



# WWF-Australia Submission to the Energy White Paper, Issues Paper

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## A. Introduction

WWF welcomes the opportunity to make a submission to the Energy White Paper - Issues Paper and look forward to participating in the Green Paper process and other consultation opportunities.

WWF-Australia is part of the WWF International Network, the world's largest and most experienced independent conservation organisation. We have 80,000 supporters in Australia, five million supporters worldwide and a global network active in more than 100 countries. WWF's mission is to stop the degradation of the planet's natural resources and to build a future in which humans live in harmony with nature. WWF has been advocating for effective energy and climate change policy in order to avoid dangerous climate change both nationally and internationally for more than two decades.

## B. General

WWF believes that a forward looking comprehensive energy policy framework that includes as a key aim the reduction of greenhouse gas emissions, is important to provide investors, decision makers, business and the community with some clear long-term guidance on Australia's energy pathway over the coming decades, as decisions made today will lock in our energy infrastructure for the next 20-30 years.

Given that energy extraction, processing and production is one of the major contributors to greenhouse gas emissions and therefore global warming WWF believes the energy policy framework must be consistent with Australia's international commitments to work with other countries to limit global temperature to below 2 degrees, and have in its consideration the consequences of the possibility that this goal will be tightened to below 1.5 degrees<sup>1</sup>.

WWF believes that energy sector will need to (and can) decarbonise faster than other sectors of the economy if Australia is to meet its fair share of the international obligations to limit climate change to 2 degrees. This is for three reasons:

1. energy is the major contributor to Australia's greenhouse gas emissions;
2. there are low emissions energy solutions available today;
3. other sectors may struggle to reduce emissions as quickly as the energy sector can.

Australia will therefore need to deploy a range of renewable energy technologies and resources as early as possible to create a diverse, competitive, and reliable energy market that can decarbonise faster if science and governments deem necessary.

If the Energy White Paper does not adequately assess the opportunity and risks before us globally and nationally with respect to the decarbonisation of the energy sector, it could mislead the investment and policy making community, resulting in negative outcomes. For example, investment in power plant with a 20-40 year life now based on the assumptions and conclusions on the Energy White Paper could result in high carbon stranded assets in 10-15 years' time. It would also make it difficult to go for stronger targets if we lock in high carbon assets over the coming two decades.

The Energy White Paper must also examine ways to better address the environmental impact of energy extraction, processing, production and transport. Australia's environment is under

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<sup>1</sup> Conference of the Parties to the United Nations Framework Convention on Climate Change (2010), *The Cancun Agreements: Outcome of the work of the Ad Hoc Working Group on Long-term Cooperative Action under the Convention*, Decision 1/CP.16, <http://unfccc.int/resource/docs/2010/cop16/eng/07a01.pdf#page=2>

unprecedented pressure from invasive species, urbanisation, major developments, as well as climate change. Cumulative impacts must be included in all environmental assessments.

## Recommendations

1. Include an assessment of international climate change negotiations (such as the commitment to limit warming to 2 degrees and review possibility of limiting warming to 1.5 degrees) and climate change science (such as IPCC policy recommendations) outlining their potential impacts on future global and national energy trends and how this could impact Australia's energy exports and domestic energy profile.
2. At a minimum use the IEAs 450ppm scenario (roughly 50% probability of staying below 2 degree temperature increase) as the basis for the energy vision, discussion, and recommendations, and include a scenario for 350ppm.
3. Ensure energy sector modelling includes the full range of Australia's potential 2020 target as submitted to the UNFCCC (5-25% of 2000 levels by 2020).
4. Given energy investments can have a 20-40 year life, include possible projections out to 2050 (based at a minimum on IEA 450ppm scenario, and include a 350ppm scenario).
5. Include an examination of the role and allocation of subsidies towards energy extraction and production, including whether fossil fuel subsidies are necessary and indeed are inconsistent with a low carbon future, and Government investment elsewhere to reduce greenhouse gas emissions.
6. Include an examination on how to ensure accurate greenhouse gas profile of Australia's energy resources, including extraction, transport, processing and production and how emissions can be reduced.
7. Include an examination of the introduction of strategic environmental assessments, in addition to, and not as a substitute for, environmental impact assessments for large projects. And the use of proactive planning tools to identify no-go areas, determine and cap cumulative impacts (on biodiversity, land and water), and identifying infrastructure hubs to reduce environmental footprint.
8. Discussion on how to ensure Australia's energy resources, including extraction, transport, processing and production do not have a detrimental impact on Australia's environment and biodiversity. Include options to ensure there is full environmental assessment (including cumulative impacts) and consultation in advance of individual project approvals.

## C. Electricity sector

The challenge for policy and decision makers is how to achieve multiple and sometime moving objectives. In the case of the energy sector, the objective should be to ensure energy security and decarbonisation at the latest by 2050, and not exploit coal and gas for short-term gains without assessment of long-term costs and impacts.

