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Low Hanging Fruit in Australia's Climate Policy

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Australia has a history of fragmented and politically contested climate policy, and current climate policy is both piecemeal and limited in scope and ambition. Ample opportunities exist to reduce emissions through the more broad-based application of policy. This paper outlines six areas where climate policy in Australia could achieve emissions reductions at low cost: pricing emissions in industry through a modification and broadening of the existing Safeguards Mechanism; investment in assisting the transformation of the electricity grid to very high shares of renewables; a mixture of innovation support, and targeted incentives and regulatory standards in specific sectors and activities; an effective green infrastructure program to stimulate demand and raise productivity in the medium term; a community focussed structural adjustment fund that would enable disproportionately impacted communities to adapt reality of the global transition to net-zero emissions by 2050; and removing impediments to the emergence of new renewable energy-based export industries to take the place of coal and gas exports.

Keywords

climate change policy, policy packages, Australia

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Low Hanging Fruit in Australia's Climate Policy[1]

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Abstract

Australia has a history of fragmented and politically contested climate policy, and current climate policy is both piecemeal and limited in scope and ambition. Ample opportunities exist to reduce emissions through the more broad-based application of policy. This paper outlines six areas where climate policy in Australia could achieve emissions reductions at low cost: pricing emissions in industry through a modification and broadening of the existing Safeguards Mechanism; investment in assisting the transformation of the electricity grid to very high shares of renewables; a mixture of innovation support, and targeted incentives and regulatory standards in specific sectors and activities; an effective green infrastructure program to stimulate demand and raise productivity in the medium term; a community focussed structural adjustment fund that would enable disproportionately impacted communities to adapt reality of the global transition to net-zero emissions by 2050; and removing impediments to the emergence of new renewable energy-based export industries to take the place of coal and gas exports.

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1. Introduction

With the election of President Biden and the new urgency for a global commitment to net zero emissions by 2050, Australia's climate policy is at a critical turning point. Pressure is increasing from the international community, including key allies, to increase national ambition on climate change, specifically through formal adoption of a national net-zero emissions long-term target and a more substantial 2030 emissions reductions target. The scientific case outlined in IPCC(2021) reinforces the urgency of concerted climate policy action.

Australia's emissions have fallen since 2005. This fall in emissions has primarily been due to lower accounted emissions from land-use, land-use change, and forestry (LULUCF) in earlier years and the ongoing adoption of renewable electricity generation that is increasingly market-driven rather than policy effort.

There are substantial opportunities to achieve emissions reductions that could be achieved through even moderate policy efforts. This effort could be complemented by measures that facilitate and accelerate the transition to renewable energy driven by changing cost structures and productivity-enhancing investment in green public infrastructure. A national carbon pricing policy was implemented in 2012 and revoked in 2014. Australia's climate policy is currently limited to selective federal mechanisms and specific programs at the subnational level.

Moving to net-zero emission by 2050 in Australia will require a refocusing of the climate policy framework. The political narrative on climate policy has been focused on fears of economic costs and job losses. Still, the Australian economy's real economic issue is not the potential impacts of domestic emissions reduction policies. Instead, it is the fact that Australia relies significantly on exports of fossil fuels and fossil-fuel intensive goods, making Australia's exports vulnerable to other countries' emissions reductions policies (McKibbin 2015a,2015b). The implication is that as a vital component of national climate policy, Australia should implement policies to minimize the structural adjustment costs that will inevitably be faced as the world moves towards net-zero emissions by 2050. It should also maximize new export opportunities, whether in low-emissions commodities and zero-carbon energy, agricultural products, or services.

We first outline the current state of Australia's climate commitments and existing policies. We then summarize where policies will need to focus on getting on a trajectory to net-zero emissions in Australia by 2050. In particular, we focus on the low-cost options or the "low hanging fruit" that will also allow a more substantial 2030 emissions target to be achieved.

We argue that what is needed is a policy mix that includes credible carbon pricing to encourage all Australian households and corporations to change their carbon use in production and consumption as part of a broader portfolio of policies. Such a pricing scheme could evolve from the existing "Safeguards Mechanism". Other necessary policy elements include public investment to support and accelerate the transition of the electricity grid to 100% renewables, including widespread decentralization of electricity generation; and a mixture of innovation support along with targeted regulatory standards and incentives in specific sectors and activities including transport, buildings, some industrial activities, and agriculture.

