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A Climate Dividend for Australians



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Executive Summary

The Australian Climate Dividend Plan (ACDP) is a comprehensive market-based approach to making energy in Australia more affordable, more reliable, and ensuring that the social cost of energy use is taken into account.

The ACDP involves a tax of A\$50 per Metric Ton (MT) of CO₂ emissions on electricity, direct combustion, transport, fugitive emissions, and industrial processes ('the carbon tax'). The revenue generated would then be returned, evenly, to every voting-age Australian citizen. This would represent a tax-free payment of approximately \$1,300 per person per annum.

Under the plan, border adjustments for traded goods would mean that Australian industry would not be put at a competitive disadvantage. Exports to countries without comparable schemes would receive rebates for the taxes paid. Imports from countries without such schemes would be charged fees based on the carbon content of those products.

The plan would also permit the rollback of subsidies for renewables and similar measures—these being unnecessary given a carbon tax. This could save the government more than \$2.5 billion annually.¹

The ACDP would leave more than three-quarters of Australians better off financially, even if they did not change their current consumption or energy use. Lower-income households would receive a particularly large benefit relative to their existing incomes and expenditures.

The average Australian household is estimated to be \$585 per annum better off.

The lowest income-quintile households would be \$1,305 per annum better off.

We do not assume any behavioural change—although it is reasonable to expect there would be since prices of various goods will change. If the plan leads to a reduction in carbon emissions over time, then there will be a commensurate reduction in the carbon dividend households receive. Of course, this also means that the financial impact of the carbon tax will be reduced, meaning that any behavioural change made voluntarily is beneficial for both individuals and the community more broadly.

One option which we canvass is to phase in the carbon dividend, beginning at A\$20 per MT and rising to A\$50 per MT in \$5 per annum increments. In year 1 the average household would be \$235 per annum better off and lowest income quartile households would be \$520 better off.



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The Problem

Addressing the problem of climate change is arguably one of the greatest and most pressing moral challenges of our time. The average temperature of the Earth's surface has increased by 0.6°C in the last three decades and 1°C since pre-industrialisation and global sea levels have risen by around 3mm per year in recent decades, largely due to an increase in CO₂ and other human-emitted greenhouse gases in the atmosphere.²

The changing climate is also understood to have a range of current and potential impacts. These include an increase in the number and intensity of natural disasters, the extinction of animal and plants species, and significant implications for human health due to, for example, increased air pollution.³

Australia, like nearly 200 other nations, has also committed at an international level to doing its part to address this challenge: as part of the Paris Agreement's goal of keeping global temperature rise below 2.0C, it has agreed to cut its emissions by 26-28% from 2005 levels by 2030.

But adopting laws and policies that can achieve these Paris goals, and effectively address the problem of climate change, is proving extremely politically challenging in the current Australian context. Concerns about energy affordability and reliability have overwhelmed recent attempts to adopt climate policies that effectively reduce Australia's carbon footprint, and meet our Paris commitments.

This report attempts to find new ways out of this impasse, which can allow Australia effectively to achieve the goal of a 26% cut in emissions, whilst also retaining a commitment to energy reliability and affordability, especially for low-income Australians.

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Guiding Principles

To be politically and economically viable, any climate change policy in Australia must meet three key criteria:

1

It must take account of social costs, or as economists call them “negative externalities”, associated with the emission of carbon; second, it must ensure that energy supply is reliable; and third, it must also ensure that energy is affordable, especially for low-income Australians.

Energy policy must ensure that the social cost of producing energy is taken into account. It has been well known for a long time now that the emission of carbon dioxide into the atmosphere has negative environmental consequences.

This implies that there is a trade-off between the amount of energy consumed and its positive benefits to society and, also the negative externalities that are imposed by CO₂ emissions. When the social cost of such emissions is incorporated into the price mechanism, consumers will optimally balance the social benefits and the social costs through their consumption choices. Thus, a key principle is that the social costs are incorporated into the price mechanism.

2

The supply of energy must be reliable. Just as the cost of energy is important, it is also vital for citizens to be able to count on energy when needed. One of the notable features of electricity markets is the fact that there are periods where a large number of users demand a large amount of energy at the same time.

This is particularly true with weather extremes. On very hot days a lot of consumers tend to use air-conditioning where it is available. In winter months and when the weather is cold households use additional energy to heat their homes.

3

Energy must be affordable, especially for low-income Australians. Australians must be able to cool and heat their homes, drive to and from work and school, and run their household appliances at reasonable prices. For older Australians in particular, the inability to cool or heat their homes can be life threatening. For others having a significant portion of the household budget going to necessities can put them under significant financial strain.

The last two of these principles are uncontroversial. The first—taking account of the social cost of emissions—is disputed only by the relatively small number of people who deny that human-caused CO₂ emissions impact the climate.

The real challenge is how to achieve these three vital, but different goals, with one set of policies. By combining the power of the market’s price mechanism to aggregate and transmit information with the equitable redistribution of the proceeds of the revenue generated by a carbon tax, the Australian Carbon Dividend Plan will achieve these goals.

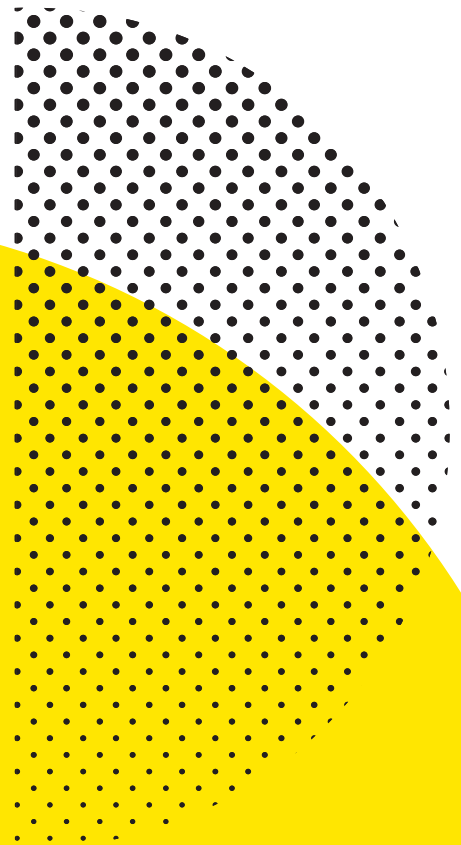


“Australians must be able to cool and heat their homes, drive to and from work and school, and run their household appliances at reasonable prices.”





