

Competition policy for the energy transition

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Abstract

This paper explores three key, interrelated aspects of the role of competition policy in the energy transition for Australia:

1. Addressing market failures: Competition law, procedures, and especially policy need to pay more attention to market failures beyond those caused by market power. To achieve an efficient reallocation of resources on such a large scale as required, it will be crucial to address network effects, public goods, information asymmetries, and externalities. Competition policy will be needed to ensure that other policy instruments, such as taxes, subsidies, government financing and regulation, do not create unnecessary, welfare-destroying impediments to future competition.
2. Broadening the focus of competition analysis: A narrow focus on competition can hinder the energy transition. When there are significant differences between private and social costs, a merger, acquisition, or specific conduct might lower private costs but raise social costs. A more nuanced analysis of transactions or conduct should consider factors such as whether products belong to the same market (e.g., green versus brown) and non-price effects.
3. Designing essential markets: Certain markets that are critical to the energy transition—such as pollution emission rights, natural resources, electricity, and transport—must be well-designed for the transition to succeed.

1. Introduction

The transition to net zero will require an unprecedented reallocation of resources on a nearly unimaginable scale. Globally, billions of people will need to change their consumption habits, modes of travel, energy and water use, and waste reduction practices. Simultaneously, hundreds of millions of businesses will need to overhaul their R&D efforts towards green production processes—sometimes even shifting what they produce—and rethink how and where they source materials and deliver products. Factors of production—labour, capital, and land—will need to move from being used in

carbon-intensive industries to greener sectors. This shift will demand workers relocate and capital flow across industries, countries, and borders.

As Olivier Blanchard recently emphasised¹, the energy transition marks the most profound structural transformation in human history. This shift is occurring in the aftermath of major global disruptions, such as the financial crisis, the COVID-19 pandemic, the invasion of Ukraine by Russia, and renewed conflicts in the Middle East. Compounding these challenges, the transition is also unfolding amidst long-term trends of population decline and aging, as well as newer phenomena such as slowing global trade and fractured geopolitics. In this context, critical economic interdependencies increasingly risk becoming geopolitical vulnerabilities, further complicating the global landscape of this transformation.

Adding to the complexity, the transition is shrouded in uncertainty regarding the effectiveness of different policy instruments—such as taxes, subsidies, specific regulations, government investment, and industrial policy more broadly—and the pace and impact of climate change. Rapid technological advancements in fields like artificial intelligence, biotechnology, and quantum computing also add unpredictability, as their ultimate outcomes remain unknown.

The energy transition is not just a radical reform due to its massive scale and uncertainty, but also because of its urgency. To avoid catastrophic climate outcomes, the share of carbon-neutral technologies in the global energy supply must rise from around 20% today to 80% by 2050.²

While this global challenge is shared, there is a crucial difference in how small, open economies like Australia can approach the transition compared to large economies such as the US, China, or the EU. Larger economies benefit from economies of scale and scope, allowing them to more effectively use subsidies to promote coordination in complex supply chains or incentivise R&D. They can also enforce specific regulations, like standards for widespread adoption of a particular EV charger, with less risk of being cut off from global supply chains.

In contrast, small open economies must place greater emphasis on market-based instruments, such as carbon pricing, and on markets more broadly, including designed markets, to drive the energy transition. By fostering competition and innovation, a well-functioning market economy, supported by effective regulatory frameworks and market

¹ Remarks during *Session 2: The Green Transformation* at the Peterson Institute for International Economics conference on “Rethinking economic policy: Steering structural change,” April 2024. Available at <https://www.piie.com/events/2024/rethinking-economic-policy-steering-structural-change>.

² International Energy Agency (2023), “Net Zero Roadmap: 2023 Update. Available at <https://www.iea.org/reports/net-zero-roadmap-a-global-pathway-to-keep-the-15-0c-goal-in-reach>.

governance, can significantly accelerate this shift. This paper explores three key, interrelated aspects of the role of competition policy in the energy transition for Australia.

First, while competition law, and to a lesser extent policy, primarily aim to mitigate the negative impacts of market power, addressing other market failures is equally crucial. To achieve a large-scale reallocation of resources, it is essential to tackle network effects, public goods, information asymmetries, and externalities. Competition alone cannot resolve these issues; therefore, a combination of instruments, including regulation, taxation, and government funding, will be necessary, even in a small, open economy like ours.

This array of tools will undoubtedly challenge the allocative efficiency of market outcomes. However, by focusing on dynamic efficiency and long-term market outcomes, competition policy can help maximise the benefits and minimise the costs of the energy transition. Competition policy can establish a robust framework that drives the adoption of well-crafted policies, harnesses the synergies between various policy tools, and fosters an environment where businesses and individuals are motivated to actively engage in the transition.

Second, a narrow focus on competition law and procedures can impede the energy transition. For example, when there are significant discrepancies between private and social costs, actions such as mergers, acquisitions, or specific conduct might reduce private costs while increasing social costs. A more nuanced analysis of these transactions or behaviours should consider factors like whether products belong to the same market (e.g., green versus brown) and non-price effects. During the energy transition, competition law and procedures must play a dual role as both enforcer and protector. They should continue to prevent anticompetitive practices that hinder the energy transition, while also not unnecessarily obstructing actions by private companies that support this transition.

Finally, markets critical to the energy transition—such as pollution emission rights, natural resources, electricity, and transport—must be well-designed to ensure success. These markets possess characteristics like information asymmetries, economies of scale and scope, network effects, and externalities. Therefore, competition must be engineered into them through the design of market rules that incentivise participants to act in a socially optimal manner.

2. The role of competitive markets

The energy transition represents a profound structural transformation, where factors of production—labour, capital, and land—are reallocated to create goods and services that

minimise or eliminate carbon emissions. While government policies have so far driven much of this shift, it is essential for consumers, investors, and firms to become intrinsically motivated to participate. Their engagement is facilitated through well-functioning markets, which can align economic incentives with environmental goals, accelerating the transition to a sustainable economy.