These policies would usefully be complemented by an effective green infrastructure program to stimulate demand and raise productivity in the medium term, funded by issuing long-term government bonds at historically low interest rates. Infrastructure investment would both provide a demand stimulus over the next decade to offset the adjustment costs due to structural change in the economy (IMF (2020), Jaumotte et al. (2021)). Well-targeted infrastructure investment could generate a private sector productivity stimulus in future decades to offset the economic costs from emissions reductions programs.

Alongside these policies, we argue the need for a community-focused structural adjustment fund that would enable disproportionately impacted communities to adapt to the reality of the global transition to net-zero emissions by 2050. We also argue there need to be policies to remove the impediments and support for the emergence of new export industries takes the place of coal and gas exports.

2. Australia's International Climate commitment, Emissions Trajectory, and Existing Climate Policies

Australia's Nationally Determined Contribution (NDC) to the Paris Agreement includes a commitment to reduce emissions by 26-28 percent below 2005 emissions by 2030. Australia re-communicated the same target in 2020, outlining a 'technology-focused approach' to emissions reductions.[4] A net-zero emissions target has been under discussion, but the federal government has not committed to this target. In contrast, all Australian States and Territories have adopted net-zero targets or made statements of intent to achieve net-zero emissions. There is no long-term national strategy with transparent policies that will achieve such a substantial reduction in emissions. Long-term emissions strategies are essential for guiding policy and investment decisions (Jotzo et al., 2021).

Since Paris, no new commitments have been made. Australia re-communicated the NDC in 2020 and affirmed the original target, in contrast to other developed countries that have strengthened their 2030 commitments.

Emissions trajectory

Australia's emissions have fallen by 16% from 2005 to 2020 (Department of Industry, Science, Energy, and Resources (2020a)). This aggregate reduction is almost entirely due to lower accounted emissions from land-use, land-use change, and forestry (LULUCF), in addition to reductions in electricity generation emissions (Figure 1). Emissions from transport, stationary energy use (especially fossil fuel combustion in industry), fugitive emissions, and industrial processes have all increased. Agricultural emissions have declined, but this mainly reflects inter-year variability rather than an underlying trend. Emissions from waste have fallen by a small amount.

LULUCF emissions stood at 91 MtCO2-equivalent in 2005, declined to zero by 2015, and in 2020 were negative 18 MtCO2-eq. The net effect of 107 MtCO2-eq amounts to 18% of Australia's national emissions in 2005 and can account for the majority of reductions required

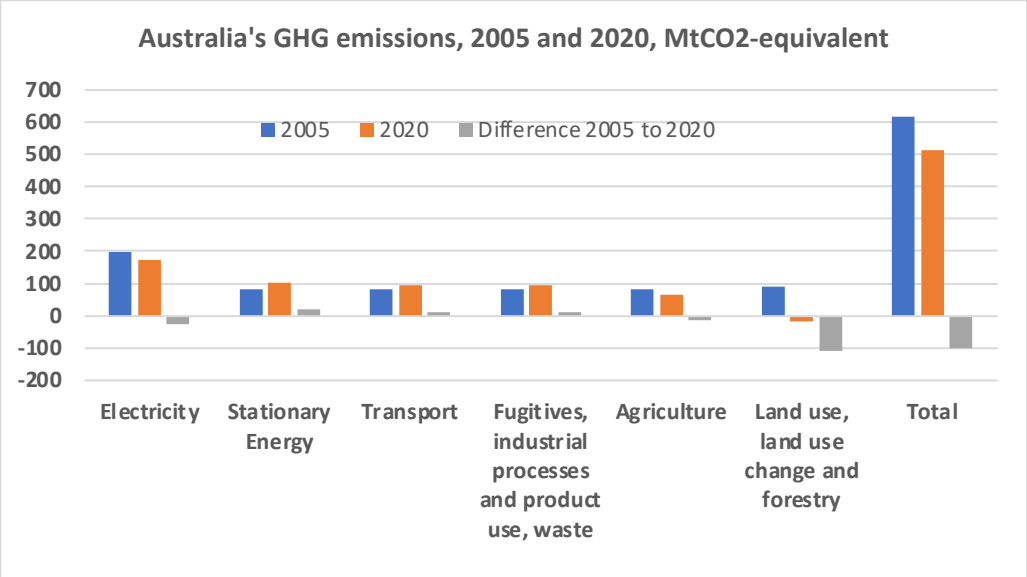
[4] https://www.industry.gov.au/policies-and-initiatives/australias-climate-change-strategies/international-climate-change-commitments

