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Isabella Wedl and Eric Lonergan*

Beyond the Fixation on Carbon Pricing: A New Framework for Designing Climate Policy

The focus of climate economics has traditionally been on CO_2 as a negative externality. For decades, this has led policymakers to strongly focus on carbon pricing as the preferred climate policy instrument. But addressing the climate crisis differs fundamentally from a pollution problem. It requires a rapid transformation towards sustainable energy production and the electrification of other sectors, which carbon pricing alone has proven insufficient to deliver. This article outlines an economic framework that moves beyond the narrow lens of externalities and draws attention to the key roles that capital costs and price elasticity play in shaping green investment and the shift to low-carbon consumption. Together with political economy considerations, these observations suggest a pragmatic approach where carbon pricing is not the primary instrument but is instead sequenced with other policies, namely policies that lower the cost of capital for green investments and targeted positive incentive policies that help to create affordable and attractive low-carbon alternatives.

For decades, economic thinking on climate policy has been dominated by the concept of negative externalities, i.e. the framing of greenhouse gas emissions as a societal cost that needs to be internalised into market prices to correct the market failure. This framework, articulated most prominently by Nobel prize winner William Nordhaus fundamentally sees the climate crisis as a pollution problem, the prescribed solution to which is to impose a tax or price on carbon. Carbon pricing is therefore seen as the central mechanism to shift economic production and consumption from carbon-intensive to climate-friendly practices. For many economists, this remains the "first-best" policy option, praised for its cost-efficiency, technology neutrality and fiscal potential. This thinking has become deeply embedded in policymaking and informed the adoption of cap-and-trade systems and other carbon pricing mechanisms in Europe and beyond.

But when applied to the practical challenge of achieving net-zero – such as technology innovation, infrastructure cost reduction, and the real drivers of consumer choices – the theory of externalities has critical limitations.

First, the core of any successful decarbonisation path is the provision of sustainable electricity and the electrification of other sectors, which requires investment in new, capital-intensive technologies in the power sector. To accelerate investment in regulated utilities, economic theory typically recommends the leveraging of regulatory design and lowering of the cost of capital – which carbon pricing cannot provide.

Second, the transition requires major shifts in consumption, but many emission-intensive goods and services suffer from high price inelasticity i.e. demand is hardly affected by price changes. This means that consumers and firms absorb higher prices without substantially changing their behaviour, which leads to regressive effects, political backlash and limited emissions reductions. Price elastic-

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* This year's Berlin Summit continued the discussion on modern climate policy that the Forum for a New Economy had kicked off last year, highlighting the benefits of positive instead of negative market incentives. The climate policy session focused on the presentation and discussion of our forthcoming paper "Beyond Externalities – a new framework for climate policy", co-authored with Michael Grubb, which we summarise in this article. The paper moves beyond the either/or framing of carbon pricing versus positive incentives and lays out the economic rationale for an effective sequence of climate policies.

Isabella Wedl, Forum New Economy, Berlin, Germany; and Institute for European Environmental Policy, Brussels, Belgium.

Eric Lonergan, Calibrate Partners, London, UK.

ity is therefore an essential prerequisite for carbon pricing to work.

Third, to alter price elasticity and allow consumers to move to low-carbon alternatives, the creation of near-perfect substitutes for carbon-intensive goods is needed. Taxing fuel, for instance, has limited impact on driving habits if viable electric vehicles (EVs) are not a cheaper alternative and underinvestment in charging infrastructure does not make them close substitutes. Only when these are in place will a carbon price have a substantial impact on behaviour.

These observations help to gain clarity on the economics of decarbonisation policies and significantly alter one's perspective on policy appropriateness and sequencing. Initiating the decarbonisation of a sector with carbon prices tends to create high political costs, as they often disproportionately affect lower-income households. This frequently results in carbon prices being set at levels that are too low to drive significant emissions reductions, or in policy instability that undermines long-term investment. Sequencing positive incentive policies ahead of carbon pricing is not just more likely to deliver results but also to dramatically alter public perceptions of climate policy.

Supporting strategic investment by targeting the cost of capital

Investment in clean electricity and electrified infrastructure is paramount to reaching net-zero, and a primary lever for scaling renewables is targeting the cost of capital. While private investment in green innovation in these sectors has been historically weak, the past two decades have seen the costs of key renewable energy technologies fall dramatically. Apart from early public research and development, this has been the result of cost-reducing processes, such as learning-by-doing, economies-of-scale at all stages, and reductions in financing costs as experience and confidence grew.