Markets play a critical role in coordinating consumption, production, and investment decisions, particularly in an era of rapid change and uncertainty. They help navigate trade-offs, such as whether to allocate water for irrigation or power generation, and manage constraints like rationing the frequency spectrum for telecommunications or alleviating road congestion. Importantly, markets stimulate innovation, whether by reducing waste, developing new energy storage solutions, or creating novel technologies that enable a low-carbon economy. This market-driven innovation is vital to achieving the broader goals of the energy transition.

For markets to efficiently facilitate the large-scale reallocation of resources required by the energy transition, they must function effectively.³ This section examines how competition can enhance market efficiency, focusing on its role in fostering innovation and allowing consumers to better consider the green quality dimensions of products and services. In both instances, competition can serve as a powerful catalyst, motivating firms, investors, and consumers to actively engage in the transition.

2.1 Competition and Innovation

Competition is a potent driver of innovation, compelling firms to enhance their products, services, or processes to maintain a competitive edge. In highly competitive markets, companies are motivated to innovate, as doing so allows them to preserve or expand their profitability. Conversely, firms that fail to innovate face the risk of falling behind, as competitors capitalise on advancements to gain market share. This dynamic not only rewards innovation but also punishes firms that stagnate, leading to shrinking margins when competitors introduce superior offerings.

The energy transition requires innovation to focus on green technologies, which presents a critical challenge: can competition facilitate the shift toward sustainable products and processes? The relationship between competition and innovation, however, is nuanced.⁴

³ See Holmes, T. J., & Schmitz, J. A. Jr. (2010), 'Competition and Productivity: A Review of Evidence,' *Annual Review of Economics* 2(1), 619-642, for a review of the literature on how competitive pressures compel firms to optimise resource use and improve productivity.

⁴ For a recent survey, see Aghion, P., Cherif, R., and Hasanov F. (2021), 'Competition, Innovation, and Inclusive Growth,' *IMF Working Paper* WP/21/80. Available at <https://www.elibrary.imf.org/view/journals/001/2021/080/001.2021.issue-080-en.xml>.

For example, Katz and Shapiro's (1987)⁵ seminal paper on firm rivalry for innovation highlights how the incentives to innovate can depend on several factors. Their analysis reveals that while competition can encourage innovation, market leaders are more likely to pursue major innovations only when imitation by rivals is difficult. This implies that the characteristics of the technology at play may be more influential on innovation than market competition itself.

The broader economic literature suggests an ambiguous relationship between competition and innovation. Aghion et al. (2005)⁶ propose, and empirically test, an inverted-U relationship: as competition intensifies from low levels, industry-wide innovation initially increases but declines once competition becomes overly fierce. While competition can drive firms to innovate, excessive competition may limit their capacity to invest in R&D, particularly in industries where profits are tightly constrained.

More recent research by Aghion et al. (2023)⁷ extends this understanding by demonstrating that consumer preferences for socially responsible products (green quality), coupled with competition between firms, can jointly influence the direction of innovation. Their study of 7,060 automobile firms across 25 countries finds that when consumers show a strong preference for green products, competition can significantly drive green innovation. This suggests that competition, when aligned with consumer demand for sustainability, can accelerate the shift to environmentally friendly technologies.

In the following section, we explore how competition can help consumers express their preferences for green products. In a later section, we also discuss how competition law and policy can be adapted to promote green innovation and better enable consumers to choose environmentally sustainable products.

2.2 Competition and green quality

Survey evidence consistently shows that consumers value green quality and are willing to pay a premium for eco-friendly products.⁸ There is also a large academic literature, mostly based on discrete choice experiments, which finds that consumers are willing to pay a premium for products with lower environmental impacts such as green electricity

⁵ Katz, M. and Shapiro, C. (1987), 'R&D Rivalry with Licensing or Imitation', *The American Economic Review* 77, 402–20.

⁶ Aghion, P., Bloom, N., Blundell, R., Griffith, R. and Howitt, P. (2005), 'Competition and Innovation: An Inverted-U Relationship', *The Quarterly Journal of Economics* 120, 701–28.

⁷ Aghion, P., Bénabou, R., Martin, R. and Roulet (2023), 'Environmental Preferences and Technological Choices: Is Market Competition Clean or Dirty?' *American Economic Review: Insights* 5 (1), 1–20.

⁸ See, for example, <https://www.bain.com/insights/ten-takeaways-from-our-2024-sustainability-survey-of-consumers-infographic-ceo-sustainability-guide-2024/> and <https://www.pwc.com/gx/en/news-room/press-releases/2024/pwc-2024-voice-of-consumer-survey.html>.

and bioplastics.⁹ Collectively, this evidence suggests that that green quality carries significant value in consumer decision-making.

There are several ways firms can differentiate their products through green quality. These include reducing polluting inputs, increasing the use of renewable energy, adopting sustainable production and packaging processes, and making products easier to recycle. While many of these actions have historically been driven by government regulations and mandatory requirements, firms can also profitably pursue green differentiation if the price premium on green quality outweighs the additional costs of production.

Such profitable opportunities to leverage green product differentiation offer a clear path for competition to actively support the energy transition. Below we consider two necessary conditions for product differentiation strategies based on green quality to be potentially profitable. Section 4 examines the role that competition law and policy in fostering this dynamic, ensuring that markets are conducive to green innovation and consumer choice.

A basic requirement for successful product differentiation strategies is that consumers can easily identify products with higher environmental quality through effective labelling and certification. Labelling must provide credible, transparent, and clear information to consumers. Certification should prevent companies from “greenwashing” their products. As discussed in Section 4, competition law and procedures play a crucial role in ensuring that labelling and certification enable firms to credibly communicate the green quality of their products. Additionally, competition policy is essential for harmonising labelling and certification standards across different jurisdictions.