to achieve the existing Paris commitment.[5] The reasons for the turnaround in LULUCF emissions are (in order of magnitude of effect) reduced land clearing, increased carbon uptake in forests, and lower emissions from agricultural and other land.

The emissions reductions have come about primarily not as a result of purposeful national climate change policy but as a result of sub-national land-use policies, changes in agricultural practices, and changes in growing conditions of forests. Annual carbon sequestration in the LULUCF sector reached its maximum in 2017. It is not expected to contribute to further large emissions reductions in future years. Policy mechanisms such as the federal government's Emissions Reductions Fund are merely likely to prevent a reversal to the sector being a net emitter.

Electricity sector emissions peaked in 2016 and have since fallen by about 6 MtCO2 per year or about 3% per year. This fall in emissions is because of the ongoing rapid expansion of solar and wind power, which mostly displaces electricity from coal-fired power plants. Renewable energy is cheaper than any new form of fossil fuel based power generation, is increasingly supported by energy storage, and is expected to continue to replace coal-fired power in the Australian grid and increasingly also gas (AEMO 2021).

Figure 1: Australia's GHG emissions by sector, 2005 and 2020



Data: Department of Industry, Science, Energy, and Resources (2020a)

[5] Australia accounts for its 2030 target as the cumulative emissions under a linear trajectory from a 2020 base to 2030, so the trajectory of emissions to 2030 also matters for target fulfilment.

Renewable energy investment now happens primarily due to market forces rather than policy. However, some incentives remain for small-scale rooftop solar installations and some renewable power purchasing schemes by sub-national jurisdictions. Australia's future power system is likely to be primarily decarbonized even without climate change policy interventions because relative costs are in favour of renewable power. However, policy efforts could significantly speed up the process of coal plant retirements and investment in renewable energy supply, energy storage and grid expansion, and allow for an orderly transition process.

Existing policy mechanisms

The Australian federal government has several policy mechanisms to reduce emissions in particular activities and foster some low-emission technologies. As outlined by the Department of Industry, Science, Energy, and Resources (2020), the main focus of the current Australian government is on encouraging the uptake of technology through lower prices for technology rather than increasing carbon prices.

A carbon tax in Australia was politically made impossible following a series of political decisions on carbon pricing between 2009 and 2014. Both major political parties favored a national emissions trading scheme between 2006 to 2009 when the then (conservative) opposition withdrew its support. A carbon pricing scheme – a permit scheme starting with a fixed price akin to a carbon tax – was introduced in 2012, only to be repealed in 2014 after a change in government. Following an adversarial political debate about climate change policy over many years, carbon taxes or indeed any form of broad-based price on carbon emissions remain politically profoundly unpopular. This resistance to carbon pricing is despite their proven effectiveness in reducing emissions (Best et al. 2020) and their demonstrated political feasibility in many other countries and sub-national jurisdictions.

Price-based alternatives to traditional carbon pricing such as emissions trading schemes or carbon taxes have been considered, prepared, and, to some extent, are in operation in Australia.

A core policy instrument in use since 2014 is the Emissions Reduction Fund (ERF). The ERF is designed to incentivize emissions reductions by providing funds for activities that reduce carbon emissions (Climate Change Authority 2017), mainly in land use, forestry, and

agricultural activities. It consists of a crediting mechanism for project-based emissions reductions and a purchasing mechanism whereby the Australian government buys credited emissions reductions. Project proponents opt-in voluntarily. A$2.55 billion were initially allocated to the ERF, and contracted prices paid for emissions reductions were around A$12/tCO2-eq by 2017, and the most recent ERF round paid an average of A$16/tCO2-eq. A recent proposal is to expand the crediting and purchasing function to emissions reductions in industry.