The policies that have mainly driven these capital cost reductions fall into three groups. First, loan guarantees and targeted lending by public finance institutions, which can play a vital role in lowering capital costs. The most famous example of this might be the Chinese central bank's low interest loans for renewables. As part of an international strategy, Export Credit Agencies (ECAs) can provide guarantees or concessional finance to unlock investment in renewable projects in developing countries. The second group is comprised of grants and fiscal instruments, such as tax credits, as used extensively in the US Inflation Reduction Act. And the third group is made up of the financial de-risking policies that address the revenue risks that renewables face in competitive electricity markets. As electricity market prices usually depend on fossil fuel prices, the revenues for power from renewables are uncertain, which creates a high cost of capital for investors. The UK's Contracts for Difference (CfDs) scheme provides a powerful example of policies that de-risk electricity prices. By guaranteeing a fixed price (strike price) for renewable electricity generated, CfDs provide long-term revenue certainty for developers. When wholesale market prices exceed the strike price, generators pay back the difference, protecting consumers from excessive costs.

While the specific instruments may vary, the general lesson for other sectors from the success with renewables is the need to prioritise policies that can establish low-carbon technologies at scale, including by targeting the cost of capital.

The experience since the beginning of the Ukraine war underscores the centrality of capital costs. Even with rising carbon prices, higher interest rates and inflation derailed many renewable energy projects. In the US and the UK, multiple offshore wind projects were cancelled over the past few years because soaring debt costs rendered them unviable.

In addition to financing, regulatory certainty and appropriate market design are crucial: governments should provide clear long-term policy signals, including timelines for phasing out approvals for new unabated fossil fuel generation. Significant investment is needed in grid infrastructure, including transmission lines, interconnectors and distribution network upgrades, to accommodate high shares of variable renewables like wind and solar. Market rules must be adapted to value flexibility and ensure efficient integration.

Creating near-perfect substitutes through targeted positive incentives

Decarbonisation also requires a deep shift in consumer and corporate behaviour towards the production and consumption of low-carbon goods and services – particularly in the transport, heating and food sectors. But as outlined earlier, carbon prices have limited effect when demand is inelastic and alternatives are costly. Often, the sustainable option also entails significant inconvenience, a shift in cultural norms or a significant capital cost. A small financial incentive is unlikely to offset significant inconvenience. Instead, the key is to create affordable and attractive low-carbon substitutes.

Targeted positive incentives (TPIs) are policies that offer a potent approach to altering behaviour by making sustainable choices radically cheaper, easier and more attractive. This often involves creating a significant relative price advantage for the green alternative or offering significant non-monetary benefits.

Norway and several Chinese cities, for instance, have had astonishing success in electrifying the auto market by using a relative price strategy. Norway started to implement positive incentives for EVs in the 1990s, including exemption from vehicle import taxes and 25% VAT; significantly reduced or waived road tolls, ferry charges and public parking fees; and offered access to bus lanes in congested areas. These measures eliminated the upfront cost disadvantage of EVs and added significant user benefits. In addition, substantial investment in public charging infrastructure addressed anxiety and helped to create a near-perfect substitute for petrol cars. As a result, EVs captured around 90% of new car sales by the early 2020s. The success demonstrates the power of creating near-perfect substitutes and then targeting relative prices in influencing consumption choices. As EV technology matured and costs fell, some of the most generous incentives were phased out, demonstrating that TPIs can act as powerful catalysts that need not be permanent. Most importantly, Norway used tax exemptions to ensure the list price of electric cars was below that of the fossil fuel alternative.

Another example is residential energy efficiency: the US Inflation Reduction Act's Residential Energy Efficiency & Electrification programme has incorporated TPI principles for home energy upgrades. It includes substantial point-of-sale rebates for installing heat pumps and other energy efficiency improvements. In addition, homeowners can claim 30% of the cost of energy efficiency improvements. These measures directly reduce the upfront cost barrier for homeowners, accelerating the adoption of efficient electric heating and improved building envelopes. Around 3.4 million households have claimed these credits, which points to the effectiveness of such direct financial support (U.S. Department of the Treasury, 2024).

This approach can be applied sector by sector by focusing on the relative price and convenience of green substitutes (e.g. plant-based alternatives or green steel) to make it the default. Carbon prices should then be sequenced as part of this broader approach.