An effective labelling and certification framework can also positively influence the effectiveness of competition in providing green quality. Firms with market power might not offer the socially optimal level of green quality, especially when low-quality firms have a cost advantage. Labelling can curb excessive investment in low-quality technologies and enhance the overall green quality in the market.¹⁰

A second necessary condition is recognising green quality as a product or service attribute under our competition law and procedures. Theoretically at least, the ACCC can assess mergers, acquisitions, and conduct with reference to their potential impact on

⁹ See, for example, Sundt, A. and Rehdanz, K. (2015), ‘Consumers’ willingness to pay for green electricity: A meta-analysis of the literature’, *Energy Economics* 51, 1-8; and De Marchi, E., Pigliafreddo, S., Banterle, A., Parolini, M. and Cavaliere, A. (2020), ‘Plastic packaging goes sustainable: An analysis of consumer preferences for plastic water bottles’, *Environmental Science & Policy* 114, 305-311.

¹⁰ See Amacher, G. S., Koskela, E., and Ollikainen, M. (2004), ‘Environmental quality competition and eco-labeling’, *Journal of Environmental Economics and Management* 47(2), 284-306.

green quality. For instance, the ACCC merger guidelines explicitly mention quality as a dimension of market power. Ultimately, whether consumers value green quality is an empirical question that can, in principle, be answered using standard tools. Similarly, it is plausible that standard tools can be adapted to define the relevant market. For example, the Small but Significant and Non-transitory Increase in Price (SSNIP) test could be augmented to include reductions in green quality if firms are considered to compete on this dimension as well as on prices.

However, in practice, it may be challenging for the ACCC to consider green quality in their assessments, especially when lower green quality must be balanced against potential price reductions. Additionally, their analysis primarily focuses on the impact of the transaction or conduct on current and potential consumers of the product or service, rather than on the broader impact on all citizens when externalities are involved. Section 4 will explore how competition law and policy can be expanded to better incorporate a comprehensive definition of green quality.

2.3 Competition is not everything

While markets possess significant strengths, they sometimes fall short in efficiently allocating resources, a crucial challenge for the energy transition. The following section explores the necessity of complementary policy instruments to address market failures and highlights the heightened importance of competition policy in this context. While competition law and procedures ensure that firms are incentivised to use scarce resources efficiently and drive innovation, a broader competition policy perspective can safeguard against potential distortions. Specifically, it ensures that interventions like regulations and government subsidies do not inadvertently create barriers to competition, which could stifle innovation and harm long-term welfare.

The idea that competition policy should be linked to the energy transition is neither original nor unique to Australia. For example, the confirmation hearing for the new European Union Executive Vice-President for Clean, Just, and Competitive Transition is taking place on 12 November. The new Executive Vice-President's mandate includes overseeing both Europe's energy transition and competition enforcement (including leading DG Competition) alongside the modernisation of competition policy.

3. Multiple Instruments to address market failures

The previous section explored some potential roles for competition in driving the energy transition. This section aims to achieve two objectives: first, to outline why a comprehensive policy mix—of which competition law is only one component—is essential for this transition. Second, we argue that competition policy can provide a cohesive overarching framework for effective coordination between federal, state, and

territorial governments, and between different regulators and government agencies and departments, helping to minimise the societal costs associated with the transition.

Our starting point is that markets can fail in various ways, particularly when environmental costs are not accounted for. Without mechanisms like a carbon tax, polluters are not responsible for the full social impact of their emissions, which diminishes their motivation to reduce carbon output. Additionally, both consumers and businesses often lack critical information about energy efficiency, renewable technologies, and the long-term benefits of green energy adoption. These information gaps can significantly impede the shift towards sustainable energy practices.

Another significant market failure is the underproduction of innovation, often driven by knowledge spillovers. When firms or individuals generate new knowledge, others can benefit without directly contributing to its development. This inability for innovators to fully capture the returns on their investments reduces the incentive to invest in research and development, leading to underinvestment.¹¹ Even when competition drives innovation, knowledge externalities create a gap between private and socially optimal innovation levels. This is particularly concerning for the energy transition, where technological advancement is critical. To address these failures, effective policy interventions are needed, and a key challenge lies in selecting the most appropriate policy tools to achieve this.

3.1 The need for multiple instruments

To understand why multiple policy instruments are necessary for the energy transition, we must first consider the conditions under which a carbon tax or a cap-and-trade regime could suffice as the sole instrument. These conditions include a single externality, technological change that is not endogenous to the economy, perfectly credible policymakers, and a complete separation of distributional and efficiency effects. In this simplified, yet unrealistic scenario, the revenue generated from the carbon tax could be redistributed to mitigate any negative distributional impacts.

However, we do not live in such a world. Beyond the fact that climate change is a global challenge—necessitating a global carbon tax even if it could work alone—there are several reasons why we need multiple policy instruments.

¹¹ See Griliches, Z. (1992), 'The Search for R&D Spillovers,' *Scandinavian Journal of Economics* 94(S1), S29-S47.

Acemoglu et al. (2023)¹² provide a compelling argument that a carbon tax alone cannot simultaneously address the two most critical market failures: the climate externality and knowledge spillovers. For a carbon tax to correct both externalities, the optimal tax rate for addressing the climate externality would need to be the same as that for addressing knowledge spillovers. As Acemoglu et al. (2023) highlight, this is not feasible because a very high carbon tax would be required to correct the externalities caused by knowledge spillovers. Therefore, in practice, addressing the knowledge externality solely through carbon pricing would necessitate setting the carbon price at an excessively high level. Consequently, carbon pricing must be complemented by subsidies for green technologies.