The ERF suffers from the same fundamental problems of any opt-in project-based mechanism, namely the tendency for adverse selection favouring activities as projects that may have happened anyway and the risk of overstating emissions savings relative to counterfactual baselines (Burke 2016). Elaborate systems aimed to assure the integrity of emissions reductions cannot fully overcome these problems.

For the industry sector, a policy mechanism called the safeguards mechanism has been in place since 2016.[6] The mechanism covers around 200 industrial facilities with direct scope one emissions of greater than 100MtCO2-eq per year. Companies must cover the excess of actual emissions over a counterfactual 'baseline' by purchasing emissions credits. However, the safeguards mechanism to date has been largely ineffective as baselines are in most cases higher than actual emissions, and baselines have been adjusted upwards in some cases. During the 2019-20 reporting year, just 0.25 MtCO2-eq of excess emissions were covered through surrendered credits, compared to total emissions covered of 143 MtCO2-eq.[7]

A national renewable portfolio standard, called Renewable Energy Target, is in place in the electricity sector. However, the mandated amount of renewable energy has been largely fulfilled, and the price of renewable energy certificates from large-scale installations have fallen. Some sub-national jurisdictions have at various points tendered for the construction of new wind and solar using contract-for-difference instruments. Contracted prices in recent such tenders have generally been below contemporaneous wholesale market prices for

[6] See https://www.industry.gov.au/regulations-and-standards/national-greenhouse-and-energy-reporting-scheme/safeguard-mechanism .

[7] See http://www.cleanenergyregulator.gov.au/NGER/National%20greenhouse%20and%20energy%20reporting%20data/safeguard-facility-reported-emissions/safeguard-facility-emissions-2019%E2%80%9320#2019-20-Reporting-year-summary

electricity. Overall, there no longer is a significant subsidy element for new zero-emissions large-scale electricity generation investments.

No consequential policies exist to drive a shift to lower-emissions mobility in the transport sector, except for some limited preferential treatment of electric vehicles in some sub-national jurisdictions. There are no national minimum fuel efficiency or maximum emissions intensity standards for cars or other vehicles. Fuel taxes are low in international comparison, and no fuel taxation applies to agriculture, mining, aviation, and some parts of on-road transport.

The only significant policy mechanism to reduce emissions in agriculture is the ERF fund, providing subsidies to selected project-based activities.

3. Low-cost policies for medium-term emissions reductions and towards net-zero emissions

Several specific policies could be implemented in Australia, which would help reduce emissions in specific sectors and activities individually. They collectively could amount to a portfolio that could reduce emissions significantly by 2030 and prepare the way towards net-zero emissions by 2050.

These policies include: pricing emissions in industry through a modification and broadening of the existing Safeguards Mechanism; investment in assisting the transformation of the electricity grid to very high shares of renewable energy; a community focussed structural adjustment fund that would enable disproportionately impacted communities to adapt reality of the global transition to net-zero emissions by 2050; an effective green infrastructure program to stimulate demand and raise productivity in the medium term; broad-based zero-emissions innovation support, along with targeted incentives and regulatory standards in specific sectors and activities; and removing impediments for the emergence of new export industries to take the place of coal and gas exports.

Carbon pricing in industry

The first element is a transparent mechanism to price carbon. A carbon tax or broad-based

emissions trading scheme is seen as impossible at this point due to the political constraints discussed above. However, the Safeguards Mechanism could readily be turned into a price-based incentive to reduce emissions by large industrial producers. This transformation would be done by tightening baselines while at the same time issuing emissions credits to installations whose emissions remain below their baselines (Wood et al., 2021). This adjustment would make the scheme a baseline-and-credit system, where some emitters buy credits, and others sell them, with potential linkage into the market for emissions credits under the ERF scheme.

Establishing such trading in industry could open the door to more comprehensive and potentially politically more durable carbon pricing arrangements.