The Australian Climate Dividend Plan



The Model

The ACDP is based on a proposal for carbon dividends developed in the United States by the Climate Leadership Council (CLC), a Washington-based think tank.⁴

The basic idea of their proposal is to institute a carbon tax (at US\$40 a ton) and return the proceeds from that tax as a dividend to every American on an equal basis. The ACDP would function in a similar way and involve the same four basic features.

A carbon tax

The plan involves instituting a A\$50 per ton tax on carbon dioxide emissions in Australia. This would be implemented at the point where carbon enters the economy—such as a mine, a well, or a port. The CLC plan envisages the rate of the tax increasing over time. This could be a feature of the ACDP, but a fixed A\$50 per ton rate is a sensible starting point. We elaborate on the scientific background for this estimate of the social cost of carbon below.

Carbon Dividends

The key part of the plan is that (all) the proceeds of the tax are returned to all Australian citizens of voting age on an equal basis. This would occur via direct deposit, dividend checks, or even contributions to retirement-savings accounts. The Australian Taxation Office would administer this, and the dividend would go to any eligible Australian with a tax file number.⁵

Border Adjustments

A number of “border adjustments” would be made for traded goods. Exports to countries without comparable schemes would receive rebates for the taxes paid. Imports from countries without such schemes would be charged “fees” based on the carbon content of those products.

Regulatory Rollback

The final component of the plan is to rollback various regulations on carbon dioxide emissions and subsidies for renewables—these being unnecessary (and potentially counterproductive) in the face of a carbon tax.

Rationale and Logic

A Carbon Tax and Informational Efficiency

The rationale for the carbon tax component of the plan is that carbon dioxide emissions constitute a negative externality. That is, something outside the price mechanism that causes a social harm (e.g. climate change or global warming). One could imagine having a government determine the optimal amount of emissions, but this would require a tremendous amount of information. In particular, it would require knowing the preferences of everyone in the population. However, once a tax is imposed on carbon—equivalent to the social harm it causes—the market’s price mechanism will optimally balance the good side of emissions (e.g. consumption, economic growth and development) with the bad side (e.g. global warming). This idea of “internalising the externality” into the price mechanism goes back a century to the British economist Arthur Pigou—hence the moniker “Pigouvian tax”.⁶ The best scientific evidence is that the social cost of carbon is at least \$US36 per MT. The testimony of perhaps the world’s leading climate economist, University of Chicago Professor Michael Greenstone, to the United States House Committee on Science, Space and Technology, Subcommittee on Environment, Subcommittee on Oversight in February 2017 emphasised this point.⁷ There is also recent evidence suggesting that the true social cost of carbon could be substantially higher, particularly once mortality costs are factored in.⁸

Dividends and Compensation

The dividend component of the plan is attractive for two reasons. First, it is a means of compensating those individuals who will pay more for goods and services as a consequence of the carbon tax. The tax will increase input costs for firms, resulting in some of those increased costs being passed on to consumers. But because the compensation is lump sum in nature, it does not diminish the incentive for individuals and households to reduce their carbon footprint. It is thus superior to compensation that targets high users of carbon.

The fact that the dividend is allocated equally across all individuals means that the carbon tax is not regressive. Indeed, the US Treasury estimated that the bottom 70% of US households would be *better* off as a result of the carbon tax-dividend combination.⁹ We show below that this proportion is even higher for Australian households.

Second, the carbon dividend makes the tax more politically viable. In effect, a dividend-based approach harnesses the power of economic incentives both to change behaviour *and* promote political support for regulatory change. Of course, citizens also bear a cost, through a Pigouvian tax addressing the externality, but the scheme affords them the opportunity to modify their behaviour to minimise their payment while still receiving the dividend.

Global Competitiveness

Importantly, the specific version of a carbon dividend approach we advocate aims to ensure that Australians play a fair role in addressing the costs of climate change, but not a greater share than is fair or appropriate—and to ensure that it does not unjustifiably damage the competitiveness of Australian exports, or Australian-made goods relative to imported alternatives.

The fees charged based on the carbon component of goods exported to Australia from other countries that do not have a carbon tax make those exporting countries less competitive on carbon-intensive goods. This gives them an incentive to produce and export less carbon-intensive goods. Moreover, it gives them an incentive to adopt a carbon tax themselves and avoid all such fees regardless of the carbon component of their exported goods. The other part of the border adjustment—that Australian exporters to countries without a carbon tax get a rebate for taxes paid—means that such exporters are not disadvantaged by the carbon tax. An important implication of this is that other countries do not have an incentive not to adopt their own carbon tax as a way of securing a competitive trade advantage.

This border-adjustment component of the plan could be subject to a challenge before the World Trade Organisation, but we believe that this a challenge Australia could successfully defend.¹⁰ This is also an additional reason to favour the adoption of a carbon dividend at a national rather than state level in Australia. While in principle any Australian state could adopt a carbon dividend model, there could be real questions about the power of the states to impose a carbon price or tax, and their capacity to adopt border adjustment provisions, consistent with sections 90 and 92 of the Australian Constitution.¹¹

Transcending Left-Right Divides

Finally, the regulatory rollback permitted by the scheme removes the need for costly subsidies to particular forms of energy such as renewable energy, removes potential distortions in the economy, and ensures that there is no advantage to “rent-seeking” behaviour.

In the absence of a carbon tax that levels the energy playing field among competing technologies, there is the natural tendency to use government subsidies to promote renewable energy in order to lower emissions. This is economically costly because it requires tax-payer dollars, funded from distortionary taxation (e.g. reducing labour supply). In the Australian context this subsidy is significant—more than \$2.5 billion annually. The budgetary benefit of ending these subsidies this alone, which is not factored in to the carbon dividend is substantial.

Regulatory interventions such as subsidies are also politically costly because they involve government taking an affirmative position on technology, rather than letting consumer preferences govern energy choices.

These subsidies could be phased out rather than abolished immediately. Given the size and nature of the subsidies, removing them smoothly over a five-year period would amount to a \$500 million budgetary benefit in year 1, growing to \$2.5 billion annually by year 5, while providing certainty to the sector.