Pisani-Ferry (2024)¹³ highlights another reason for the necessity of multiple instruments. Green investment decisions require a high degree of policy certainty regarding future carbon tax levels, which must be sufficiently high to ensure profitability. That is, the critical factor is not only the current carbon tax but also its projected trajectory over the next years. Regulatory instruments, such as Australia's new vehicle efficiency standards¹⁴—which mandate that cars sold in the Australian market from January 1, 2025, meet an average CO2 target—offer much greater certainty than merely announcing a future carbon tax trajectory. Consequently, a carbon tax must be supplemented by regulatory measures.

The desire and necessity for a just energy transition further highlight the need for multiple instruments. As suggested by Pisani-Ferry (2024), the investments required from households for the energy transition—ranging from electric vehicles (EVs) to the electrification of heating and cooking—will only be affordable for low-income households through means-tested subsidies. This underscores the desirability of combining a carbon tax with household subsidies and the urgency of considering how best to promote the energy transition in lower-income countries in our region.

To illustrate the necessity of multiple policy instruments, imagine a scenario where the electrification of transport is mandated, requiring all vehicles to switch to electric by 2030, with production fully decarbonised. This regulation would eliminate carbon emissions from light transport and improve air quality. However, it would not tackle other critical issues such as congestion, road fatalities, equity, biodiversity impact, or the

¹² Acemoglu, D., Aghion, P., Barrage, L. and Hemous, D. (2023) , 'Green innovation and the transition toward a clean economy,' Peterson Institute for International Economics Working Paper No. 23-14, Available at <https://ssrn.com/abstract=4816734>.

¹³ Pisani-Ferry, J. (2024), 'The transition to carbon neutrality: An unusual type of structural reform,' Working Paper, available at <https://www.piie.com/sites/default/files/2024-08/pisani-ferry2024-08-22.pdf>.

¹⁴ <https://www.infrastructure.gov.au/infrastructure-transport-vehicles/vehicles/new-vehicle-efficiency-standard>.

sustainability of land use and natural resource extraction. Addressing these challenges requires additional policy measures.

The need for multiple instruments is nicely summarised by a recent OECD working paper:¹⁵

“A comprehensive policy mix will be required to achieve the transition in the most effective way, including emission pricing instruments, standards and regulations, and complementary policies to facilitate the reallocation of capital and labour towards low-carbon activities, to spur innovation and to offset any adverse distributional effects.”

3.2 Competition policy as an overarching framework

While multiple policy instruments are crucial for a successful energy transition, they also introduce risks, including higher costs, delays, and unequal distribution of burdens across society. This is because aligning the right policy tools with the appropriate market failures or policy objectives requires precise calibration, which is difficult, if not impossible, to achieve. Policy errors, regulatory capture, and political opportunism can further hinder this process.

Policy errors are not exclusive to the energy transition. They are a common feature of policymaking and difficult to fully avoid.¹⁶ However, the complexity of the transition, which involves a wide range of instruments, amplifies the chances for regulatory capture and political manipulation.

Political economy arguments suggest that policies benefiting well-organised interest groups tend to be favoured, with their costs diffused across the broader population. Examples include emissions trading schemes or regulatory mechanisms that over allocate allowances to incumbents or carbon taxes that exempt certain industries.¹⁷ When political economy considerations overshadow purely economic decision making, the result can be a policy mix that is less efficient and more costly for society.

In Australia, two additional complexities arise when using multiple policy instruments for the energy transition. First, as a small, open economy, Australia faces limitations in leveraging subsidies and government funding to drive green innovation. Unlike larger economies, Australia by and large can only achieve economies of scale and scope

¹⁵ Leandro, A. (2024), ‘Achieving the transition to net zero in Australia,’ OECD Economics Department Working Paper No.1794, OECD Publishing, Paris. Available at https://www.oecd-ilibrary.org/economics/achieving-the-transition-to-net-zero-in-australia_9a56c9d2-en. See also

¹⁶ See, for example, McConnell, A. (2015), ‘What is policy failure? A primer to help navigate the maze,’ Public Policy and Administration 30(3-4), 221-242.

¹⁷ See, for example, Michaelowa, A., Allen, M. and Sha, F. (2018) ‘Policy instruments for limiting global temperature rise to 1.5°C – can humanity rise to the challenge?’, *Climate Policy* 18(3), 275-286.

through exports. This reality heightens the need for policies that preserve competitiveness and suggests that subsidies might be more effective when directed at the adoption of green technologies rather than innovation, except when focused on export-driven activities. Additionally, Australia's small market size calls for careful regulation; overly prescriptive regulation can isolate us from global supply chains, hindering access to products or technology that may be essential for the energy transition.

The second additional complexity arises from Australia's federal system. While not unique to Australia, the combination of a smaller economy and a federation presents distinct challenges. The effectiveness of policy tools such as subsidies, tax credits, and government funding—whether provided directly or by underwriting private investment—can become even more limited due to inter-jurisdictional competition. For example, if support for green hydrogen deployment is uncoordinated across states and territories, projects might end up in locations with higher green energy costs or limited water resources, resulting in inefficient resource allocation. This fragmented decision-making can increase the inefficiencies in the policy mix, as competition between jurisdictions limits the effectiveness of each instrument.

Another long-standing challenge that has gained urgency in the context of the energy transition is regulatory inconsistency across jurisdictions. Differing regulatory standards can raise costs for businesses, inhibit innovation, and discourage risk-taking. In effect, the transition underscores the benefits of deeper economic integration among Australian jurisdictions. For instance, inconsistent product standards across states can drive up prices, potentially limiting consumer access to products that are essential for the energy transition.

These additional complexities highlight the urgent need for enhanced coordination—and, where possible, harmonisation—of the various policy instruments driving the energy transition. The transition increases the advantages of greater economic integration among jurisdictions by eliminating barriers, enabling businesses to achieve scale efficiencies, and facilitating the entry and expansion of new firms. Harmonising regulations and standards where they are currently inconsistent can provide vital links, fostering a more cohesive and efficient framework to support sustainable innovation and growth.

