the direct governmental research role should be designed to complement, rather than substitute for, activities commonly undertaken by industry.

In the context of GHG-relevant technology innovation, there are two principal market problems. **First** and foremost, there is the environmental externality of global climate change. If firms and households do not have to pay for the climate damage imposed by their GHG emissions, then these **emissions will be too high,** and demand for GHG-reducing technologies will be too low. In turn, there will be insufficient incentive for companies to invest in mitigation technology research and development (R&D), because there will be little market demand for any potential innovations that result. A market-based emissions policy that places a price on GHGs is widely accepted to be a cost-effective response to this issue.

**Second**, there are problems specific to the market for innovations - not just with respect to climate, but more broadly.1 Knowledge, just like a stable climate, is a public good. It is well known that individual companies cannot capture the full value of investing in innovation, as that value tends to spill over to other technology producers and users, thereby diminishing individual private incentives for R&D. 2 This problem tends to worsen the more basic and long term the research (and may be exacerbated by technology transfer to other countries without sufficient intellectual property protection). Well-targeted policy that boosts climate technology innovation therefore has the potential to lower the overall cost of attaining long term climate goals

The proposed strategy thus has two main parts to directly confront these two market problems: **(1) establish a price on GHG emissions through a carbon tax** or market-based trading system, supplemented by permanent tax credits for all (not just energy-related) R&D ; and (2) increase public funding for basic strategic research inspired by critical, climate-related needs. The total revenue required for these purposes would be on the order of $10-15 billion per year.

Taking these parts together, the strategy seeks to increase both the demand for and the supply of GHG-reducing innovations in a balanced way -one that emphasizes those aspects of the overall innovation process that the private and public components of the system are best oriented toward advancing. **R&D push without the pull of demand is like pushing on a rope**: ultimately having little impact.3 In fact, ratcheting up R&D and other technology policies in an attempt to compensate for insufficiently stringent emissions policy can dramatically raise the cost of achieving a given amount of GHG mitigation. Conversely, market demand- pull without supportive R&D policies may miss longer-term opportunities for significantly lowering GHG reduction costs and expanding opportunities for greater GHG mitigation. A coupled "emissions price plus R&D " strategy, as suggested here, offers the best opportunity for mitigating GHG emissions at the lowest possible cost to society.

The remainder of the chapter will consider each stage of the technology innovation process separately - research and developn1ent , demonstration, and deployment -elaborating on the innovation strategy proposed above, and highlighting in particular its ability to address the unique challenges and opportunities at each point of the innovation process.

Research and development

Both parts of the innovation strategy work toward the advancement of climate mitigation technology, although each targets a different part of the economy.

First part of the innovation strategy: Stimulating private sector R&D

The first part of the innovation strategy seeks to harness the power of private sector investment. Industry is central to the U.S. innovation system, performing 71 percent and funding 62 percent of total U.S. R&D (Figure 10.1). The single most important part of solving the climate technology problem is therefore to address the GHG externality through emission s pricing. The emissions price attaches a financial cost to GHG s and -just as people will consume less of something that carries a price than they will of something given away for free -will induce household s and firms to buy technologies with lower GHG emissions (such as lower- emission power plants and more efficient cars and appliances). In turn, the emissions price creates a demand-driven, profit -based incentive for the private sector to invest in R&D and other innovative efforts to bring new, lower- cost, climate-friendly technologies to market. In all, the GHG price helps to stimulate progress at multiple stages of the innovative technology process: basic and applied research, development, demonstration, and deployment (Box 10.1) (demonstration and deployment to be discussed in greater detail below).

Emissions pricing is not the only important tool necessary to achieve climate 1 mitigation goals, however. Although private sector incentives for innovation are supported by intellectual property protection, secrecy, and other means, there is still a substantial portion of the benefits of innovation that cannot be captured by innovating firms, as new innovations build on existing knowledge and the benefits of new technology are passed onto consumers. This leads to a generic argument in favor of R&D tax incentives to boost the level of all (energy- and non –energy related) private sector R&D.

