Environmental Policy-Making; Theory & Practice

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1 Introduction

Over the past half century, sustained global economic growth has transformed the lives of billions of individuals. Yet, this growth has come at a cost; increased economic activity has led to widespread environmental degradation including climate change, deforestation, ocean acidification and high levels of air and water pollution. Accordingly, one of the primary goals of policymakers at all levels of government is to develop policies that successfully trade-off the benefits from increased economic activity with the costs of the environmental degradation this growth often brings.

While these costs can take many forms, the principal motivation for polices designed to protect the environment is the protection of human health. In some cases, these linkages are direct. We limit the emission of fine particular matter because it harms respiratory and cardiovascular health. In other cases, the linkages are indirect. For example, we invest in policies to protect river basin ecosystems, in part, because they improve drinking water quality and decrease soil erosion downstream. Cleaner water leads to less diarrheal disease and improved soil quality increases caloric availability that, in turn, decreases the prevalence of illness causes by malnutrition. While the latter relationships may be more difficult to assess, all of these effects form the building blocks from which the economic case for environmental protection is built.

The goal of this paper is threefold. First, we will provide a brief overview of economic perspectives on the root causes of environmental problems followed by a discussion of the common policy tools used to address them. Second, we will provide a number of case-studies from across the world to illustrate how these policies are applied in practice, describe their challenges and shortcomings, and assess their impacts on human health. The case studies will address national, regional and global efforts to protect the global commons. Finally, it should be noted that some of the greatest environmental harms have been induced by well-intentioned policy making in other domains. In the end, all policies are environmental policies. Attending to the ways in which our actions influence the state of the planet and human health is critical to ensure a sustainable and prosperous future.

2 Environmental Policy-Making

The principal driver of environmental degradation is a misalignment of perspectives. Individuals, firms, and governments make choices based on the costs that they will incur and the benefits they are expected to reap, but generally ignore the consequences of those decisions on others outside of their decision making purview.[1] These externalities can be experienced across a wide range of geographic scales, from impacts that are quite localised to those that span the globe. Intertemporal externalities are also important – when actions today have long-lived impacts, such as the release of greenhouse gas emissions, impacts may be felt across generations.[2] The key point is that all actors within the economy, even those with altruistic motives, are unlikely to undertake decisions that completely attend to these externalities absent some form of government intervention, leading to excessive levels of environmental degradation. It is precisely these market failures that threaten planetary health and lead to calls for bold policy responses.

While many approaches can be taken to address these market failures they all share the same objective. They encourage decisions that are socially optimal, such that they weigh both the private and external costs against the private and external benefits of any action. Non-price based policy instruments generally accomplish this by fiat – they codify into law and regulatory statutes restrictions on environmentally damaging behaviors. Price-based policy instruments, as the name suggests, uses market forces to price environmental harms and thus incentivise their avoidance. The key feature of price-based policies is that externalities can be internalised by forcing decision making entities to bear the full costs of their actions. Which policy instrument is best for solving a given environmental problem differs greatly based on context, in the subsequent sections we will provide a detailed discussion of the major advantages and disadvantages of each policy type.

2.1 Policy Instruments in Theory

The principal forms of non-price policy instruments used for environmental protection are mandates and bans. Mandates require that individuals or firms adopt a particular technology or production process to decrease the negative externalities produced from individual or firm activity. Standards require that firms or individuals maintain levels of a harmful good below a certain level Bans prevent firms or individuals from using a certain good or production process. In each of these cases, non-compliance with the regulation leads to civil or criminal punishments of varying severity. Mandates and bans can occur at all levels of governance ranging from municipalities placing restrictions on local industrial pollutants to global agreements banning or restricting harmful activities (as in Case Study 2).

Price-based policies for environmental protection also take two primary forms: taxes/subsidies or a cap-and-trade system. Taxes and subsidies offer the most straightforward approach to price these externalities. Taxes are imposed on activities that cause external damages; since firms (or individuals) now bear those costs directly, they have strong incentives to reduce environmental harms. For example, a carbon tax would encourage firms to take into account the external damages caused by carbon emissions when making investment decisions. Subsidies work similarly but in the opposite direction. Payments are offered for actions that create external benefits –payments for ecosystem services are prominent example – to encourage the relevant actors to engage in more of that behaviour. If taxes/

subsidies are set optimally, such that they precisely correspond to the external harm/benefit, the externality will be fully internalised and regulated actors will only engage in actions where the social benefits exceed the social costs. More prosaically, firms now incorporate the environmental costs and benefits of their actions into their decision making since the tax/subsidy transforms them into an explicit item on their business ledgers.