Existing forums, such as the Energy and Climate Change Ministerial Council, provide valuable opportunities for coordination. However, a stronger focus on competition in relevant markets is crucial to accelerating the transition effectively. Moreover, the National Cabinet, which includes the prime minister and state and territory premiers and chief ministers, could offer the high-level oversight needed to ensure effective

coordination. This goal may seem ambitious, but given the urgency of the energy transition, it's worth aiming high.

While competition policy alone cannot fully resolve the challenges presented by federalism, it can play a crucial role by ensuring that national competition principles apply beyond government business and legislation that limits competition. These principles should extend to broader policy tools, such as subsidies and industry assistance, to foster alignment and minimise inefficiencies. Achieving this requires a comprehensive understanding of firm and consumer incentives within contexts of asymmetric information, strategic behaviour (including lobbying), and the effects of market structure and design on competition and innovation.

4. Broadening the focus of competition law and procedures

Understanding the role of competition law in the energy transition requires recognising that competition can both advance and obstruct sustainable goals. As we discussed in Section 2, evidence suggests that consumers are willing to pay a premium for green quality, and in well-functioning markets with fully informed consumers, this demand can drive firms to offer green options and innovate. However, in the presence of externalities, where firms do not bear the full costs of environmental harm, competition may push firms toward unsustainable practices, prioritising lower costs and conventional inputs to stay competitive.

This section examines how competition law and procedures can support well-functioning markets that incentivise the efficient provision of green quality. It also considers how competition law enforcement can help mitigate the risk that, without internalising externalities, markets may yield less sustainable outcomes.

4.1 Supporting markets to provide green quality

Competition law can support the efficient provision of green quality both directly—such as through consumer protection measures that address information asymmetry—and indirectly, by allowing private firms the flexibility to pursue actions that advance the energy transition. This subsection highlights three ways that competition law and policy should be broadened to encourage behaviours and strategies that align with transition goals.¹⁸

¹⁸ For a similar, and insightful, discussion in the context of European competition law, see Holmes, S. (2024), 'Competition policy: A powerful sword and shield to fight climate change,' Green European Journal. Available at <https://www.greeneuropeanjournal.eu/competition-policy-a-powerful-sword-and-shield-to-fight-climate-change/>.

One immediate way competition law can support sustainability is by not unduly restricting agreements between competitors that aim to enhance environmental outcomes. For instance, supermarkets could agree to phase out plastic packaging. However, such an agreement might require binding commitments across competing firms; otherwise, each firm might face a "prisoner's dilemma" where unilateral action becomes too costly, discouraging individual firms from adopting sustainable practices on their own.

The logic is straightforward. Consider two dominant supermarket chains. If both phase out plastic, they can pass on the increased costs to consumers while potentially reaping benefits like increased sales from environmentally conscious customers or lower financing costs due to improved ESG ratings. However, if one supermarket chooses to continue using plastic to maintain lower costs, it could gain a competitive advantage by attracting price-sensitive customers from the other chain. This creates a situation where both firms may be disincentivised to act sustainably on their own, resulting in an outcome where neither phases out plastic—a less sustainable result overall.

A regulatory ban on plastic packaging could achieve the same result as a voluntary agreement between supermarkets. However, regulation often comes with significant costs and delays. It may be limited in ambition, fail to fully address the issue, or vary across states and territories, creating inconsistent standards that drive up business costs and can ultimately harm consumers.

Even if regulation is feasible and could be implemented quickly, it is not necessarily the most efficient solution. Allowing different mechanisms to compete in achieving sustainability goals can foster more innovative and adaptable approaches. This requires reducing unnecessary barriers that prevent competitors from forming agreements that support sustainability, potentially allowing for quicker, more flexible solutions than regulation alone can provide.

However, our competition law is (rightly) built on the principle that businesses should primarily compete rather than collaborate with rivals. Nevertheless, given the scale and urgency of the energy transition, competition law and practices should not only permit but actively encourage meaningful collaboration among competitors where it fosters sustainable outcomes.

Under Australia's Competition and Consumer Act, competitor collaboration can be authorised, as it can in many jurisdictions. The ACCC's *Guidelines for Authorisation of Conduct (non-mergers)*¹⁹ recognise circumstances where "particular conduct may not harm competition or may give rise to public benefits that outweigh any public detriment."

¹⁹ Available at <https://www.accc.gov.au/system/files/guidelines-authorisation-conduct-non-merger-aug24.pdf>.

Many sustainability agreements, such as the above hypothetical agreement between supermarkets to phase out plastic packaging, likely fall within these parameters for authorisation.

However, further steps are needed. Sustainability is increasingly recognised as integral to quality and innovation—key drivers of competition. Clear guidance should clarify when agreements enhancing quality or innovation, particularly those tied to sustainability, are pro-competitive and may not require formal authorisation. The European Commission and other international regulators have issued specific guidance on sustainability agreements, and in Australia, entities like the Queensland Competition Authority have offered direction on the regulatory treatment of adaptation and mitigation expenditures. Providing more tailored guidance could help streamline sustainability-oriented collaborations within the bounds of competition law. The ACCC’s *Sustainability collaborations and Australian Competition Law: A Guide for Business (Draft)* is an excellent first step in this direction,²⁰ but it needs to be a dynamic document that evolves with changing practices and insights.

Competition law can also support sustainability initiatives by firms with substantial market power. Generally, competition law prohibits such firms from actions that have the purpose, effect, or likely effect of significantly reducing competition in a market, as outlined in Section 46 of the Competition and Consumer Act. However, given their size, firms with substantial market power may also be uniquely positioned to drive sustainability efforts, and it is important that competition law does not inadvertently discourage them from doing so.