Section 41 of the U.S. Internal Revenue Code allows taxpayers to claim credits against corporate and individual income tax for extra expenditures on research and experin1entation above a defined baseline. Known informally as the "R&D tax credit," it was originally added to the tax code in 1981 as a temporary measure. It has been renewed 14 times since then - sometimes retroactively and/or after lapses - and under current law expired on December 31, 2013, though it is expected to be renewed for 2014. Given that R&D efforts typically span multiple years, this kind of uncertainty makes long-range research planning based on tax considerations difficult. As such, encouraging increased private sector R&D by making the R&D tax credit permanent would bolster private incentives for innovation that would be induced by the emissions price, and would improve innovation incentives more generally. In recent years tax expenditures for the R&D tax credit have been in the range of$8-9 billion annually, with forward-looking estimates of about $10 billion per year to make the credit permanent.

It is difficult to pin down exactly how much and what type of innovation is likely to be generated by a GHG emissions price bolstered by the R&D tax credit, but the innovation is sure to come from a wide array of businesses currently engaged in the development and use of energy producing and consuming technologies, including:

-Provision of electricity and transportation services.

-Agro-biotech sector (assuming there are incentives for CO 2 sequestration in forests and other biomass sinks).

-Companies that produce and consume other non-CO 2 GHGs (e.g., chemical companies).

-Less obvious sectors such as information technologies (e.g., in the context of energy management and conservation).

Second part of the innovation strategy: Public support for strategic basic research

Although basic and applied research is critical to the innovation process, more than three-quarters of industrial R&D is instead focused on development. In contrast, universities, other nonprofits, and federal labs perform the vast majority of basic research (about 80 percent), more than half of which (approximately 53 percent) is funded by the federal government. 4 Although it may have low short-term returns to individual firms, basic research can have high returns to society over the long run by building the intellectual capital that lays the groundwork for future advances in technology. In this way, universities, nonprofits, and federal labs play a complementary role to industry in the innovation system, so there is a need for policy that will supplement industrial R&D with more basic research relevant to lowering the cost of GHG mitigation and meeting other energy policy goals.

The second part of the climate innovation strategy addresses this need by proposing to gradually increase federal spending for energy R&D. But how high should federal energy R&D budgets go? While ideally one might like to optimally determine and allocate the federal R&D budget across the wide variety of funded areas thorough detailed evaluation of the technical opportunities, cost of research efforts, likelihood of success, and ultimate economic and social payoff of research - this is not realistic and may not even be practically possible. Nonetheless, a significant expansion of well-directed energy R&D funding is warranted based on scientific opportunities for advance, plausible assumptions about the rate of return on such spending and other factors, to roughly $8 billion per year over the next several years, or roughly a 40 percent addition in energy R&D from 2012 levels. A gradual and sustained ramp-up is preferable to a dramatic spike in R&D spending due to the nature of the R&D process, which involves the training of scientists and engineers and their gradual movement into the innovation system, where they then require ongoing support. To avoid crowding out of other beneficial R&D (i.e., **diverting engineers and scientists away from non-energy sectors**), this funding should therefore be phased in.

Other studies have recommended substantially higher levels of R&D funding, including a 2010 study by the President's Council on Science and Technology, or PCAST, that recommended double this amount - $12 billion for R&D and $4 billion for large-scale demonstration and deployment annually - although without a specific scale- up period. The PCAST study also recommended that the additional funds ($10-11 billion annually in their case) come from new revenue streams, such as carbon pricing, rather than traditional federal appropriations.

This funding should place a priority on strategic basic research inspired by critical needs arising from. efforts to develop new and improved GHG mitigation technologies . The concept of strategic basic research emphasized here is close in spirit to Stokes's notion of use-inspired basic research, which (unlike pure basic research) is inspired by the desire to develop improved technology, but (unlike pure applied research) also seeks to develop improved fundamental understanding (see Figure 10.2). A few examples include:

-Direct conversion of solar energy to electricity and chemical fuels.

-Understanding of how biological feedstocks are converted into portable fuels.

-New generation of radiation-tolerant materials and chemical separation processes for fission applications.

-Addressing fundamental knowledge gaps in energy storage.