An alternative mechanism to adjust the price of an externality-producing good is to set up a cap-and-trade system. Under a cap-and-trade system, the policymaker creates permits that allow firms (or individuals) to engage in some harmful activity (i.e. creating pollution, chopping down a forest, etc.). The total number of permits is called the "cap", and it establishes the maximum amount of the harmful activity that is allowed. The policymaker assigns (or auctions off) these permits to firms, which then have the ability to trade with one another on the open market. Under trading, the reductions implied by the cap are met in the most efficient way possible, with low-cost abatement firms shouldering more of the responsibility (in exchange for payments from high-cost abatement firms). If designed optimally, the market clearing price of those permits, like the optimal tax, will correspond precisely to the external damages caused by the harmful activity.

While both tax and cap-and-trade systems can be used to re-align incentives and improve environmental quality, it is important to note their differences when the costs of protection are uncertain.[3] Cap-and-trade systems fix the level of environmental harm so that all of the uncertainty is propagated through permit prices. Tax systems fix the price of environmental harm so that all of the uncertainty is propagated through pollution levels. The consequences of those uncertainties will differ across economic and regulatory settings and should serve as a useful guide for selecting between these two strategies.

2.2 Policy Instruments in Practice

While the function and virtues of various policy approaches may be clear in theory, their use and effectiveness are shaped by a wide range of practical realities. The list of these factors is too long and context specific to enumerate, but it is instructive to review several broad categories of challenges.

Technical and Informational Constraints: Designing optimal policy, irrespective of which policy tool is chosen, requires a comprehensive assessment of all social costs and benefits. On the benefits side, those might include relatively straightforward measures like averted infant mortality or hospitalisations near the sources of pollution[4], but also impacts on communities further away in space or time, which are much harder to assess. Other benefits from pollution reduction, which include emerging evidence on the impacts of pollution on cognitive performance and learning[5 6 7], are even more challenging to measure. Forecasting all the costs imposed by new regulations is equally tricky, particularly as technologies to control environmental harms are constantly evolving based on experimentation and scientific advances. Price-based tools offer an important advantage in this context since pollution levels under a tax or permit prices under a cap-and-trade system provide valuable feedback on underlying cost structures. This information along with any emerging new evidence on the benefits from environmental protection can then be used iteratively to fine-tune policy making.

Institutional Capacity: Successful environmental policy, like most types of policy, requires monitoring and enforcement. The strength of government institutions and their ability to design and enforce rules is clearly important. In the environmental context, where the basis for government interventions are often scientifically and technologically complex, policy making may be further constrained by the availability of relevant expertise and a competent technocratic apparatus. In this regard, non-price policy instruments may be preferable. Mandates and bans are relatively easy to monitor and enforce. Conversely, price-based approaches typically require costly monitoring infrastructure, well-functioning tax authorities, and the development of electronic exchanges where pollution permits can be traded, which may not be feasible in many settings.

Political Economy: Finally, it is important to recognise that all policies create winners and losers and thus advocates and detractors for every change. In many cases, the costs or environmental regulation are felt locally but the benefits are spread over a more diffuse population. This is especially true for policies that have long lasting impacts since many of the benefits from a policy may be realised by individuals that are not yet born. Election cycles and the politics of now are often incompatible with long-run investments in the future. Distributional concerns regarding who bears costs is equally contentious amongst regulated entities. Incumbent firms frequently support standards and mandates because they often include grandfather clauses for existing firms; in this way they serve as a barrier to entry from new entrants in the industry which has its own negative implications for economic growth and prosperity, but engenders the support of those firms subject to the regulation. In a similar vein, cap-and-trade systems, which could auction permits to raise revenue, generally allocate them at no cost to regulated entities. [8] Indeed, they often over-allocate pollution permits to elicit industry buy in, with a commitment to lower caps over time to deliver on the intended environmental benefits.

One attractive feature of taxes (and auctioned permits in cap-and-trade programmes) is that these policies generate revenue that can be used to reduce other taxes within the economy or finance new or existing government programmes.[9] Despite this attraction, non-price instruments are often much more politically appealing than price-based ones because the costs imposed on consumers from policies like mandates or standards are generally less transparent and thus appear less politically toxic than those where costs are a prominent feature of the policy design. Environmental subsidies face a different challenge. They are costly to provide and difficult to wind down as consumers and firms become dependent on them.