Another option would be to establish the Climate Asset and Liability Mechanism (CALM) outlined by the Academy of Social Sciences in Australia (2020). This approach prices carbon annually out to 2050 through a hybrid approach of combining trading of long-term carbon certificates in fixed supply with a fixed short-term certificate price achieved by a climate bank intervening in the carbon market. The intervention is performed by the climate bank issuing additional carbon certificates that can only satisfy current year emissions. These certificates are sufficient to eliminate short-term price volatility in the carbon market along the transition path to a net-zero target by 2050. This approach is similar to how monetary policy operates in many countries. A central bank fixes the short-term cost of money (the interest rate) but allows the long-term interest rate to be determined in the bond market.

In the context of the Safeguards Mechanism, this would mean allowing industrial emitters to use CALM permits to fulfill their obligations. The advantage of this approach is that households and firms are also allocated CALM assets that they trade in a market with firms that create carbon emission liabilities. The CALM system allows compensation to households and firms for higher energy prices and creates a sizeable political constituency that supports the continuation of the carbon pricing policy.

Facilitating the coal-to-renewables transition in electricity generation

A second area where low-cost intervention would speed up the climate transition is electricity generation. As outlined above, wind and solar power are already commercially competitive in Australia in that they are the cheapest option for new power generation investments.

However, on average, coal-fired power generators still produce over 60% of the energy in Australia's primary electricity grid. Australia's grid will be able to be run on 100% renewable energy or close to it (AEMO 2021) if substantial investments are made in new wind and solar generation assets and new transmission infrastructure and decentralized infrastructure and energy storage.

The outlines of a carbon-free Australian electricity supply system are evident, even with substantially larger total electricity use on the electrification of industry, transport, and buildings. Australia has practically unlimited potential for relatively low-cost solar and wind power and widespread sites for pumped-hydro energy storage (Blakers et al., 2017). An extensive government-owned pumped-hydro project is in preparation. Several commercial large-scale grid battery projects are in operation and preparation. Integrating electric vehicles into the grid will allow flexible, decentralized energy storage. Flexible demand-side response in industry and the building sector can lower the required total energy supply and storage capacity. Investment in decentralized smart grid infrastructure can also increase reliability and resilience against climate shocks such as extreme bush fires and floods.

However, the road to this outcome requires enormous investments, coordination between investors, and policies to smooth transitions from the existing to new patterns.

Structural adjustment in carbon-intensive regions

A third element of the policy package would be to provide structural adjustment funding for regions within Australia that will be disproportionally impacted by the transition away from carbon-intensive activities. This structural transition assistance is a relatively low-cost investment at the current price of long-term debt. A key sticking point in the Australian political discourse is the relatively small number of affected regions with enormous political significance in a finely balanced political system. This significant cost potentially borne by particular communities has impeded implementing a national carbon plan.

Transition smoothing is needed for coal-fired power generators and mines supplying them. Experience with the last closure of a major coal-fired power plant, the Hazelwood power station in 2017, shone the spotlight on local economic and social disruption (Wiseman et al. 2020). Such disruptions could be minimized through the planned, orderly closure of coal-fired power plants. Targeted approaches to facilitate coal plant closure, including possibly through

market mechanisms (Jotzo and Mazouz 2015), would provide predictability and allow acceleration of coal-fired power plant closures. To date, by contrast, concerns about energy supply security and the regional politics of job losses have tended towards policy interventions aimed to delay the closure of coal plants, thereby slowing the transition to a low-emissions power system.

A program with substantial federal government funding would enable communities to make the inevitable adjustment to a low carbon world. Dealing with regional structural adjustment and removing political roadblocks would allow the low-cost climate policies discussed above to be implemented with less political resistance.

Infrastructure investments

A fourth element is a need for government to provide infrastructure in a range of other areas that the private sector does not have the incentive to provide. Infrastructure investment has the advantage of providing a fiscal stimulus during the structural transition to a low carbon economy and providing productivity benefits to the national economy, especially at times of low interest rates (Jaumotte et al., 2021).

Green infrastructure investments have been planned or implemented in many countries to counter pandemic-related economic slowdowns, under labels such as 'building back better' or 'green 'deal'. Options that are likely to yield both climate benefits and economic multipliers include clean physical infrastructure, building efficiency retrofits, investment in education and training, natural capital investment, and R&D into low-carbon technologies (Hepburn et al. 2020).