**Second—Targets both USE and PRODUCTION—Only the carbon tax provides sector-wide incentives to change energy usage.**

**Komanoff 15 – co-founded the CTC, Director, Energy-Policy Analyst, MA Harvard** [Charles Komanoff, What an Energy-Efficiency Hero Gets Wrong about Carbon Taxes, 9/2/15, <http://www.carbontax.org/blog/2015/09/02/what-an-energy-efficiency-hero-gets-wrong-about-carbon-taxes/>]

The Crux

And therein lies the fundamental difference between Goldstein’s (NRDC) and my (CTC) respective approaches. Miles-per-gallon rules reduce carbon emissions per vehicle-mile driven, but they do nothing to affect the other half of the formula that equally determines emissions: the number of vehicle-miles driven.

In contrast, a carbon tax effectively **makes every action that reduces fossil fuel use less costly**, by raising the rewards from using less fuel. Taxing carbon will open up multiple paths that will influence the literally billions of daily decisions that determine energy usage and, hence, carbon emissions.

In driving, a carbon tax will affect whether and how far and often to drive . . . which car to take on a family trip . . . how high an mpg rating to demand in the next lease or purchase . . . and, at the societal level, whether public transit investments “pencil out” and might be prioritized over wider highways, and whether hyper-efficient car designs pencil out in corporate boardrooms and venture-capital spreadsheets.

The power of carbon-taxing, in a nutshell.

The same goes for other energy-use sectors. Costlier diesel fuel will not only stiffen legislators’ and regulators’ spines in promulgating truck mpg standards; they’ll incentivize local and regional provision over far-flung shipping of food, raw materials and consumer goods, thus cutting down on freight-miles and resultant emissions. Rising electric rates — at least during the decades until carbon fuels are eliminated — will not only strengthen NRDC’s and ACEEE’s case for ever more-efficient appliances; their price pressures will help restrain the size and number of appliances sold and also motivate consumers to use them more efficiently.

Costlier electricity and natural gas will likewise discourage developers from building, and families from insisting upon, gargantuan homes whose outsize volumes must be heated and cooled. Not to mention that a carbon tax provides an antidote to the oft-postulated “rebound effect” by which increased energy efficiency, by reducing the implicit price of energy services, can engender greater energy usage and inadvertently cancel some of the intended savings from those efficiencies. A carbon tax acts as a direct brake on that implicit price reduction and, thus, on the rebound effect.

The point is clear: **No other policy can match a carbon tax’s reach, or its simplicity**. As we wrote last year in comments we submitted to the Senate Finance Committee concerning energy subsidies and pricing:

The U.S. energy system is so diverse, our economic system so decentralized, and our species so varied and innovating **that no subsidies regime**, no matter how enlightened, and no system of rules and regulations, no matter how well-intentioned, can elicit the billions of carbon-reducing decisions and behaviors that a swift full-scale transition from carbon fuels requires. At the same time, nearly all of those decisions and behaviors share a common, crucial element: they are affected, and even shaped, by the **relative prices** of available or emerging energy sources, systems and choices. Yet those decisions cannot bend fully toward decarbonizing our economic system until the underlying prices reflect more of the climate damage that carbon fuels impose on our environment and society.

Carbon Taxing Going Forward

Two carbon tax bills now before Congress — submitted by Reps. Jim McDermott (D-WA) and John Larson (D-CT) — ramp up the tax level steadily and predictably to reach triple digits (i.e., $100 per ton of CO2) a decade on. Our modeling suggests that either bill, by the end of its tenth year, will have reduced total U.S. carbon emissions from fossil fuel burning by more than 30 percent, vis-à-vis 2005 emissions — with the reductions rising as the tax level continues ramping up. As noted, a little more than half of the reductions will come about by sustaining and accelerating the ongoing decarbonization of the U.S. fuel mix, not just in electricity but by motivating increased electrification of sectors like driving that are now dominated by hydrocarbon fuels. The remainder will result from energy efficiency and conservation, i.e., reduced usage per unit of economic activity.

Such a carbon tax has myriad other advantages, including the ease with which **it can be replicated globally,** that no other approach can match. One unsung advantage is that taxing carbon **harmonizes** with other measures for reducing energy consumption and carbon emissions. My or other individuals’ energy-savings don’t undermine the tax’s effect on other economic actors ― whereas under cap-and-trade, autonomous energy-saving actions lower the price of the emission permits and thus attenuate the price signal. Likewise, a carbon tax reinforces the economic effectiveness of the appliance and vehicle and building efficiency standards so ably championed by David Goldstein and NRDC, just as those standards play an essential role in overcoming the market failures that are hard to counteract with price signals alone.