In the end, the practical success of each policy approach will depend on the context in which it is implemented. Environmental policies can be designed to resolve local, regional, or global problems characterised by varying levels of complexity. In the section that follows, we present a range of case studies to help elucidate the design and challenges of environmental policies across the globe.

3 Case Studies

3.1 Deforestation – National Effort

Despite recent progress, the Earth's forests continue to disappear at an alarming rate. In the Amazon, deforestation rates have recently begun to rise after a multi-year decline as thousands of acres of forest are cleared each year to create new soybean plantations and ranches.[10] In Sub-Saharan Africa, rapid population growth has led rural villagers to cut down thousands of hectares of forest to access new fuel and food sources.[11] In Southeast Asia, commercial logging and increasing demand for palm oil have made Indonesia the world's second largest deforester.[12]

Deforestation has adverse effects on communities at the local, regional and global level. Locally, deforestation can decrease soil quality, change rainfall patterns and lead to soil erosion. Regionally, deforestation increases the risk of flooding; a 10% decline in forest coverage is associated with between 4-28% increase in flooding risk, depending upon the country.[13] Flooding kills thousands and displaces hundreds of thousands of people each year, underscoring the relationship between and human health and well-being. Globally, deforestation is a major contributor to climate change. Forests hold more than two times the current amount of carbon in our atmosphere and absorb 33% of CO2 emissions caused by fossil fuel use and land change.[14][15] Deforestation, and especially tropical deforestation, is therefore doubly bad for decreasing atmospheric carbon levels—it removes a carbon sink that can absorb future carbon emissions, while at the same directly increases the amount of carbon released into the atmosphere.

Decreasing deforestation is a difficult problem that requires context-specific solutions. When deforestation is carried out by firms and other large landowners, policies punishing firms that illegally deforest by cutting off access to credit or markets can be particularly effective. An excellent example of this type of policy is Brazil's Resolution 3545, which banned firms who were non-compliant with the Brazilian Forest Code from accessing state-subsidised credit. This programme was found to reduce deforestation in the Amazon by more than 700 hectares (10%) a year in the years immediately following the policy with especially large effects on cattle ranches.[16] Of course, implementing such a policy requires a sustained political consensus on the importance of preventing deforestation. Indeed, in Brazil, outcries against the law and other related measures fighting deforestation by rural interest groups led to a partial roll-back of protections in 2012, which coincided with a large uptick in Brazil's deforestation rate.[17]

While increasing punishments for offending firms at the country level is an effective strategy against deforestation when both the political will for forest preservation exists and deforestation is concentrated among large firms or landowners, in many cases such a policy will not be feasible. An alternative approach is to instead pay firms, villages or individuals for protecting their forests. This subsidy for forest protection has a clear economic rationale; the benefits from forests are shared globally, but the cost of foregoing the potential economic gains from not deforesting are felt only by local communities. A subsidy can give residents of those communities a piece of the large global benefit they are creating by choosing not to deforest.

A recent experiment in a rapidly-deforesting district of Uganda tested the effectiveness of exactly this type of programme.[18] Individuals in 60 villages within the district were randomly selected to receive payments of $28/year for each hectare of forest they preserved. This payment reduced deforestation rates by 50 percent in villages that received the programme. Moreover, this programme was highly cost-effective. Using the United States' EPA's prevailing measure of the social cost of carbon, the monetary value of the environmental costs from releasing a ton of carbon into the atmosphere, the experiment found that the benefits were more than twice the programme costs. The programme would remain cost-effective even assuming a much wider range of social cost of carbon values.[19]

One notable challenge for this type of policy is that the countries that contain the most threatened forests often have the least ability to pay for this type of programme. Thus, without sustained support from other players that also stand to gain from these global environmental benefits, enacting such a programme may not be feasible. A second challenge is that these programmes require significant levels of monitoring and an infrastructure to facilitate payments. As remote sensing technology and mobile money systems continue to improve, payment for environmental services programmes such as these will become easier to run at scale, even within governments that have a relatively low levels of state capacity. These types of subsidy payments, administered in partnership with local governments, may be an especially attractive way to help prevent deforestation.