For example, a supplier with substantial market power might offer rebates to retailers conditional on their adherence to certain environmental practices. While this could potentially reduce the retailer’s reliance on competing suppliers, it should not be automatically treated as a violation of Section 46. Clear guidance from the ACCC’s Guidelines on Misuse of Market Power²¹ is essential to support sustainability-oriented conditions. Currently, the guidelines do not address environmental actions, which leaves ambiguity that could deter firms from pursuing impactful sustainability initiatives. Including provisions on environmental contributions would help align competition policy with sustainability goals, allowing firms to leverage their market position in ways that support the transition to a greener economy.

²⁰ Available at <https://www.accc.gov.au/system/files/Sustainability-collaborations-and-Australian-competition-law-draft-for-consultation-July-2024.pdf>. For an overview of the ACCC’s approach to environmental sustainability see <https://www.accc.gov.au/about-us/news/speeches/competition-stewardship-in-markets-transforming-for-environmental-sustainability>.

²¹ Available at <https://www.accc.gov.au/business/competition-and-exemptions/misuse-of-market-power>.

Finally, there is an opportunity for competition law to further support the energy transition by adapting merger procedures to explicitly consider environmental impacts. Under the current system, mergers that significantly reduce competition can still be authorised if there is a net public benefit. However, there is no specific guidance on how to evaluate environmental benefits in these assessments. Updating the ACCC's *Merger Authorisation Guidelines*²² to include environmental criteria would provide greater clarity on how these benefits, such as emissions reductions, are valued.

For instance, the guidelines could outline different considerations for various types of mergers, such as between firms regulated under the Safeguard Mechanism versus those that are not, or between energy sector companies. By establishing clear criteria, the ACCC would promote sustainability through enhanced regulatory certainty, empowering companies to pursue mergers that align with environmental goals.

4.2 Enforcement actions that support the transition

Companies frequently compete on factors beyond price, including environmental and sustainability practices like using cleaner inputs and recyclable materials or greening their distribution fleet. Collusive practices that undermine competition in these areas should be viewed as critically harmful, arguably even more so than price-fixing, given the urgency of transitioning to a sustainable economy. This perspective reinforces the need for competition law to treat collusion on environmental standards with the same severity as traditional forms of cartel conduct.

Currently, Section 45 of the *Competition and Consumer Act* prohibits cartel behaviour such as price fixing, market division, bid rigging, and output restrictions. However, collusion on environmental actions—such as agreeing not to adopt new emissions-reduction technology—falls outside the explicit provisions of this section.²³ Addressing this gap could strengthen efforts to deter anti-competitive behaviour that directly impacts environmental progress.

The second area where competition law enforcement can support the energy transition is in merger review. By considering environmental impacts, merger review could prevent mergers from leading to unsustainable practices or worsening existing ones. Currently, our merger review regime asymmetrically addresses environmental impacts. As noted in Section 4.1, anticompetitive mergers may be authorised if they yield net public benefits, including environmental gains—assuming there is clear guidance on evaluating such

²² Available at <https://www.accc.gov.au/system/files/Merger%20Authorisation%20Guidelines%20-%20October%202018.pdf>.

²³ The recent ACCC's *Sustainability collaborations and Australian Competition Law: A Guide for Business (Draft)* provides some guidance on when a sustainability collaboration may be considered a cartel. However, the focus is only on the impact of the collaboration on price fixing, market division, bid rigging and output restriction as required by Section 45 of the CCA.

benefits. However, the reverse does not apply: it is not possible to block a merger solely because it leads to substantial environmental harm if the transaction does not substantially lessens competition.

This imbalance means that a merger's focus remains largely on price effects, and in the absence of a carbon price, a merger could, for example, lead to increased pollution if it enables a more polluting production method. A more nuanced approach would consider not only price impacts but also non-price factors, such as whether the merging firms' products are in distinct markets based on environmental quality (e.g., treating eco-friendly products as a higher-quality offering). This broader view would better reflect the urgency of environmental considerations in assessing the overall impact of mergers.

4.3 Summary

Given the breadth of topics covered in this section, this summary of its main messages may be helpful:

- **Dual role of competition:** Competition can both support and hinder sustainable goals. Consumers willing to pay a premium for green quality can drive firms to offer environmentally friendly options. However, without fully internalising environmental costs (externalities), competition may incentivise firms to adopt unsustainable practices to maintain lower costs and remain competitive.
- **Competition law's role:** Competition law can help markets deliver green quality by addressing information asymmetries and allowing firms to collaborate on sustainability goals.
- **Regulatory flexibility over direct regulation:** Direct regulation can be slow and inconsistent across regions, leading to higher costs for businesses and consumers. Allowing competitor agreements under competition law can enable quicker and more flexible responses to sustainability needs than regulation alone.
- **Encouraging collaboration:** Competition law typically discourages collaboration among competitors. However, for the energy transition, collaboration to achieve sustainable outcomes should not only be permitted but actively encouraged. Authorisation guidelines should clarify, with a sharp focus on providing regulatory certainty, when sustainability-related agreements are pro-competitive and might not need formal authorisation. The ACCC's *Sustainability collaborations and Australian Competition Law: A Guide for Business (Draft)* is a first step in this direction.
- **Guidelines on misuse of market power and mergers:** Firms with substantial market power, by their size, are well-positioned to drive sustainability. Competition law should not inadvertently discourage them from doing so. Additionally, merger reviews should explicitly consider environmental impacts, preventing mergers that might lead

to unsustainable practices while authorising those that provide clear environmental benefits.

- **Addressing collusion on environmental issues:** Companies can compete on sustainability, such as reducing emissions or using recyclable materials. Collusion in these areas should be considered as harmful as price-fixing. Section 45 of the Competition and Consumer Act, which prohibits cartel behaviour, should also address environmental collusion to prevent anti-competitive practices that harm environmental progress.

5. Designing essential markets

The pathway to net-zero emissions is increasingly clear. It begins with decarbonising the electricity sector—the most accessible target for emission reduction. From there, it moves to electrifying the transportation sector, ultimately addressing the challenging task of reducing emissions in harder-to-abate sectors like heavy industry, aviation, and materials production.