It’s 26 years and counting since my first carbon tax op-ed, and almost 9 years since I co-founded the Carbon Tax Center. We at CTC have long since abandoned the hope that NRDC or the other big green giant, the Environmental Defense Fund, would lead the charge for a U.S. carbon tax. We’re okay with that, but we ask our environmental colleagues to refrain from devising and attacking straw-man versions of carbon taxes.

We’ve never said that “carbon emissions fees alone can . . . solve the climate problem.” Rather, we believe that the climate problem can’t be solved without them.

**Ratchet effect and flow-stock processes make the impact to any delay exponential.**

**Stern 15** (Stern studied the Mathematical Tripos and was awarded a is Bachelor of Arts degree in mathematics at Peterhouse, Cambridge, and his DPhilEcon in economics at Nuffield College, Oxford with thesis on the rate of economic development and the theory of optimum planning in 1971 supervised by James Mirrlees, “Why Are We Waiting?: The Logic, Urgency, and Promise of Tackling Climate Change”, MIT Press, Apr 17, 2015)

Whether or not we focus on how to convince others, the uncertainty itself associated with the potential scale and impacts of climate change might lead to the argument that we should wait for more precise information and forecasts before we act. For some examples of decisions under uncertainty, "wait and see" might be reasonable, but in this case it **would be profoundly mistaken**. The powerful flow-stock process, and the ratchet effect it implies, mean that delay in taking action can lead to concentration levels that would be very difficult to reduce and **severe impacts** that might be irreversible. Once GHGs are in the atmosphere they are very hard to remove, especially CO2 which lasts in the atmo-sphere for very long periods, much of it for 100 years or more and some of it for 1,000 years. We are already at a difficult starting point in terms of concentrations of GHGs. **Another 20 years of delay could add a further 50-60 ppm CO2e**, **which would make a concentration of 550 ppm hard to avoid**, let alone 450 ppm, **with consequent risks of exceeding 4°C much higher**, e.g., **a** 5-**55% chance** (table 1.2).

**T – Expand the Scope**

**Counter-interp—“Expanding the scope of antitrust laws” requires that affs incorporate new factors into antitrust analysis**

**Eastern District of Pennsylvania 96**

“Schuylkill Energy Resources v. Pennsylvania Power & Light Co.,” United States District Court for the Eastern District of Pennsylvania, 20 May 1996, Lexis.

(Am. Compl. P 66.) However, PP&L has no unilateral ability to change its rates; any increase or decrease in rates must be filed with the PUC and conform to PUC regulations or orders. See 66 Pa. Cons. Stat. §§ 1301, 1308(a) (1993). In addition, although the reliability and environmental qualities of energy sources may be worthwhile concerns, they are not within the scope of federal antitrust laws. **Courts have rejected attempts to expand the scope of the antitrust laws** to encompass noneconomic interests. *See, e.g., National Soc'y of Professional Eng'rs v. United States, 435 U.S. 679, 693-95, 55 L. Ed. 2d 637, 98 S. Ct. 1355 (1978)* (**rejecting an attempt to incorporate** concerns for noneconomic [\*12] **factors**, **such as risks to safety and health, into antitrust analysis).**

C/I – of is a reference point in relation to antitrust law

**Meriam Websters No Date** “Of” <https://www.merriam-webster.com/dictionary/of>

Definition of of (Entry 1 of 3)

1—used as a function word to indicate a point of reckoning

north of the lake

2a—used as a function word to indicate origin or derivation

a man of noble birth

b—used as a function word to indicate the cause, motive, or reason

died of flu

c: BY

plays of Shakespeare

d: on the part of

very kind of you

e: occurring in

a fish of the western Atlantic

3—used as a function word to indicate the component material, parts, or elements or the contents

throne of gold

cup of water

**“Anticompetitive practices” are a wide range of business practices.**

**Wells 16** – Executive Notes Editor, Washington University Global Studies Law Review, J.D., Washington University in St. Louis

Todd Wells, “Exploring the Space for Antitrust Law in the Race for Space Exploration,” Washington University Global Studies Law Review, Vol. 15, 2016, LexisNexis