3.2 EU Cap-and-Trade – Regional Effort

A global consensus exists that increased carbon dioxide in the atmosphere is leading to climate change and global warming.[20] Climate change is expected to have large negative consequences on human health[21] and economic activity[22] across the globe. Reducing carbon emissions is a global problem that requires global solution. However, as with ozone depletion, the benefits of each nation's carbon reductions are spread across the globe, while the costs are localised, creating strong incentives to free ride on other countries' actions.

One way this problem can be solved is through a global collective action agreement. Unfortunately, given the high costs of carbon reduction, some countries will have strong incentives to cheat (or set emission targets too high); without a strong enforcement mechanism, such agreements may be useless. An alternative is to create regional carbon reduction agreements among countries or sub-national entities in which institutions for enforcement and cooperation already exist. While these regional agreements cannot fully address the global problem on their own, their success can help to identify the costs and benefits of effective abatement strategies and thus increase the likelihood of further cooperation across the globe.

The European Union attempted such a regional agreement with the introduction of its Emissions Trading System (EU ETS) in 2005. This programme required that all large firms operating plants in the power-generating and a mutually agreed upon set of industrial sectors obtain permits equal to the amount of carbon dioxide they emitted. The number of permits were limited—this "cap" was set to correspond to the emissions targets agreed upon by each country. In the first pilot stage of the policy (2005-2007), countries set their own caps and allocated permits to firms. In later stages, some proportion of permits would be auctioned off to the highest bidders. Firms were allowed (and encouraged) to trade permits among themselves. In this way, the cap could be met most efficiently—firms that could cheaply limit emissions would choose to reduce them, while firms for which abatement was expensive could purchase additional permits rather than making expensive investments in new abatement technologies. Yet despite the lofty ideals of the European programme, its success has been modest.[23] Understanding the reasons greater success was not achieved is essential for designing more successful climate policies moving forward.

For a cap and trade programme to be successful it is necessary that the cap be set lower than existing emissions levels. If the cap is set too high, there will be an excess of permits and the price of those permits will fall towards zero, reducing firms' incentives for abatement. Due to economic concerns, political pressure and the need to engender buy in from participating governments and firms across the region, this is precisely what happened in the European case. The cap in the pilot phase of the cap-and-trade programme (2005-2007) was at a level where permit supply far outstripped demand, leading permit prices to crater and the markets to collapse once firms became aware that expected emissions were beneath the total cap. While the cap was scheduled to decline over time, the lower emissions targets in the second phase of the cap and trade market coincided with the Great Recession. The recession led to a large decline in energy demand and by extension carbon emissions, creating a glut of permits even under the lower cap. These permits could be saved to use in future years, keeping carbon prices low even as the economy recovered and the cap continued to drop in the post-recession era. As a result of these low carbon prices, studies of EU ETS find that the programme led to only relatively modest emission reductions, on the order of 2%-4%.[24]

It is important to note, however, that even with low prices, expectation of future price increases can lead to long-run emissions reductions. Indeed, research has found some evidence that the introduction of the ETS led to an increase in carbon abatement technology patents among affected firms.[25] Thus, while the ETS has produced a carbon price that is too low to encourage significant contemporaneous abatement, the specter of future price increases may have also sparked research that will pay large dividends in the future.

An important challenge with regional cap and trade agreements that the European Union has successfully navigated to-date is leakage. Leakage occurs because low trade barriers allow firms facing a new regulation to re-locate to areas of the world with less-stringent regulations. In the case of the European Union, leakage could have occurred if firms in carbon-intensive industries chose to relocate to North America or Asia rather than face higher input prices in Europe. The EU was extremely concerned about carbon leakage and took major steps to avoid it--most importantly allocating (rather than auctioning) carbon permits to all firms in industries deemed at high-risk of carbon leakage.[26] To date, studies have found that carbon leakage in the EU ETS have been minimal, but it is unclear if this is because of the specific safeguards designed in the EU ETS or because carbon prices have remained persistently low.[27] Indeed, regional carbon agreements in the United States have shown substantial evidence of leakage.[28] Therefore, as the EU takes steps over the next decade to increase the traded price of carbon, it will be of the utmost importance to continuously monitor carbon leakage and ensure that regulators have the flexibility to make policy changes to counter leakage should evidence of its existence emerge.