This pathway highlights sectors critical to the energy transition that, due to characteristics such as network externalities, asymmetric information, economies of scale and scope, and high capital specificity, will not reach socially efficient outcomes through unregulated markets alone. To succeed, these key markets—spanning electricity, pollution rights, transport and logistics, and natural capital—must be carefully designed.

Effective market design is crucial to ensure that consumption, production, and investment decisions align with societal goals, generating prices that reflect the true social value of essential resources for a successful transition. Achieving this, however, is far from straightforward. As seen in the past decade's reforms to electricity market design, it has been government interventions outside the market—rather than designed market mechanisms themselves—driving the transformation of the electricity sector.

Each of these markets faces unique challenges that require tailored guidance. Here, however, we outline some general principles, highlight basic trade-offs, and examine the potential role of competition policy. We also briefly discuss some of the primary design challenges in the electricity market, as its effective functioning is essential for a successful transition and requires immediate attention.

Although this paper does not cover them in depth, natural capital markets—including those for water and critical minerals—are also vital, both for the energy transition and for the equally critical objective of biodiversity preservation. Moreover, efficient transportation and logistics markets will be crucial to support the electrification of transport. Additionally, well-functioning carbon markets can reduce carbon emissions

by making low- or zero-carbon energy more competitive compared to high-carbon activities, incentivising shifts in production and consumption towards lower-carbon options, reducing demand for carbon-intensive fuels, and mobilising private investment in low-emissions technologies.

The most fundamental general principle in market design for the energy transition is the focus on investment. In the 1990s, reform efforts prioritised allocative efficiency to strengthen Australia's competitiveness under the pressures of globalisation. This goal was achieved through restructuring government-owned enterprises including requirements for competitive neutrality, privatisation, the creation of national markets like the National Electricity Market, and mandates for access to monopoly infrastructure.

In contrast, the energy transition requires large-scale, coordinated investments, such as in integrated renewable generation and storage assets. Market design must not only facilitate this coordination but also safeguard future competition. A key challenge will be to prevent market power abuses by participants with market power, for example those controlling both electricity generation and storage assets. Currently, generators have the ability (though not necessarily the incentive) to exercise market power during peak demand. However, as integrated generation and storage assets expand, owners of both may gain the ability to influence prices during both high and low demand periods.

The emphasis on investment also has implications for how we regulate access to new networks. Allowing competitor access to new networks could deter initial investments, while restricting access may limit beneficial competition. It is essential that regulatory rules prevent inefficient discriminatory access, a principle especially relevant to access in transmission networks within Renewable Energy Zones.

Competition policy is a powerful instrument to ensure that today's focus on investment does not come at the expense of a competitive market in the future.

The second general principle of market design is to facilitate market integration, justified by the significant economies of scale and scope across markets essential for the transition. The societal value of reducing one ton of emissions should not depend on the specific sector, industry, or jurisdiction where the reduction occurs. An integrated market for natural capital enables efficient price discovery and highlights trade-offs between interventions across various domains and regions. In the National Electricity Market, a unified regulatory framework and physical interconnections initially led to price reductions, improved supply security, and informed investment decisions.

Market integration will be even more critical during the energy transition. For example, with the electricity sector becoming increasingly decentralised, the economic benefits of integration will grow accordingly. Harmonising regulatory standards across jurisdictions can lower costs for businesses and consumers, enabling broader and more

active participation in the transition. Competition policy again serves as a powerful tool to support collaboration across jurisdictions, helping to achieve a higher level of market integration.

Given the high degree of technological uncertainty in the energy transition, market design must facilitate—or at least not obstruct—competition between emerging technologies. In industries with potentially competing solutions, some of which may be government-driven, such as green hydrogen versus battery or hydro storage, electric vehicles versus hydrogen fuel cells, or heat pumps versus hydrogen for heating, it is crucial that competition is merit-based rather than distorted by incumbent power or policy choices.

If one technology ultimately prevails, further measures may become necessary. For instance, unbundling may be appropriate to prevent abuse of market power, as in the case of storage and renewable generation, while ensuring open access could be critical in areas like hydrogen transport and storage.

Market design should also support policy experimentation and place a strong emphasis on implementation and evaluation. Policy experimentation is essential given the high uncertainty surrounding the effectiveness of both individual policy instruments and combinations thereof. For instance, temporarily allowing varied access regimes for infrastructure or relaxing vertical integration rules in the electricity sector could test hypotheses about the effectiveness of different approaches. Such experimentation requires robust evaluation procedures to rapidly identify what works and what does not. A focus on implementation is equally important, as it helps clarify why certain policy instruments succeed or fail. Although the value of policy experimentation and the importance of effective implementation are now widely recognised,²⁴ they remain critical to achieving meaningful progress.

Finally, embedding the core market design principle—that pricing mechanisms should promote socially efficient consumption, production, and investment decisions—within the national competition framework could be beneficial. While this principle is already reflected in national energy legislation (and in regulations such as Part IIIA of the CCA and Part V of the QCA Act), investment in new generation within the National Electricity Market continues to rely heavily on out-of-market mechanisms. This highlights the essential role of both effective implementation and strong institutional design.

²⁴ For example, the Treasurer’s statement of expectations for the Productivity Commission explicitly refers to a new focus on policy implementation. See https://treasury.gov.au/sites/default/files/2023-11/pc_statement_of_expectations.pdf.

5.1 Selected Issues in Electricity Market Design

The National Electricity Market (NEM) was initially designed to integrate state grids into a single market, where competition among generators would drive efficient consumption, production, and investment decisions. Retail competition was intended to ensure that competitive wholesale prices benefited final consumers, while independent regulation of networks would promote the efficient use of existing infrastructure. However, the regulatory framework was built to handle incremental growth rather than the transformational changes required today, particularly in managing transmission and distribution expansion.