Antitrust law attempts to fight anti-competitive actions. "**Anticompetitive practices** refer to a **wide range of business practices** in which a **firm** or **group of firms** may engage in order to **restrict inter-firm competition** to **maintain** or **increase** their **relative market position** and **profits** without necessarily providing goods and services at a lower cost or of higher quality." The Organization for Economic Cooperation and Development, Glossary of Statistical Terms, Anticompetitive Practices http://stats.oecd.org.proxy.library.georgetown.edu/glossary/detail.asp?ID=3145. Obviously, with such a **broad definition** of **anticompetitive practices**, **many types of actions** can **fall under** the **regulation** of **anticompetitive law**. This can cover forms of **collusion**, **price fixing**, **bid rigging**, **bid suppression**, **complementary bidding**, **bid rotation**, **subcontracting**, and **market divisions**. Price Fixing, Bid Rigging, and Market Allocation Schemes: What They Are and What to Look For, U.S. Dep't of Justice, http://www.justice.gov/atr/ public/guidelines/211578.htm. An **even broader approach** would put **patents** under antitrust law. "All of these developments, in **Congress** and the **Courts**, are in the **spirit** of **harmonizing patent** and **antitrust law**, generally **in the direction of subsuming patent law under antitrust law**. From the perspective of **providing clarity** and **certainty** for those who are the targets of patent and antitrust suits, **harmonization has much appeal**." Robin Feldman, Patent and Antitrust: Differing Shades of Meaning,13 Va. J.L. & Tech. 1, 7 (2008).

**K – Climate Pessimism**

#### Political Action in climate is both possible and necessary

Mann, 21 – Michael E. Mann is a climatologist, Professor of Atmospheric Science at Penn State, Director of Earth System Science Center, author of more than 200 peer-reviewed and edited publications. Interview in the Guardian with Jonathan Watts, who is the Guardian’s global environment editor (“Climatologist Michael E Mann: 'Good people fall victim to doomism. I do too sometimes'”, 2-27-21, The Guardian, <https://www.theguardian.com/environment/2021/feb/27/climatologist-michael-e-mann-doomism-climate-crisis-interview>)

You say the deniers are on the back foot and there are reasons to be hopeful. But we have seen false dawns in the past. Why is it different now?

**Without doubt, this is the best chance in** the **20 years** since I have been in the climate arena. We have seen false complacency in the past. In 2007, after the IPCC shared the Nobel peace prize with Al Gore, there seemed to be this awakening in the media. that felt to many like a tipping point, though at the time I was very apprehensive. I knew the enemy wouldn’t give up and I expected a resurgence of the climate war. That’s exactly what we saw with the climategate campaign [the leaking of emails to try to tarnish scientists]. This is different. It feels different, it looks different, it smells different.

I am **optimistic** about a **favourable shift in the political wind**. The **youth climate movement** has **galvanised attention** **and re-centred the debate** on intergenerational ethics. We are seeing a tipping point in public consciousness. That bodes well. **There is still a viable way forward to avoid climate catastrophe.**

You can see from the talking points of inactivists that they are really in retreat. Republican pollsters like Frank Luntz have advised clients in the fossil fuel industry and the politicians who carry water for them that you can’t get away with denying climate change any more. It doesn’t pass the sniff test with the public. Instead they are looking at other things they can do.

Let’s dig into deniers’ tactics. One that you mention is deflection. What are the telltale signs?

**Any time you are told a problem is your fault because you are not behaving responsibly, there is a good chance that you are being deflected from systemic solutions and policies**. **Blaming the individual is a tried and trusted playbook** that we have seen in the past with other industries. In the 1970s, Coca Cola and the beverage industry did this very effectively to convince us we don’t need regulations on waste disposal. Because of that we now have a global plastic crisis. The same tactics are evident in the gun lobby’s motto, “guns don’t kill people, people kill people”, which is classic deflection. For a UK example look at **BP**, which **gave us the world’s first individual carbon footprint calculator**. Why did they do that? Because **BP wanted us looking at our carbon footprint not theirs.**

This leads to the second tactic – division. You argue people need to focus strategically on system change, but online bots are stirring up arguments over individual lifestyle choices. That said, you suggest there is too much emphasis on reducing meat, which is a relatively minor source of emissions compared with fossil fuels. Isn’t that likely to be divisive among vegetarians and vegans?