The EU carbon market experience illustrates two important lessons for the design of cap and trade programmes. First, setting the cap must always walk a tightrope between creating strong incentives to reduce pollution and encouraging voluntary participation by those who will bear the costs of that abatement. Firms will often advocate for higher caps and politicians facing re-election pressures may have little incentive to prevent these industrial groups from having their way. Setting emissions targets that become increasingly stringent over time can help by providing more time to identify effective abatement technologies and pushing the costs of investment into the future. Finding additional mechanisms that can insulate these decisions from political processes, while often context specific, is also critical for the success of future programmes. Second, flexibility in changing the cap in response to changing economic conditions is also important. Economic booms and busts have large independent effects on emissions, as will significant changes in the availability of abatement technologies. The use of safety-value approaches that establish permit price ceilings and floors can help to prevent permit gluts or shortages to both ensure robust participation in the market and create strong incentives for environmental improvements that improve human health and well-being. These policies also provide firms with greater policy certainty, creating a more favorable climate for longer-run investments.

In the end, the disappointing performance of the ETS for carbon to date does not imply that cap-and-trade programmes will not work in the future. Rather, it provides important lessons for any future attempts to create new broad-based cap-and-trade programmes.

3.3 Ozone Depletion – Global Effort

In the 1970s and 1980s, a series of scientific articles demonstrated conclusively that the Earth's ozone layer was rapidly depleting and that this depletion was due to the release of chlorofluorocarbons (CFCs) into the atmosphere. CFCs are non-toxic, non-flammable chemicals used mostly in aerosol sprays and refrigeration. Prior to the 1980s, these chemicals were used in a wide range of consumer products. Ozone depletion has large negative effects on human health, including significant increases in non-melanoma skin cancer and cataracts.[29] Ozone depletion also threatens the natural world—increases in ozone depletion have been shown to slow plant growth and harm marine ecosystems.

One of the chief obstacles to tackling the ozone depletion problem was the public good nature of the threat and the accompanying free-rider problem. Since the benefits from reducing CFCs are shared across the globe, while the costs of these reductions are borne locally, countries have an incentive to rely on other countries to reduce their CFC production, yielding a stalemate in which no action is taken. Two important features of the ozone depletion setting allowed for an international agreement to be crafted that could overcome this free-rider problem.[30]

First, ozone depletion was expected to have its largest effects among the world's largest producers of CFCs because these countries were located at high-latitudes (where ozone depletion was highest) and had light-skinned populations (who are most susceptible to skin cancer caused by ozone depletion). As a result, for many of these countries even unilaterally acting to reduce their own CFC production independent of other country's actions was a highly cost-effective proposal. For example, in the United States, the benefits of CFC reduction were estimated to be 65 times larger than the costs.[31] Thus, the central challenge of any agreement to reduce CFC levels was creating incentives for developing countries to commit to not produce CFCs once developed country restrictions went into effect, rather than inducing current CFC producers to act directly against their own interests. Second, CFC production was not central to any country's economic performance and in response to growing scientific evidence linking CFCs to ozone depletion, industry quickly developed relatively inexpensive alternatives as a replacement. As a result, any compensation necessary to induce nations with low-levels of harm from ozone-depletion to participate in the treaty would be relatively small.

In September 1987, 189 nations were able to agree to the Montreal Protocol on Substances that Deplete the Ozone Layer, a treaty with defined reductions in the global levels of CFCs (and other chemicals and substances thought to lead to ozone depletion) phased in over time.[32] These cuts would be enforced via trade penalties for any violators, thus creating strong incentives for compliance. Importantly the costs of compliance with the treaty for developing countries would be paid for by developed countries via a multilateral fund.[33] To date, these costs have been relatively small—totaling $3.1 billion through 2017.

The Montreal Protocol has been an enormous success. The level of ozone-depleting substances in the troposphere has fallen significantly and non-Antarctic ozone levels are expected to return to pre-1980 levels by the middle of the 21st century.[34] This reduction in ozone depletion has had and will continue to have large health effects and the aggregate costs of phasing out CFCs have been quite modest. Recent estimates suggest that in the United States alone, the Montreal Protocol will lead to a reduction 1.5 million skin cancer deaths, 283 million skin cancer cases and 45 million cataract cases between the implementation of the protocol and the year 2100.[35] Effects worldwide are likely substantially larger.[36] Moreover, the Montreal Protocol has been extremely flexible. Since its ratification, it has been amended eight times to reflect changes in our scientific understanding about the threats that CFCs and some of its replacements pose to the environment. One notable as-of-yet unratified amendment took place in 2016, whereby 197 countries agreed to large reductions in HFCs, a CFC replacement that, although harmless to the ozone layer, is a large contributor to greenhouse gas emissions. Curbing HFC growth is difficult because many developing countries are increasing both the manufacture and consumption of HFC products like refrigerators and air-conditioners. Whether this amendment is ratified will be a good test of whether the Montreal Protocol framework can be successful in addressing climate change issues as well.