Precedents

The carbon dividend is novel in the Australian context, but it does have relevant and informative precedents. It is based on analysis developed by the US CLC, and extensive debate over their proposal in the US and elsewhere. The Citizens’ Climate Lobby (CCL) have a similar approach to carbon pricing. It also has real-world precedents: the Canadian province of British Columbia enacted a similar scheme in 2008 with a carbon tax that escalates until it reaches \$50 per ton, and with proceeds being returned to citizens via a dividend.¹²

Other jurisdictions have had long-term dividends from common-property resources. Alaska is a good example with proceeds from oil reserves being distributed to citizens since 1982, and totalling up to US\$2,000 per person.¹³

Summary

The ACDP:

- Internalises an important negative externality—carbon dioxide emissions—through a Pigouvian tax;
- Returns the proceeds of that tax equally to all Australians, thus avoiding regressivity and improving political buy-in;
- Provides incentives for other countries to adopt a similar approach; and
- Allows a well-functioning market to partially substitute for government regulation.

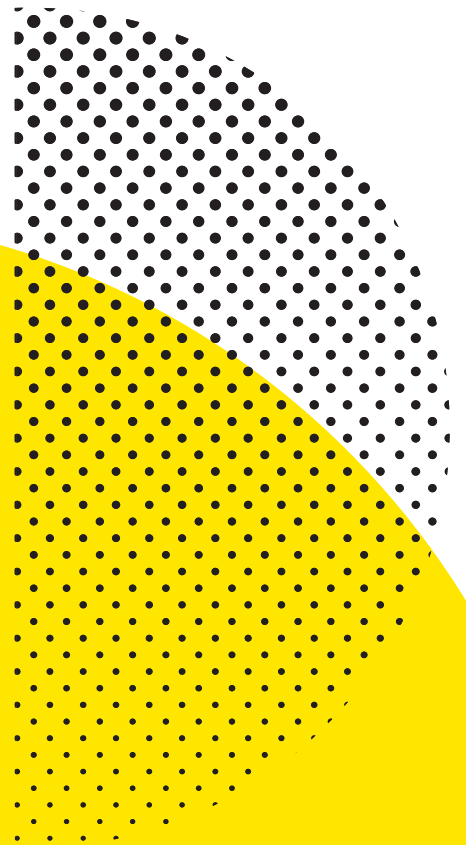
The key feature of the plan is that it provides direct financial rewards to citizens when their government affects positive change. This, in turn, provides incentives for citizens to support such efforts. This can also create new forms of democratic coalitions in support of measures to address global challenges—i.e. a new coalition of politically motivated citizens and politically supportive “citizen-shareholders” who see a combination of philosophical and economic rewards to regulatory change.

A coalition of this kind can also provide governments, who may themselves support change, with a receptive domestic political environment. This can be particularly important for challenging issues such as climate change. For example, studies show mixed support for a carbon tax: in Australia, around 40% of Australians support an emissions trading scheme or price on carbon;¹⁴ in the US, studies suggest between 35% and 50% are strongly or somewhat supportive of a carbon tax;¹⁵ while in Canada, just under 60% support carbon taxation.¹⁶





Financial Impact



Overview

The payments to households under the ACDP are substantial. We estimate that a typical household of two adults and two children under 18 would receive approximately A\$2,600 per annum in tax-free payments. Rewards of this kind have the capacity to offset and significant amount of increased energy costs and create a major shift in the perception of the relative winners and losers arising from addressing carbon emissions.

Of Australia's overall carbon emissions, 466 million MT of CO₂ equivalent would be taxed, from: electricity, direct combustion, transport, fugitive emissions, and industrial processes. This excludes agriculture (79 MMT CO₂e), Waste (16 MMT CO₂e), and land use/forestry (66 MMT CO₂e). These are excluded because of the difficulty in capturing such emissions at the point source. In the case of agriculture, it also avoids some challenging questions about compensation.

Given the A\$50 per ton carbon tax, the plan generates \$23.3B in revenue. A proportion of this is generated by government carbon emissions and, to make the impact on government revenue neutral, we deduct this from the available proceeds of the plan. Using an assumption of 10% of total revenues to cover government usage and administration costs of the plan, the available funds for the dividend to Australians is \$21.0B.

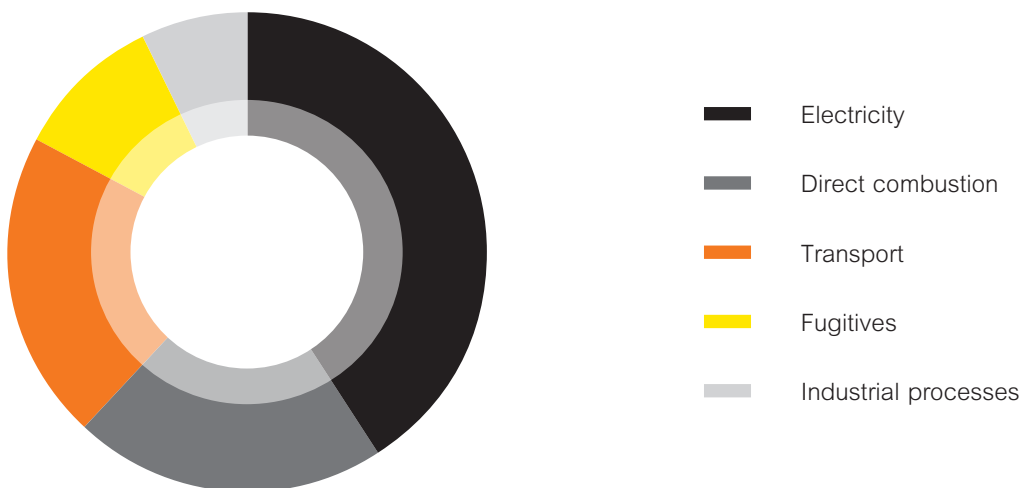
This, shared among the approximately 16 million voting-age citizens, is \$1,310 each in annual, tax-free carbon dividends.

The border adjustment component of the plan would both generate revenue and require expenditure. Exports to countries without comparable schemes would receive rebates for the taxes paid and this would reduce the \$21.0B in revenue generated by the plan. On the other hand, imports from countries without such schemes would be charged fees based on the carbon content of those products, and this would generate additional revenue.