Carbon pricing as part of policy sequencing

To address the dynamics of the green transition, we need a combination of different types of policies. Carbon prices still have a role to play within that policy mix. First, as an incentive to switch to lower-carbon options where price elasticity is already high, e.g. encouraging the switch from coal-fired to gas-based power generation. Second, carbon prices can prevent backsliding to carbon-intensive options once targeted positive incentives have successfully helped to create near-perfect alternatives. By increasing the relative price advantage of green technologies, they function as a phase-out signal for incumbent technologies and allow targeted support to be removed more quickly as cost reductions of new technologies continue. Third, carbon prices can potentially be used to raise revenue to finance support policies during transition periods. Finally, the ability of carbon pricing to drive incremental innovation can be leveraged in industries where more radical solutions are not yet viable.

A broader perspective on the economics of price elasticity suggests that the effectiveness of carbon pricing will be significantly dependent on their sequencing with other policies that rapidly reduce the cost of green technologies. Policy sequencing from benefits to costs also helps to overcome major political challenges by increasing political acceptance of climate policies and building interest groups that support decarbonisation policies.

Despite the economic policy advice to prioritise carbon pricing, which prevails in many places, we have seen a version of this policy sequence being applied in the power sector in various world regions: in the EU, California and China, targeted support policies predated direct carbon pricing, creating more favourable market conditions for renewable technologies. However, the fact that this sequence tends to be implemented due to political realities rather than being made a strategic priority, shows that rethinking the economic framework is key.

Distributional consequences of net-zero policies

When compared to an approach that focuses solely on carbon pricing, effective policy sequencing tends to avoid certain distributional challenges, since the creation of near-perfect low-carbon substitutes facilitates consumption changes, thereby preventing subsequent carbon pricing from having regressive effects. Similarly, policies supporting the supply of cheaper renewable energy, which lead to lower electricity prices, should be beneficial to lower-income households in particular.

But the green transition also involves profound restructuring of our capital stock (Pisani-Ferry & Mahfouz, 2023) – which means that we are accelerating the depreciation of carbon-intensive assets and creating new sustainable assets. Who are the losers and who bears the cost of this redistribution of wealth? Losses may well be concentrated in the hands of very few (Lonergan & Sawers, 2022). For example, the oil producing sector's share of global stock markets is less than 6%, and stock ownership is highly concentrated in the top 10% of the wealth and income distribution.

The use of positive incentives and taxes should also consider distributional consequences and, potentially, scope for regional economic development. For instance, green mortgage programmes creating a skills base, expertise and broader infrastructure around heat pumps could be targeted initially at regions where unemployment is higher. Similarly, targeted incentives can be aimed at those with low incomes. The French "social-leasing" scheme is a perfect example of a TPI that makes the relative price of the green option far cheaper for the consumer than the carbon-intensive alternative. The policy has been both highly successful and popular (after being inundated with demand, the scheme was suspended in 2024 and was re-launched in September 2025). In a similar vein, tax exemptions for EVs could be aimed at non-premium and smaller models.

Finally, the impact on inflation is relevant to the distributional consequences of net-zero policies. There has been a growing focus on the impact of electricity prices on inflation and the cost of living – which can have regressive effects on middle and lower-income families. Policies that lead to lower and more stable electricity prices, e.g. by reducing the interest costs of renewables, should therefore also reduce inflation. This raises important questions around the implementation of dual interest rates by central banks – a policy that emerged originally in response to the zero bound. In sectors where the cost of capital is dominated by interest costs, raising interest rates – perversely – may have raised inflationary pressures. Dual interest rates and targeted lending programmes would have the opposite effect.

Addressing political economy challenges

Public narratives often portray climate action as coming at the expense of economic well-being, linking it to job losses, unaffordable bills and rising economic insecurity. These perceptions partly reflect the traditional economic assumption of a trade-off between emission reduction measures and current living standards. In addition, climate proponents themselves have used scientific language and command-and-control messaging that feel disconnected from people's lived experiences.

Establishing a shared narrative could significantly enhance public support of climate policy. There are mainly two positive frames being discussed in this context: first, shifting the narrative from scarcity and sacrifice to opportunity and prosperity; and second, focusing on the contribution of the energy transition to safety and resilience in a more volatile world. There is still a pervasive misconception that switching to clean energy is costly. For decades, projections made by standard economic models have badly overestimated future costs of clean energy technologies. The real cost of solar energy, for example, dropped twice as fast as the most optimistic projections. The reason for this gap is that cost forecasting methods have not accounted for the different rates of improvement between clean energy technologies and fossil fuels. For the latter, costs have remained roughly constant through time, while the costs of renewables have dropped exponentially. In reality, renewables not only helped to mitigate the most severe impacts of the 2022 energy price shock but are also likely to drive a durable reduction in wholesale electricity prices in the future, as some clean technologies are already cheaper than fossil fuels. The electrification of end-uses also comes with energy efficiency gains. These advantages will affect not only energy security but also countries' competitiveness, in particular for areas like electrified defence logistics and artificial intelligence, which require high amounts of electricity.