Of course lifestyle changes are necessary but they alone won’t get us where we need to be. They make us more healthy, save money and set a good example for others. But **we can’t allow the forces of inaction to convince us these actions alone are the solution and that we don’t need systemic changes.** If they can get us arguing with one another, and finger pointing and carbon shaming about lifestyle choices, that is extremely divisive and the community will no longer be effective in challenging vested interest and polluters.

I don’t eat meat. We get power from renewable energy. I have a plug-in hybrid vehicle. I do those things and encourage others to do them. but I don’t think it is helpful to shame people who are not as far along as you. Instead, let’s help everybody to move in that direction. **That is what policy and system change is about: creating incentives so even those who don’t think about their environmental footprint are still led in that direction.**

Another new front in the new climate war is what you call “doomism”. What do you mean by that?

**Doom-mongering has overtaken denial as a threat and as a tactic**. **Inactivists know that if people believe there is nothing you can do, they are led down a path of disengagement**. They **unwittingly do the bidding of fossil fuel interests by giving up.**

What is so pernicious about this is that it **seeks to weaponise environmental progressives who would otherwise be on the frontline demanding change**. These are folk of good intentions and good will, but they become disillusioned or depressed and they fall into despair. **But “too late” narratives are invariably based on a misunderstanding of science**. Many of the prominent doomist narratives – [Jonathan] Franzen, David Wallace-Wells, the Deep Adaptation movement – can be traced back to a false notion that an Arctic methane bomb will cause runaway warming and extinguish all life on earth within 10 years. This is completely wrong. There is no science to support that.

Even without Arctic methane, there are plenty of solid reasons to be worried about the climate. Can’t a sense of doom also radicalise people and act as an antidote to complacency? Isn’t it a stage in understanding?

True. It is a natural emotional reaction. Good people fall victim to doomism. I do too sometimes. It can be enabling and empowering as long as you don’t get stuck there. It is up to others to help ensure that experience can be cathartic.

You also suggest that Greta Thunberg has sometimes been led astray.

I am very supportive of Greta. At one point in the book, I point out that even she has at times been a victim of some of this bad framing. But in terms of what she does, I am hugely supportive. Those I call out really are those who should know better. In particular, I tried to document mis-statements about the science. If the science objectively demonstrated it was too late to limit warming below catastrophic levels, that would be one thing and we scientists would be faithful to that. But science doesn’t say that.

Ten years ago, you and other climate scientists were accused of exaggerating the risks and now you are accused of underplaying the dangers. Sometimes it must seem that you cannot win.

It is frustrating to see scientists blamed. We also are told that we didn’t do a good enough job communicating the risks. People forget we were fighting the most well-funded, well-organised PR campaign in the history of human civilisation.

Another development in the “climate war” is the entry of new participants. Bill Gates is perhaps the most prominent. His new book, How to Prevent a Climate Disaster, offers a systems analyst approach to the problem, a kind of operating system upgrade for the planet. What do you make of his take?

I want to thank him for using his platform to raise awareness of the climate crisis. That said, I disagree with him quite sharply on the prescription. His view is overly technocratic and premised on an underestimate of the role that renewable energy can play in decarbonising our civilisation. If you understate that potential, you are forced to make other risky choices, such as geoengineering and carbon capture and sequestration. Investment in those unproven options would crowd out investment in better solutions.

Gates writes that he doesn’t know the political solution to climate change. **But the politics are the problem** buddy. **If you don’t have a prescription of how to solve that, then you don’t have a solution and perhaps your solution might be taking us down the wrong path.**

What are the prospects for political change with Joe Biden in the White House?

**Breathtaking**. Biden has surprised even the most ardent climate hawks in the boldness of his first 100 day agenda, which goes well beyond any previous president, including Obama when it comes to use of executive actions. He has incorporated climate policy into every single government agency and we have seen massive investments in renewable energy infrastructure, cuts in subsidies for fossil fuels, and the cancellation of the Keystone XL pipeline. On the international front, the appointment of John Kerry, who helped negotiate the Paris Accord, has telegraphed to the rest of the world that the US is back and ready to lead again. That is huge and puts pressure on intransigent state actors like [Australian prime minister] Scott Morrison, who has been a friend of the fossil fuel industry in Australia. Morrison has changed his rhetoric dramatically since Biden became president. I think that creates an opportunity like no other.