How this washes out in terms of net government revenue depends on the carbon schemes adopted by other countries and the carbon content of imports versus exports. It is worth noting, however, that both imports and exports are currently approximately 20% of GDP.

It is also important to consider behavioural change by households in the face of a carbon tax. After all, a key point of the plan is to provide the correct price signals for individuals to balance the positives and negatives of carbon emissions. For the purposes of this report we do not assume any behavioural change. If, however, there is a reduction in carbon emissions over time then there will be a commensurate reduction in the carbon dividend households receive. Of course, this also means that the financial impact of the carbon tax will be reduced, meaning that any behavioural change made voluntarily is beneficial for both individuals and the community more broadly.

Emissions by sector (2017)



How Different Households are Affected

According to the latest data available from the Australian Bureau of Statistics, the average household in Australia has 2.0 people over the age of 18 and has annual expenditure of \$74,123.¹⁷ Using the breakdown of expenditure by category and applying the increased cost in equal category from the carbon-tax component of the plan, the increased costs to households can be determined.

We use the approach adopted by the CSIRO and AECOM in their assessment of the impact of the Gillard carbon tax.¹⁸ This approach uses the so-called “input-output method” that traces the impact of a carbon tax through the economy by looking at which industries use the outputs of other industries as inputs, and in what proportion. The CSIRO/AECOM analysis has been adapted to the current period using the different rate of carbon tax under the ACDP, and data from the ABS and the Household, Income and Labour Dynamics in Australia (HILDA) Survey.

This approach makes the conservative assumption that the full amount of the carbon tax is passed through to consumers. This leads to the largest estimate of the impact on households. It also implies that capital/shareholders do not bear a direct burden.

For the average Australian household, expenditures are estimated to increase overall by 2.7%, or \$2,035 per annum. The increase in some categories of expenditure would be modest. The major increases come from transport (9.8% or \$1,085 for the average household) and power (21.7% or \$476). Since the average household consists of 2.0 adults aged 18 years or older, the carbon dividend represents \$2,620 per annum. **Overall this means that the average household is estimated to be \$585 per annum better off**, even before any adjustment in consumption patterns that could increase this benefit.

Low income households are of particular concern. Since they receive the same per person level of compensation, but have lower total consumption, they benefit more than the average household. For the lowest income quintile of households, the benefit of \$2,620 per annum is partially offset by increased expenditure of \$1,315.

This leaves the lowest income quintile households \$1,305 better off, again before any adjustment in consumption patterns that could increase this net gain.



A Phased Approach

It would also be possible, however, to adopt a more gradual approach to the phasing in of the tax-based component to a carbon dividend plan – or start with a lower rate and phase-in the A\$50 rate over time. For instance, one could begin with an A\$20 per MT tax and dividend and increase the rate at A\$5 per annum until it reaches A\$50 per MT after 6 years.

The downside of this approach is that would lead to a lower carbon dividend for households in the short-run, and the full social cost of carbon would be internalised only after 6 years, rather than immediately. But the benefit of this approach is that it would give households and the economy more broadly a chance to adjust to the new regime somewhat gradually. Indeed, the tax would begin at a level already experienced under the Gillard government.

Even this more gradual approach would also lead to a clear net economic gain for middle and low-income households.

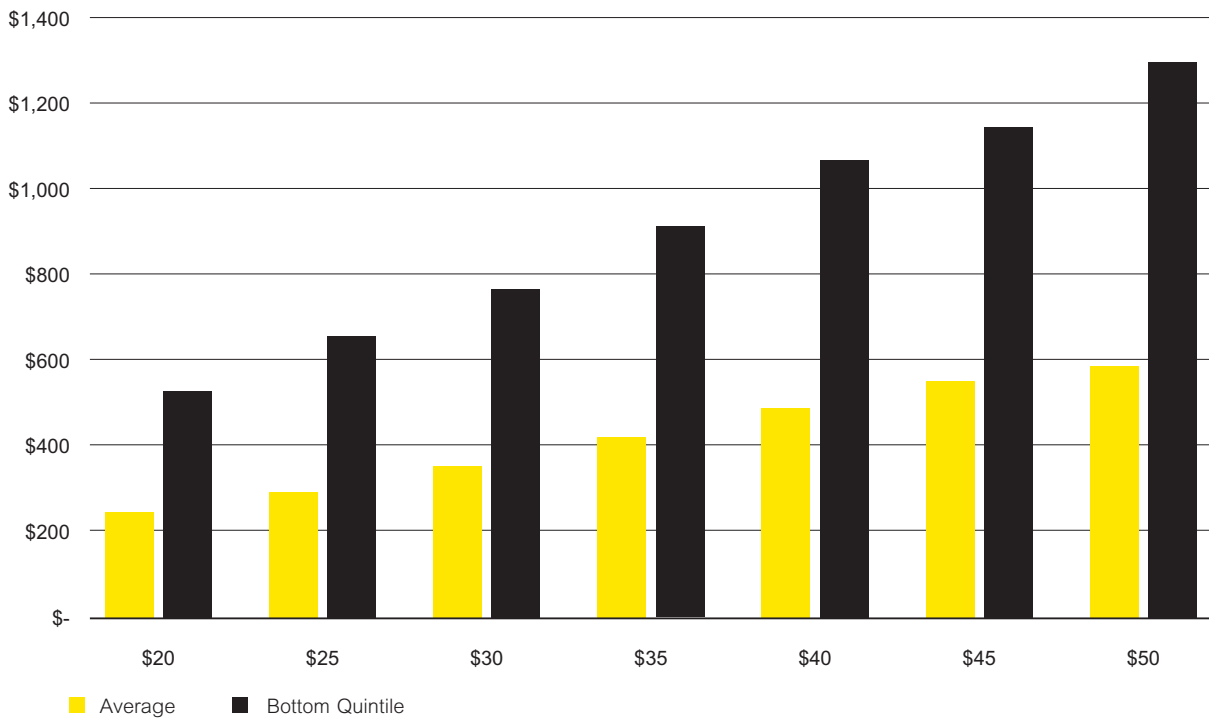
Financial Impact

In year one, with the tax and dividend set at A\$20, an average household would receive a dividend of \$1,050 and have increased expenditure of \$815 for a net benefit of \$235 per annum. A household in the lowest income quintile would receive a net benefit of approximately \$520 per annum in year one. These would grow over time as the rate and dividend increases.