In Australia, there are many worthwhile infrastructure investments with prospects for a public good return that individual companies do not internalize, which will help the transition to net-zero emissions. They could include electricity transmission infrastructure and smart energy networks, grid-integrated charging stations for electric vehicles, public transport infrastructure, and innovation support for new zero-carbon industries.

Innovation, incentives, and regulation in specific activities

A fifth element, comprising a wide range of specific policies and measures, is to support zero-emissions innovation, provide incentives for deployment of low-emissions technologies, and provide regulatory guardrails in specific activities where they are needed. These policies

should be tailored to where broad-based policy instruments such as carbon pricing do not apply or are ineffective.

Support for applied, near-commercial R&D on renewable energy and related systems is provided by the Australian Renewable Energy Agency (ARENA). At the same time, the Clean Energy Finance Corporation (CEFC) is the government's green bank that supports first-of-a-kind low-emissions investments. The investment mandate of ARENA could be broadened to include other sectors and a broader range of R&D activities, and the magnitude of lending through the CEFC expanded.

Specific incentives for the uptake of zero-emissions technologies would be effective in transport, following the example of many countries that provide such incentives for early adoption of electric vehicles and in some applications in the building sector and agriculture beyond the project-based ERF mechanism. Regulatory action also has a role, including in the form of minimum efficiency standards for buildings, appliances, industrial machinery, and process standards in specific instances in industry and agriculture, to facilitate the phasing out of high emissions practices where affordable alternatives are available.

Supporting new clean energy export industries

Lastly, while Australia's comparative advantage in an unconstrained carbon world was partly based on fossil fuels, in a carbon-constrained Australia's comparative advantage in energy will shift to its vast renewable energy resources, coupled with large amounts of available land. This new comparative advantage is associated with an open investment regime and institutional frameworks that support the emergence of new resource-based industries. This new comparative advantage provides scope for a large-scale renewable energy-based export industry such as hydrogen, ammonia, and green steel.

Currently, there are impediments to the emergence of these new industries. These impediments are dominated by the lack of an overall national climate policy framework coordinated with policies in the individual Australian States. There is a shortage of core physical and intellectual infrastructure and insufficient funding for research and development dedicated to future-proofing zero-carbon technologies, as distinct from those with remaining carbon emissions (Longden et al., 2021). There are also some market failures and regulatory burdens that should be addressed.

4. Conclusions

As an economy rich in fossil fuels, Australia faces economic and political hurdles on the road to net-zero emissions that are magnified relative to many other advanced economies, primarily through reduced fossil fuel exports due to actions taken globally.[8] At the same time, Australia has a strong emerging comparative advantage in renewable energy and ample opportunities to reduce national greenhouse gas emissions at a low cost. The country's current relative lack of ambition in international climate change commitments needs to be seen in this light.

The most efficient way to reduce greenhouse gases is to have a credible and rising carbon price to incentivize households and firms to change their behaviour and move away from carbon-emitting activities. Merely developing technologies, as is the focus of current Australian government policy, does not necessarily imply that technologies will be implemented. A carbon price signal can be established starting in Australia's industrial sector through the evolution of the existing 'safeguards' policy mechanisms and in a way that overcomes pervasive political hurdles to carbon pricing and that can help ensure political durability of carbon pricing.

An economy-wide portfolio of policies for cost-effective action on emissions also includes essential other elements. In electricity supply, which is at the core of economy-wide decarbonization, policies should support the rapid transition to a 100% renewables-based electricity supply system, including decentralized energy provision and facilitating the exit of coal-fired generation assets. In other areas of the economy – including agriculture, transport, and buildings – a mix of more significant support for zero-emissions innovation, incentives for deployment of such technologies, and some minimum standards will help harvest the low-hanging fruit of emissions savings.

[8] See McKibbin (2015a, 2015b), IMF(2020), Jaumotte et al (2021).

Investments need to be made to assist affected communities throughout Australia to transition to activities that replace high carbon-intensive activities. A green infrastructure program would provide a demand stimulus in the coming decades and raise the return to private investments in implementing low fossil fuel technologies. With historically low interest rates, this transition and the infrastructure investment could be funded cheaply. Together with efforts to remove impediments to the emergence of new, clean-energy based export industries, such investments can help overcome entrenched political resistance to the climate policies needed to get Australia on a trajectory to net-zero emissions.

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