While the NEM has historically succeeded in securing supply and lowering prices,²⁵ its ability to meet future demands is uncertain. With electricity demand projected to double and supply shifting toward high fixed-cost, low marginal-cost renewable sources, simply introducing demand-side bidding into the current design is not going to be sufficient to achieve efficient outcomes. Challenges that need addressing include managing market power from joint ownership of generation and storage assets, and incentivising investment in zero-marginal-cost technologies within capped wholesale markets.

The consumer side of the market is important as it is directly linked to how competition—particularly in well-designed markets—can foster a more active role for consumers and firms in the energy transition. Recent research²⁶ identifies four interrelated challenges that must be addressed to support the efficient adoption of consumer energy resources (CER) within the NEM:

1. Can consumers be incentivised to make optimal energy choices?
2. Can retail competition deliver pricing structures that guide consumers toward these choices?
3. Can an augmented wholesale market, allowing CER aggregators' participation through demand-side bidding, produce wholesale prices that encourage the right retail pricing structures?
4. Will regulatory barriers be addressed promptly?

Some of these challenges can be resolved through further research and analysis, while others demand coordinated government action. Achieving this complex, cross-jurisdictional coordination may be difficult without a unified national effort—similar to the National Competition Policy of the 1990s.

²⁵ See, for example, Simshauser, P. (2019), 'On the stability of energy only markets with government initiated contracts-for-differences.' *Cambridge Working Papers in Economics* 1972.

²⁶ This discussion is based on La Nauze, A. and Menezes, F. (2024), 'Challenges in the Consumer-Side of the Energy Transition,' forthcoming in the *Australian Economic Review*.

6. Conclusion and policy recommendations

Markets will be essential for Australia's energy transition. Efficient resource allocation is needed to maximise its benefits and minimise its costs. This paper examines the vital role of competition law and policy in facilitating an effective transition, focusing on three main areas: addressing market failures, expanding competition analysis, and designing essential markets. Our main points can be summarised as follows:

Market failures, policy instruments and coordination:

A successful energy transition requires a comprehensive policy mix, including competition policy, to tackle market failures such as environmental externalities, information gaps, and underinvestment in innovation. Relying solely on a single approach, like carbon pricing, is insufficient. Coordinating multiple policy tools is complex and can lead to higher costs and uneven economic burdens. In Australia, these challenges are further complicated by its federal system, where regulatory fragmentation across states can hinder efficient resource allocation and stifle innovation. Harmonising regulations and policies across jurisdictions could reduce inefficiencies and create a more effective policy environment for the energy transition.

Competition policy can provide a unifying framework to coordinate efforts across federal, state, territories and local levels, fostering smoother policy integration and establishing common regulatory standards. This approach would create a more scalable and competitive marketplace, driving innovation and encouraging the entry of new firms while promoting efficiencies of scale. Although competition policy alone cannot fully resolve federal challenges, it can help by extending national competition principles to areas like subsidies and industry assistance, minimising inefficiencies and supporting a cohesive strategy. An ambitious, coordinated approach centred on competition is essential for Australia to meet its energy transition goals effectively. The National Cabinet, established in response to the COVID-19 pandemic and composed of the prime minister and state and territory premiers and chief ministers, could provide the high-level oversight necessary for this coordination to occur.

Broadening competition law:

To support the energy transition, competition law and procedures must expand to foster sustainable behaviour and encourage "green quality." While competition can drive innovation and the supply of green quality, firms often prioritise cost-cutting over sustainability as environmental externalities are not priced. Competition law can assist in establishing market conditions that incentivise environmentally responsible practices.

One approach is to give firms the flexibility to pursue sustainability initiatives through competition law. For instance, allowing competitors to collaborate on environmentally

beneficial outcomes, such as phasing out plastic packaging, can lead to faster and more innovative solutions than regulation alone. Clearer guidelines on when sustainability agreements are pro-competitive could also reduce the need for formal authorisations. Similarly, firms with significant market power should be able to promote environmental practices without facing automatic penalties, provided these actions do not hinder competition. The ACCC's *"Sustainability Collaborations and Australian Competition Law: A Guide for Business (Draft)"* is a step in this direction, but it needs to be a dynamic document that reflects evolving practices and learnings.

Merger guidelines could be updated to explicitly consider environmental impacts, allowing the ACCC to assess both emissions reductions and environmental harm in merger evaluations. This would clarify how environmental considerations influence approvals and encourage environmentally responsible mergers. Additionally, combating collusive practices that block sustainable actions, such as the adoption of emissions-reduction technologies, is crucial; such collusion should be treated as severely as traditional cartel activities given the urgent need for climate action.

Expanding competition law to consider environmental impacts and align with sustainability goals creates a legal framework that encourages green competition and innovation while deterring unsustainable practices.

Market Design Principles:

Markets like electricity, pollution rights, transport, and natural capital must be well-designed to achieve socially efficient outcomes during the energy transition. Market design should align prices with social values and ensure that decisions around consumption, production, and investment support this transition. So far, most progress in these sectors has been driven by government action rather than relying solely on designed market mechanisms, and this needs to change.

Two core market design principles are focusing on investment and market integration. For example, significant, coordinated investments in renewable generation and storage are essential, along with preventing market power abuses and ensuring fair access to new networks, especially in Renewable Energy Zones. Integrated markets, due to economies of scale and scope, enable efficient price discovery and improve outcomes across regions and sectors. This integration, particularly in a decentralised energy sector, could reduce costs and encourage greater participation. Harmonising regulatory standards and supporting cross-jurisdictional collaboration in policy development through competition policy are also crucial.

Other important market design principles include supporting competition among emerging technologies and advocating for policies that ensure fair competition without favouring incumbents. It also calls for policy experimentation to test different

approaches, a sharp focus on implementation, and robust evaluation processes to learn from outcomes. Embedding socially efficient pricing within national competition frameworks would aid the transition, especially as new investments continue to rely on out-of-market support.