The net dividends for both average and lowest-quartile households at different rates are shown in the following figure.

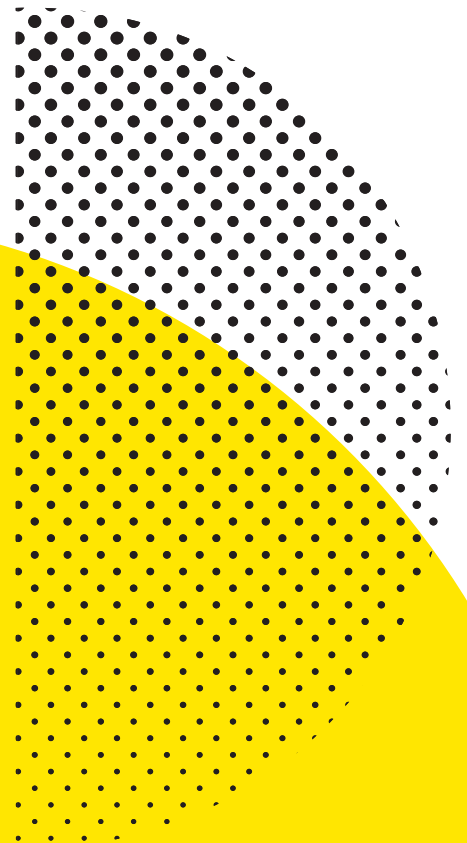
“Even this more gradual approach would also lead to a clear net economic gain for middle and low-income households.”

Net Household Dividend





Why It Works



The effectiveness of the ACDP in achieving the three guiding principles of energy policy: affordability, reliability, and taking account of social cost, lies in the simplicity and robustness of its design.

Market Balancing

At the very heart of energy policy is a balancing act. Balancing the good that comes from energy consumption: economic development, growth, and prosperity; with the bad: carbon emissions and the ensuing environmental impact.

Individual consumers perform this balancing act in other parts of the economy every day. Market prices provide all the information necessary for consumers to make the appropriate tradeoff between one purchase and another. Similarly, producers only need to understand their own production capabilities and the relative prices of inputs into production (like labour and raw materials) and the price at which they can sell to decide what and how much to produce. This is one powerful aspect of the price mechanism—the power to aggregate disparately held information into one statistic—the market price—that helps guide decision-making.

When there is uncertainty about the effectiveness of new technologies, future consumer demand or other events, the price mechanism plays another fundamental role—it communicates information from those who have it to those who don't.

When the true social cost of energy use is factored in to market price—as the carbon tax component of the ACDP does—the price mechanism efficiently and effectively aggregates and communicates information. Consumers balance the benefits and harm of energy use, and producers have appropriate incentives to invest in new, more energy-efficient technologies.

All energy technologies are thus placed on a level playing field, based on their power output and carbon emissions. If a certain technology produces energy more efficiently, in terms of its carbon footprint, then consumers will find it more attractive. This works all the way through the energy value chain, from generation to distribution to retail.

If renewable energy sources are more environmentally efficient, it means consumers will find them cheaper and want to use them. Similarly, if investments in renewable technologies can bring down prices in the future then the prospect of increased consumer demand will spur those investments. This provides stability and certainty in the energy market on both the consumer and producer side.

There is an alternative to using the price mechanism to allocate resources and provide incentives for these investments—government fiat and mandate. There has been a long intellectual debate about the ability of the government to mimic the market's price mechanism in aggregating disparate information in order to make sound resource-

“Individual consumers perform this balancing act in other parts of the economy every day.”

Policy Rabbit Holes

The universality that underlies the carbon dividend aspect of the plan is a core strength that distinguishes it from other approaches. While the carbon-tax-plus-targeted-compensation approach adopted by the Gillard government is closest to the carbon dividend approach, among existing Australia policies responses to the challenge of climate change, its design also highlights the challenges with carveouts from application of the tax, and non-universal compensation.

Exempting a large portion of transportation from the carbon tax was an inefficient means of back-door compensation for a specific segment of the population. As Prime Minister Gillard put it: “Families, tradies, small business people do not have to worry about a petrol price increase.”²⁰ The whole point of a carbon tax is to make people consider the social cost of their carbon use, but a carbon-dividend plan also compensates them in a lump-sum fashion. This both addresses the cost-of-living pressures that come with a carbon tax, but also maintains the virtues of price signals.

Once one starts exemptions and selective compensation, policy complexity escalates. It is hard to find a single demographic variable that targets a particular group that the government may want to compensate, without being under- or over-inclusive. Once down this path of selective compensation, it is easy to find categories of people deserving of their own special compensation. It also encourages lobbying and interest-group politics which rarely leads to either democratic or economically sensible outcomes.

A dividend approach avoids this type of policy complexity by providing a clear, equal, and transparent amount of compensation—linked to the revenue generated by the carbon tax—to all households. As we have noted, low income households benefit more in total dollars than higher-income households. As a proportion of their income, the magnitude of this compensation is even larger.



Comparison with Other Schemes

Overview

Australia has made a number of attempts to tackle climate change and CO₂ emissions in the last decade or so—and the controversy surrounding these attempts has contributed to the downfall of two prime ministers and one opposition leader (current at the time of this writing). There have also been significant power outages in states like South Australia, and retail electricity prices have grown rapidly.

Relative to the three core principles of sound energy policy: reliability, affordability, and tackling social cost, Australian energy policies have been seriously flawed. And they have been so because of obvious design flaws which we now discuss briefly.

National Energy Guarantee

In 2017-18, the Turnbull government proposed a policy known as the National Energy Guarantee (NEG).²¹ The policy is pitched as “tackling the energy ‘trilemma’” of affordability, reliability, and emissions. These are, at least as labels, exactly the same as our guiding principles outlined above.

Because it failed to adopt a properly market-based approach, the NEG involved numerous patches, and workarounds. For instance, the way it sought to handle affordability involved: deals with energy retailers, a gas reservation scheme restricting exports, compulsory arbitration, removing energy networks’ appeal rights, more funding to the Australian Competition and Consumer Commission and the Australian Energy Regulator, one-off cash payments to households, energy efficiency initiatives and a new government website.

The reliability measures were equally convoluted. These included: increasing regulation through an Energy Security Board, a notice-period requirement (of three years) before large generators are permitted to close, the gas reservation scheme, and an audit of existing thermal generators.