Indeed, as our struggles to address the threats from climate change poignantly illustrate, there are many reasons to think that the achievements of the Montreal Protocol may be hard to replicate. Its success was at least partly attributable to a lucky confluence of factors —the countries most affected by the environmental harms were also the largest producers of environmentally-polluting goods and the costs of reducing pollution were relatively small. In settings that share these characteristics, the Montreal framework may serve as a useful template. In others, an alternative approach may be necessary.

4 Conclusion

One of the great challenges of the 21st century and beyond is the design of policies and institutions that appropriately balance economic growth and environmental protection while understanding the important feedbacks between them. This paper has provided a broad overview of the regulatory approaches designed to accomplish this goal, the socio-political realities that shape their success, and a range of case studies to highlight some of the salient features of environmental policy making in practice. Three elements are critical – measurement, design, and enforcement.

The vast majority of environmental regulations are designed to protect human health, and health impacts can take many forms. At the same time, all environmental regulations create both direct and indirect costs. Measuring the extent of these costs and benefits as well as how they vary with the intensity of a given activity is difficult but essential for good policy making. Science is an iterative process and the technologies we use to produce various goods and services is ever-changing. It is essential that policies be designed flexibly enough to change as new evidence about costs and benefits emerge, recognising that their relative size and distribution play a pivotal role in the politics of any rulemaking and its ultimate success.

While a solid evidence-base and good measurement is necessary for good policy, it is insufficient to guarantee success. As we have seen in our case studies, policy design and enforcement are also critical, particularly since most polices have unintended consequences. As discussed in Case Study 2, the mobility of capital and low trade barriers is a special concern for regional agreements where leakage can undermine policy goals. Another unintended consequence that is generally overlooked is the environmental impact of policies designed to address non-environmental issues. All policies alter the incentives to engage in some set of economic behaviors, and since many of those impact environmental quality, it is not an exaggeration to claim that all policies are environmental. Yet, surprising little is done to attend to incorporate these concerns when designing or evaluating the policy making enterprise. A more comprehensive policy analysis process that takes into account environmental changes caused by all economic policies, not just those that are explicitly environmental, is essential for a policy-making process designed to maximise the returns to society.

There is a strong economic case for adopting polices to better protect our planet and this paper has highlighted a number of policy instruments that can be used to accomplish this goal. Yet, choosing the correct policy to address a given problem is not easy; comprehensive, data-driven analyses and a strong understanding of incentives and the political context in which they operate are essential to choose policies that will create long-run economic growth without sacrificing planetary health.

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About The Rockefeller Foundation

For more than 100 years, The Rockefeller Foundation's mission has been to promote the well-being of humanity throughout the world. Today, The Rockefeller Foundation pursues this mission through dual goals: advancing inclusive economies that expand opportunities for more broadly shared prosperity, and building resilience by helping people, communities and institutions prepare for, withstand, and emerge stronger from acute shocks and chronic stresses. To achieve these goals, The Rockefeller Foundation works at the intersection of four focus areas—advance health, revalue ecosystems, secure livelihoods, and transform cities—to address the root causes of emerging challenges and create systemic change. Together with partners and grantees, The Rockefeller Foundation strives to catalyze and scale transformative innovations, create unlikely partnerships that span sectors, and take risks others cannot—or will not.

About the Oxford Martin School

The Oxford Martin School at the University of Oxford is a world-leading centre of pioneering research that addresses global challenges. It invests in research that cuts across disciplines to tackle a wide range of issues such as climate change, disease and inequality. The School supports novel, high risk and multidisciplinary projects that may not fit within conventional funding channels, because breaking boundaries can produce results that could dramatically improve the wellbeing of this and future generations. Underpinning all our research is the need to translate academic excellence into impact – from innovations in science, medicine and technology, through to providing expert advice and policy recommendations.

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