The book provides a long list of other reasons to be hopeful – rapid take-up of renewable energy, technology advances, financial sector action and more. Even so, the US, like other countries, is still far short of the second world war-level of mobilisation that you and others say is necessary to keep global heating to 1.5C.

Have the prospects for that been helped or hindered by Covid?

**I see a perfect storm of climate opportunity.** **Terrible as the pandemic has been, this tragedy can also provide lessons, particularly on the importance of listening to the word of science when facing risks.** That could be from medical scientists advising us on the need for social distancing to reduce the chances of contagion, or it could be from climate scientists recommending we cut carbon emissions to reduce the risk of climate catastrophe. There is also awareness of the deadliness of anti-science, which can be measured in hundreds of thousands of lives in the US that were unnecessarily lost because a president refused to implement policies based on what health scientists were saying. **Out of this crisis can come a collective reconsideration of our priorities. How to live sustainably on a finite planet** with finite space, food and water. A year from now, memories and impacts of coronavirus will still feel painful, but the crisis itself will be in the rear-view mirror thanks to vaccines. What will loom larger will be the greater crisis we face – the climate crisis.

**ce on its own**. In the face of the climate crisis and rampant social and economic inequality, far-sighted activists will have to discern how to weave in and out of institutions, building power in one key while nurturing the fire of radicals in another.

## 1AR

### Case

**Even if positive feedbacks are inevitable, mitigation makes the feedback loops worse**

**Berwyn 21** (Bob, Inside Climate News, Citing Imperial College (London) climate scientist Joeri Rogelj, a lead author of the next major climate assessment from the Intergovernmental Panel on Climate Change., “Many Scientists Now Say Global Warming Could Stop Relatively Quickly After Emissions Go to Zero”, https://insideclimatenews.org/news/03012021/five-aspects-climate-change-2020/)

**Recent research shows that stopping greenhouse gas emissions will break the vicious cycle of warming temperatures**, melting ice, wildfires and rising sea levels **faster than expected** just a few years ago.

**There is less warming in the pipeline than we thought**, said Imperial College (London) climate scientist Joeri Rogelj, a lead author of the next major climate assessment from the Intergovernmental Panel on Climate Change.

“It is our best understanding that, if we bring down CO2 to net zero, **the warming will level off.** **The climate will stabilize within a decade** or two,” he said. “**There will be very little to no additional warmin**g. Our best estimate is zero.”

The widespread idea that decades, or even centuries, of additional warming are already baked into the system, as suggested by previous IPCC reports, were based on an “unfortunate misunderstanding of experiments done with climate models that never assumed zero emissions.”

Those models assumed that concentrations of greenhouse gases in the atmosphere would remain constant, that it would take centuries before they decline, said Penn State climate scientist Michael Mann, who discussed the shifting consensus last October during a segment of 60 Minutes on CBS.

The idea that global warming could stop relatively quickly after emissions go to zero was described **as a “game-changing new scientific understanding**” by Covering Climate Now, a collaboration of news organizations covering climate.

“This really is true,” he said. “**It’s a dramatic change in the paradigm** that has been lost on many who cover this issue, perhaps because it hasn’t been well explained by the scientific community. It’s an important development that is still under appreciated.”“It’s definitely the scientific consensus now that warming stabilizes quickly, **within 10 years, of emissions going to zero**,” he said.

**Tipping points allow for recovery time---apathy is not the answer**

**Asher 21** “Reversing warming quickly could prevent worst climate change effects: Study” Claire Asher – syndicated journalist, on 28 April 2021, https://news.mongabay.com/2021/04/reversing-warming-quickly-could-prevent-worst-climate-change-effects-study/

Catastrophic irreversible environmental tipping points — such as the melting of polar icecaps — **could be avoided even if we exceed global climate emissions reduction targets, provided we are able to reverse that overshoot quickly**, according to a study published in the journal Nature last week.

The 2009 Planetary Boundaries framework proposed nine key Earth System processes and described tipping points brought on by human exploitation beyond which the system could shift irreversibly into a new climatic state — one in which human civilizations would find it difficult to survive.