Finally, the emissions measures included: funding of more than \$4.3 billion for clean energy projects, a \$2.5 billion fund for emissions reductions, and a productivity improvement plan.

This suite of measures highlights how difficult it is to target three goals without a method of making principled and efficient tradeoffs between the costs and benefits of emissions, as can occur through the use of the market’s price mechanism. Indeed, the NEG typifies that “rabbit-hole problem” discussed above.

Renewables Targets and Subsidies

Federally, a scheme known as the Renewable Energy Target (RET) began in 2011. Beginning with a modest goal of 2% of electricity coming from renewables, this target has increased over time. In 2009 it was increased to 20%.²²

Since 2011, the RET has consisted of two components: the Small-scale Renewable Energy Scheme (SRES) and the Large-scale Renewable Energy Target (LRET). The LRET provides subsidies for renewables such as solar, wind and hydro-electric power. The SRES provides subsidies for household solar panels, solar water heaters, and similar items. In June 2015, the LRET target was reduced from 41,000 GWh to 33,000 GWh in 2020.

At the state level, renewables targets have been more aggressive. As the figure below shows, a number of states and territories have renewable-electricity targets of above 40% in the relatively near term—with Tasmania and the ACT having 100% targets by 2022 and 2020, respectively. All but two states and territories have zero net emissions targets by 2050.



“Relative to the three core principles of sound energy policy: reliability, affordability, and tackling social cost, Australian energy policies have been seriously flawed.”



State / Territory	NT	WA	NSW	VIC	QLD	TAS	ACT	SA
Overall score	C	C	C	B	B	A	A	A
Renewable Electricity (%)	2	7	17	12	7	92	22	47
Capacity Per Capita (kw/cap) (excluding large hydro)	0.1	0.2	0.1	0.2	0.2	0.6	0.4	0.9
Solar Households (%)	11%	25%	15%	15%	32%	13%	14%	31%
Renewable Electricity Targets	50% by 2030	-	-	25% by 2020 40% by 2025	50% by 2030	100% by 2022	100% by 2022	50% by 2025
Net zero emissions target	-	-	Net zero emissions by 2050	Net zero emissions by 2050	Net zero emissions by 2050	Net zero emissions by 2050	Net zero emissions by 2050	Net zero emissions by 2050
Progress since 2016	Expert panel and consultation on approach to Renewable Energy Target.	Largest increase in rooftop solar in 2016.	Continued policy support. Largest capacity of new projects under construction.	Renewable Energy Target legislated.	Initial response to Renewable Energy Target. Largest no. of new projects under construction.	New renewable energy target and zero net emissions target. No new projects added in 2016	Final reverse audition.	SA Energy Plan. 100MW Battery announcement.
2016 Scores	-	C	D	C	C	B	-	A

Source: Climate Council, www.climatecouncil.org.au

Targets are only targets, but already South Australia has 47% of its electricity generated by renewables and a number of states and territories have more than 15% of households with solar panels installed (with WA and 25%, SA at 31%, and QLD at 32%). Clearly, the targets are biting to some real degree.

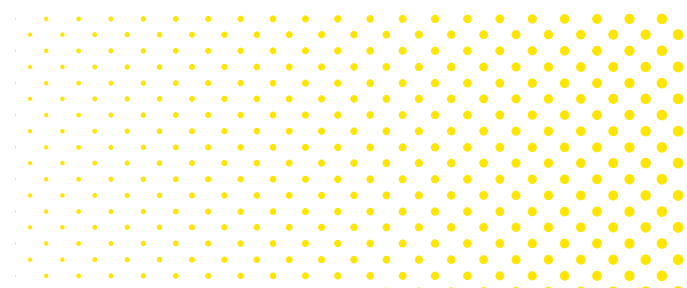
The key difficulty with renewables targets as a solution to climate change is that there is no mechanism to balance the costs and benefits of renewable energy. Solar panels cost money and involve carbon emissions to produce. Renewable energy sources like wind and solar are, almost by definition, less reliable than non-renewable sources.

Renewables targets involve government winner-picking in much the same way as industry policy does. It provides subsidies to selected uncompetitive industries for political reasons, with the purported hope that they will eventually become competitive—such as the long and expensive failure to prop up the Australian car industry.

The failures of the Obama administration's initiatives in this area are instructive—including high-profile bankruptcies of companies like Solyndra that were given federal loan guarantees. As the Washington Post put it “Meant to create jobs and cut reliance on foreign oil, Obama’s green-technology program was infused with politics at every

level, The Washington Post found in an analysis of thousands of memos, company records and internal e-mails. Political considerations were raised repeatedly by company investors, Energy Department bureaucrats and White House officials”.²³

By taking a non-technology-neutral stance, with no adequate means of trading off costs and benefits, and infusing political considerations into energy policy, renewables targets are inferior to a carbon tax and dividend-based approach.



Price-Cap Regulation

One way to attempt to make energy more affordable is to cap prices. The Turnbull government floated this in mid-August 2018 in an attempt to build internal party support for the NEG. As the Prime Minister put it “If we need to use a big stick to lower prices, we will use a big stick to lower prices.”²⁴

Capping prices is seen by economists as a dangerous and damaging intervention in the market. Lacking the information to know what “reasonable” prices are, the government can set the cap too high, thereby defeating the purpose, or too low, thereby causing firms to exit the market and reducing competition.

In practice it is likely to lead to lead to power firms cutting back on the hard-to-measure dimension—quality. This means skimping on quality through shoddy or slow repairs and underinvestment in the infrastructure of the electricity grid. This, in turn, leads to a serious reduction in reliability, and a failure on one of the key principles.

The canonical economic model of different forms of regulation bears this out and is due to Nobel Laureate Jean Tirole and his coauthor Jean-Jacques Laffont.²⁵ This framework shows, among other things, that when the regulator does not know the regulated firm’s true cost—as is always true in practice—prices must be distorted away from the socially optimal level.²⁶ So rather than dealing with the cost pressure from energy to the public through a dividend scheme, price-cap regulation introduced another distortion into the mix.

Carbon Tax with Targeted Compensation

The so-called “price on carbon” introduced by the Gillard government in 2011 was perhaps the closest approach to the carbon dividend plan attempted in Australia. Under the *Clean Energy*

Act 2011, a \$23 per MT carbon tax was instituted on certain forms of emissions, along with a range of compensation measures.