To help embed the cost advantage of renewables in public perceptions, it must become directly tangible for citizens. But the current structure of wholesale electricity markets prevents this as the cost of gas continues to influence electricity and heating costs. Structural changes are needed to separate the average electricity price from the gas price. This could be done by further developing tradeable long-term contracts for electricity, as suggested by the Draghi report, which deliver a fixed price of electricity over a fixed time horizon. In the short term, a scheme that pools the electricity from renewables already operating on government-backed fixed prices (such as the CfDs mentioned above), could enable the most vulnerable consumers to gain direct access to cheap renewable energy. While deeply entrenched narratives take time to change, linking low-carbon alternatives to socio-economic benefits has the potential to shift public perception towards envisioning climate policy as an economic opportunity.

Misperceptions about cost implications also persist among policymakers – in particular, finance departments, which may dismiss positive incentive policy proposals as too expensive. However, from a total cost perspective, a rapid green energy transition is likely to result in large overall net savings, even without accounting for climate damages.

Fiscal costs: Fiction and reality

One common objection to this framework might be that positive incentives are "costly" for the public. Indeed, debates about the costs of climate change policies frequently conflate very diverse consequences for the public sector balance sheet (the stock of assets and liabilities owned by the state) and fiscal balance (the difference between government taxes and revenues). For example, the highly influential McKinsey Global Institute study (McKinsey, 2022) led with the headline that the transition to net zero would "cost an additional $3.5trn annually". The media coverage seized on this headline. "Cost" in this context seems to be synonymous with "spending" and one might conclude that climate policies will impose an astronomical burden on taxpayers and businesses. This is a misleading oversimplification.

Two very different "costs" are frequently conflated in assessing the consequences of positive incentive policies for the public sector balance sheet and fiscal balance: On the one hand, cash transfer payments to consumers incentivising behavioural change, or non-income generating grants to the corporate sector, need to be funded with taxes or debt issuances. It seems appropriate to consider these subsidies or fiscal costs – even if there are spillover effects which may render the policies desirable. On the other hand, many other asset-creating policy interventions – including equity co-investments, lending or credit insurance – may, in fact, create modest income streams and assets for the state, thereby even strengthening public finances. Furthermore, there is a powerful case for the state providing insurance against volatile electricity prices through interventions such as CfDs. While private electricity providers see falling prices as a risk, they represent a huge benefit to the economy and consumers. By lowering the cost of capital, CfDs drive down the cost of renewables and potentially create a win-win situation for the private sector and consumer welfare.

This means that various TPI policies – if well designed – can minimise fiscal consequences and produce significant economic benefits. Green mortgages, loans or hire-purchase agreements for electric vehicles, green export credit and other state lending programmes are all examples of potentially highly successful policy interventions that do not necessitate any fiscal cost for taxpayers but may well result in a stronger state balance sheet.

Conclusion: A pragmatic framework for achieving net-zero emissions

In summary, we argue that the insights of economy theory for climate policy go well beyond the focus on CO_2 as an externality. Given the importance of the cost of capital for new investments and the role that price elasticity plays in enabling behaviour change, a pragmatic mix and sequencing of policies are needed for rapid decarbonisation. While some of these interventions will carry (upfront) fiscal costs, a range of suggested policies are, in fact, asset-creating and may create modest income streams and assets for the state, thereby even strengthening public finances.

This framework is pragmatic in the sense that it aligns with economic realities, behavioral insights, and political constraints. It draws lessons from real-world policy successes like the UK's CfDs, Norway's EV incentives, and the US Inflation Reduction Act that have demonstrably succeeded in accelerating technology deployment and adoption. By emphasising positive incentives and tangible benefits, it offers a politically viable pathway, reframing the transition as an opportunity for competitiveness, innovation and improved living standards.

When applying these insights to the European context, one of the main questions that arises is how ready European countries really are for the launch of EU's Emissions Trading System 2 (ETS-2) in 2027, which will introduce carbon pricing for consumer-facing sectors like transport and buildings. Given that price elasticities are usually low in these sectors, and low-carbon substitutes are not mainstreamed yet, the new ETS expansion might disproportionately affect low- and middle-income households and provoke public and political opposition. Further research is needed to explore short- and mid-term policy strategies to prepare for the ETS-2 implementation, or even for the case that it might be abandoned due to political opposition.

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