In the present study, researchers at the University of Exeter and the U.K. Centre for Ecology and Hydrology, both in the United Kingdom, developed simple mathematical models of four environmental elements in the Earth System that are fairly well understood: melting of polar ice caps, disruption of the Atlantic Meridional Ocean Circulation (AMOC), Amazon forest dieback, and disruption of India’s summer monsoon cycle.

Scientists found that crossing a climate change threshold would not immediately trigger irreversible change, provided that the duration of the overshoot was relatively short compared to that tipping element’s recovery time. For example, models of icecap melt and the AMOC showed about a 50-year lag between the world passing the theoretical climate threshold and the start of irreversible changes; the authors dubbed these tipping elements as “slow-onset.”

“Slow-onset tipping points take place over a timescale of many centuries and — depending on the level of warming — this would give us more time [than previously predicted] to act,” said lead author Paul Ritchie, a Research Fellow at the University of Exeter’s Global Systems Institute. On the other hand, Amazon forest dieback and India’s summer monsoon are “fast-onset” tipping elements, the authors say, because transgressing the threshold could trigger rapid and irreversible change in a matter of decades.

“Fortunately, the tipping points that are believed to be closest are slow-onset tipping points. **This may give us a lifeline to avoid dangerous climate change**.” said study co-author Joe Clarke, a PhD student at the University of Exeter.

Searching for a safe overshoot zone

The team combined their models to map out the “safe zone” of how much, and how long, we could overshoot 1.5°C warming without triggering any irreversible changes, (at least in the four tipping elements modelled). “Both the amount of overshoot and the period of overshoot are important,” explained Peter Cox, Professor of Climate System Dynamics at the University of Exeter and a co-author on the new study. But “tipping is a higher risk if we overshoot a threshold for a longer-time.”

“I support the use of simple models to help understand nonlinear dynamics such as tipping,” said Steven Lade, a Stockholm Resilience Centre researcher not involved in the present study. However, he expressed concerns that the new study’s “models are not sufficiently complex to distinguish whether a lagged response is reversible or irreversible.” For example, internal feedback processes may have already locked some Antarctic ice sheets into an irreversible melting state, even if those effects won’t be seen for centuries. “This is a subtle but important distinction that could substantially change their findings,” Lade said.

“It is true that the models that we use are deliberately simple. This allows us to demonstrate clearly how the timescale of a tipping element affects the ‘safe’ overshoot,” Cox responded. “We believe it is general enough to also apply to tipping points in more complex models, but this still needs to be confirmed”.

In addition, interactions between different elements — for example, a biome-shift from rainforest-to-degraded-savanna in the Amazon basin, exacerbating climate change and biodiversity loss — “could shorten the amount of time a threshold could be overshot,” warned Lade. Some of these interactions have been studied in depth but many more are still quite poorly understood, meaning they’re difficult or impossible to include in mathematical models of climate tipping points. Nevertheless, “neglecting interactions means any estimate will likely be optimistic,” Lade noted.

“It is possible to imagine cascades of tipping points,” agreed Cox. “This is another possible avenue for future research.”

The Paris Agreement’s target of keeping average global climatic warming within 1.5° degrees Celsius (2.7° Fahrenheit) of pre-industrial levels was selected so as to prevent triggering catastrophic tipping points like these. But with countries’ progress towards hitting that target disastrously slow (almost no nation is on target to meet their promised emission cuts, which are inadequate), it seems increasingly likely that the Earth will exceed 1.5°C warming — for a short while, at least — before any climate change mitigation strategies we implement over the coming decades start to take effect.

“We are quite likely to overshoot some tipping point thresholds temporarily,” said Cox. But these results show that “**this is not a reason for despair, but instead a reason for stronger action to slow climate change.”**

The study could offer some hope for humanity and the world. Dire reports detailing our looming proximity to several climate tipping points “may lead some to get dispirited about attempts to slow climate change,” said Cox, but these model outputs indicate “it is possible to overshoot tipping point thresholds without leading to an abrupt and permanent climate change… this means that there is always value in trying to slow and reverse climate change,” he said.

However, Lade cautioned that these results could also spark a more apathetic reaction. “**The paper could easily be misread to say that we don’t need to take action on climate for a century or more yet. While this is not their message, I am worried about how their results could be misinterpreted,” he said.**