But unlike a carbon-dividend approach, the Gillard plan was far from universal. It only applied to entities emitting more than 25,000 MT of CO₂ per year and did not apply to agriculture or transport. This had obvious advantages, in reducing opposition to the plan, but also costs in terms of efficiency: excluding transport in particular left 96 million MT of CO₂ (in 2017 terms)—or roughly one fifth of emissions—untouched by the tax and addressed only, and inadequately, by fuel taxes.

On the compensation side, the plan was also selective. One component of the compensation was to increase the tax-free threshold for personal income tax from \$6,000 to \$18,200. This also bears some similarity with our plan. Given that the next marginal rate was 19%, this represented a transfer of approximately \$2,400 p.a. to individual taxpayers. But unlike a carbon dividend, which would be universally paid to all adult Australian citizens, this form of compensation only had full effect for those Australians earning more than \$18,200. This necessitated other schemes such as those for aged-pensioners.

For businesses, compensation came in a number of forms. The “Jobs and Competitiveness Program” was designed to assist high-emitting business exposed to international trade. The plan stipulated 48 such industries, including steel and alumina. The plan also provided free “carbon units” to coal-fired power generators, and \$300 million in cash payments to Australia’s two largest steel producers: BlueScope and OneSteel.

This form of compensation was arguably required by the lack of a border adjustment component to the pricing scheme, which we propose as part of a dividend-

based approach. Much worse, however, were the carbon units for coal-fired power generators. This essentially undid the entire purpose of the carbon tax for that quite significant sector.

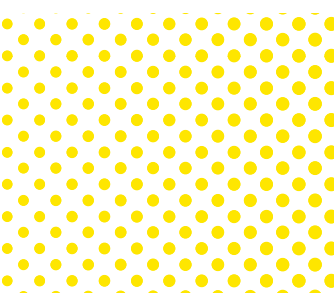
Although the Gillard approach did have the virtue of including a carbon tax, it was therefore selective in both its application and the compensation provided in ways that are again inferior to a more universal carbon tax and dividend-based approach.

Direct Action

A final approach that has been experimented with in recent times is so-called “direct action”. This was adopted as policy under the Abbott government in July 2014. It established the Emissions Reduction Fund, which was initially budgeted to cost \$2.55 billion over four years. Under this approach a goal of cutting Australia’s carbon emissions to 5% below 2000 levels by 2020 was set, and various organisations (mainly businesses, but in principle local governments or community groups) could compete via a reverse auction to receive funding for emissions-reduction projects.

It is notable that this approach set an emissions target explicitly, rather than factoring in the social cost of emissions. The approach also raises significant questions about how to measure and monitor the purported emissions reductions, what this would cost, and the economic distortion from raising tax revenue to fund the payments.

This approach is inefficient on multiple levels. It involves government winner-picking of worthy projects based on limited or no information and, rather than generating revenue, it uses government funds to essentially bribe organisations to reduce carbon emissions. This comes at the usual cost of distortionary taxation, as well as the informational inefficiency from winner picking.



Complexities and Challenges

An important design feature of the dividend plan is the border-adjustment component. There are two key advantages to a border adjustment.

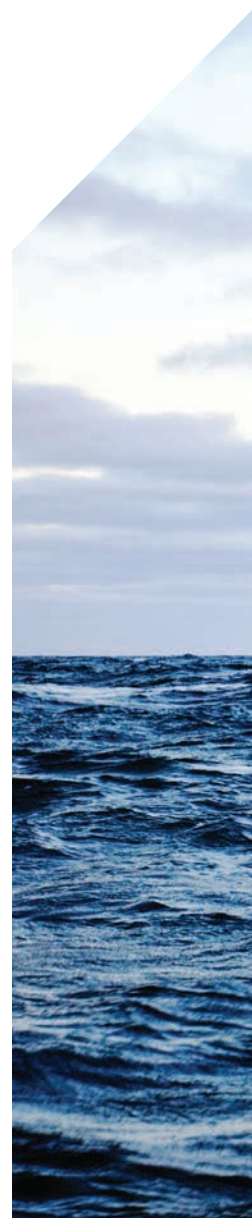
First, it ensures that Australian firms are not at a competitive disadvantage relative to international competitors simply because of the plan. Second, it encourages other countries with whom Australia trades to adopt some form of carbon pricing.

It also presents certain challenges—both legal and practical. On the legal side, it is important that the World Trade Organization view the border adjustment as permissible, and not as a tariff. There are good economic reasons to believe that it is permissible, since the goal is to create a level-playing field, not to provide competitive advantage for domestic industries. But it should be acknowledged that there are also legal risks.

On the practical side, any border-adjustment provision requires knowledge of the ultimate destination of exports to ensure that the scheme is not gamed. For instance, it is crucial that goods not be moved through a designated “carbon tax” jurisdiction and into a “non-carbon tax” jurisdiction merely in order to receive a rebate under the plan. Given the relatively large shipping costs from Australia, and the ability to track final destinations, this seems like a manageable concern.

Finally, the border-adjustment provision requires assurance that the carbon-pricing plans of other jurisdictions—and hence the trigger of a rebate—are legitimate and enforced. Given that such plans can involve emissions trading and other arrangements, this requires appropriate due diligence and monitoring by the Commonwealth government. Again, this seems quite feasible, but involves complexities in the design and implementation of the scheme that should be acknowledged up front.

“Given the relatively large shipping costs from Australia, and the ability to track final destinations, this seems like a manageable concern.”

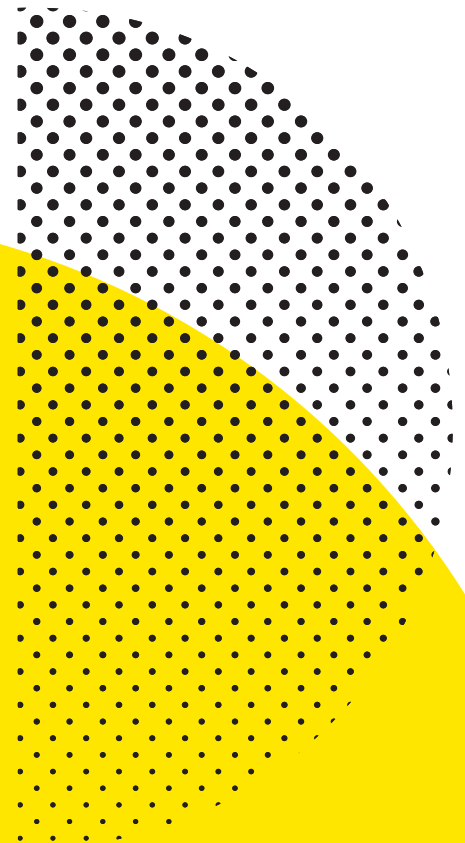








Climate Change and the Social Dividend Approach



Most Australians agree that climate change is a pressing global problem, which Australia must play its share in addressing. Indeed, many Australians believe that we should be leaders in responding to the challenges posed by climate change. Addressing climate change, however, must also be done in a way that maintains a commitment to energy reliability and affordability for all Australians. We suggest in this paper that a dividend-based approach offers one promising way of achieving this.

A social dividend-based approach involves two key components: a tax designed to internalise a “negative externality”, or a form of Pigouvian tax; and the redistribution of the revenue raised from such a tax to all Australians. The tax-based dimension to this model has the advantage of effectively addressing externalities, and in an informationally and allocatively-efficient way. The dividend-based approach, in turn, has two key advantages:

1. It **compensates** ordinary Australians for the increased costs associated with paying the tax; and
2. It provides Australian voters with a much-needed **political incentive** to support the change necessary to address pressing social problems, such as climate change.

A dividend-based approach is relatively novel in Australia. But there are important similarities between elements of the plan and other more familiar regulatory models – including previous responses to climate change.

A dividend-based approach is also relatively easy to understand, for ordinary Australians, and has the capacity to contribute to a broader cultural shift in current Australian political thinking – toward a view that sees economic prosperity and socially responsible action as mutually reinforcing, rather than in opposition to each other.

The premise of a dividend-based approach is that Australians are common owners of Australia’s natural resources, and as such, have both a duty to protect those resources-and the right to expect to share in the economic benefits associated with that protection. Shifting our view of common resources, such as the environment, also helps both ensure better stewardship over the environment, and a new way of thinking about economic prosperity for Australians.

Demands for compensation for rising electricity costs are not simply demands for government hand-outs or welfare. They are legitimate demands from citizens for governments to provide them with the economic and social bases for a life worthy of full human dignity. This should also be done in ways that treat individuals as rights-bearers, entitled to share in the benefits as well as costs of the Australian social compact, not simply supplicants seeking discretionary forms of economic support from governments.

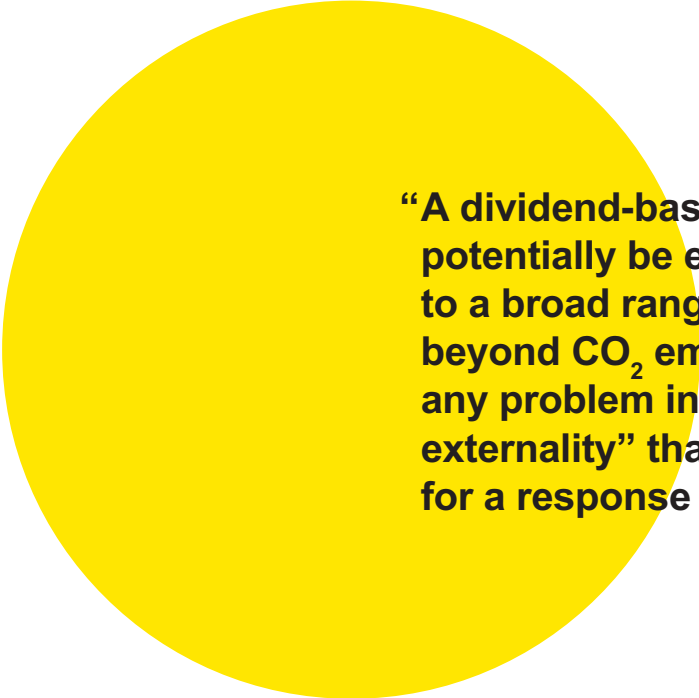
In this sense, a carbon dividend model could potentially point the way to a much broader re-orientation in current government responses in Australia to a range of social costs – towards a much broader dividend-based approach. A dividend-based approach could potentially be extended and applied to a broad range of other problems beyond CO₂ emissions – indeed any problem involving a “negative externality” that can be taxed allows for a response of this kind. If this were the case, a dividend-based approach could also gradually be used to provide increasing supplements or uplift to the wages and welfare payments currently received by all Australians, and especially low-income Australians.

Take for example the environmental costs associated with single-use plastic bags: recent research has found that tap water worldwide contains microscopic plastic fibres, and while the health impacts of plastic fibre consumption are not clear, existing data on the effects of plastic on wildlife is sufficient to raise concerns. A dividend-based approach would also suggest a two-part response to these concerns: first, instead of a voluntary retailer-imposed plastic bag fee, the government should impose a mandatory tax on all single-use plastic bags (or indeed better still, all plastic bags) and, second, redistribute the revenue thereby raised to all Australians.

We have focused in this report, however, on a more immediate set of policy challenges facing Australia: the challenge of developing a workable energy policy that can meet the demands of environmental protection, energy reliability and affordability.

We have shown how a carbon dividend-based approach meets all three of these criteria; and how it compares favourably in this context to almost all existing policy models and proposals in this context in Australia in the last decade.

We acknowledge that there are uncertainties as to the precise effects of any complex policy solution of this kind. But we are also highly confident that a dividend-based approach would deliver real benefits for ordinary Australians, in ways that make it worthy of serious consideration in ongoing debates about climate and energy policy in Australia.



“A dividend-based approach could potentially be extended and applied to a broad range of other problems beyond CO₂ emissions – indeed any problem involving a “negative externality” that can be taxed allows for a response of this kind.”

About the UNSW Grand Challenge on Inequality

The UNSW Grand Challenges program seeks to bring together researchers across the university to raise awareness of, and contribute concrete solutions to, some of the most pressing challenges of our time. The Grand Challenge on Inequality is the third of these, following on from the Grand Challenge on Climate Change and the Grand Challenge on Refugees & Migrants. Professor Rosalind Dixon and Professor Richard Holden are the academic co-leads of the Grand Challenge on Inequality.

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