Australia will need a range of renewable energy technologies and resources in the energy market as early as possible to create a diverse, competitive, and reliable energy market that can decarbonise faster if science and international developments deem necessary.

This requires Government to foster concurrent development of renewable industries now and not waiting for each technology to become 'cost competitive' in their own time.

Research shows that there are benefits to investing earlier, even at small scale. For example, investment at a comparatively small-scale now can lead to exponential growth in installed capacity and reduces the chance of delaying the availability of large-scale capacity<sup>2</sup>.

More importantly the longer governments delay the transition the more costly it becomes. For example the International Energy Agency (IEA) found that for every \$1 of investment in low carbon transition between 2011 and 2020, it avoids an additional \$4.3 in required expenditure between 2021 and 2035 to compensate for the increased emissions.<sup>3</sup>

Already in Australia, the cost of renewable energy is falling. The Bureau of Resource and Energy Economics found that some renewables, such as on-shore wind, are already cheaper than new-build fossil fuel alternatives and that by 2030 the most cost effective energy option will be solar.<sup>4</sup>

Wind energy is already driving down wholesale electricity prices,<sup>5</sup> whereas fossil fuels such as gas are driving up wholesale prices.<sup>6</sup>

Unfortunately the various reviews into renewable policies and energy prices together with the intended scrapping of the carbon price<sup>7</sup>, is leading to considerable uncertainty for energy investors and will significantly delay Australia's transition to a competitive, low cost renewable energy supply. Australia is at risk of going backwards.

Modelling by Energy and Carbon consultants Reputex found given the proposed Emissions Reduction Fund (ERF) does not impose a price on competing fossil fuel generation, if Australia's emissions trading scheme (ETS) is repealed, not only would renewable energy production shrink and Australia would fail to meet its renewable energy target, but it is likely that retail electricity prices would rise as a flow-on effect of repealing the ETS.<sup>8</sup> The Reputex study shows there would be a double whammy impact from repealing the ETS: a big drop in renewable energy projects, meaning more pollution, and higher electricity prices for consumers. Repealing or reducing the RET, would have similar effect and would lead to higher wholesale prices.

It is WWF's view that having the right policy setting to drive investment in renewable energy will be critical to ensure a low cost, low carbon, competitive energy sector, and believe the CEFC, RET and the carbon price are critical to achieving these goals.<sup>9</sup>

## Recommendations

9. Include an analysis of achieving 100% renewable energy by 2050 including barriers, opportunities, costs and benefits, including examination of:
  - a) benefits of supporting and commercialising a range of renewable technologies now to ensure a balanced portfolio that will ensure energy security;

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<sup>2</sup> WWF and Carnegie (2009) Power to Change: Australia's Wave Energy Future.

[http://awsassets.wwf.org.au/downloads/fs053\\_power\\_to\\_change\\_australias\\_wave\\_energy\\_future\\_10jun09.pdf](http://awsassets.wwf.org.au/downloads/fs053_power_to_change_australias_wave_energy_future_10jun09.pdf)

<sup>3</sup> IEA World Energy Outlook, 2011 [www.worldenergyoutlook.org](http://www.worldenergyoutlook.org)

<sup>4</sup> <http://www.bree.gov.au/sites/default/files/files//publications/aeta/AETA-Update-Dec-13.pdf>. Pg.10.

<sup>5</sup> In South Australia, despite wind contributing to 21% of the state's electricity, wholesale electricity prices have not increased over the past five years; instead they dropped from \$50 per MWh to \$49 MWh during that time period. Wind now routinely displaces more expensive technology such as open-cycle gas, see Osmond and Osborne (2011) Peaking Capacity, Co2-e emissions and pricing in the South Australian Electricity Grid with high wind penetration. Windlab Systems Pty Ltd.

<sup>6</sup> See for example The Treasury and DICCS RTE (2013) Climate Change Mitigation Scenarios: Modelling report provided to the Climate Change Authority in support of its Caps and Targets Review, p.56

<sup>7</sup> Removing the carbon-pricing scheme altogether would leave an AUD\$67 billion deficit in low-carbon energy investment requirements; this shortfall would need to be addressed using other policy measures, see WWF and Climate Risk (2012) Our Clean Energy Future: 100% Renewable Energy Powering our Future. <http://www.wwf.org.au/?5062/Our-clean-energy-future---100-renewables-powering-Australias-future>

<sup>8</sup> Reputex (2013) Policy brief: Renewable Energy and the Carbon Price.

<sup>9</sup> See for example WWF and Climate Risk (2012) Our Clean Energy Future: 100% Renewable Energy Powering our Future. <http://www.wwf.org.au/?5062/Our-clean-energy-future---100-renewables-powering-Australias-future>; and Reputex (2013) Emissions trading versus direct action: Achieving Australia's emissions reduction objectives.

- b) potential benefits for Australia's international competitiveness;
  - c) costs of delaying transition away from fossil fuels and transitioning to renewable energy; and
  - d) current issues with grid access and grid performance to address the current barriers to greater renewable energy deployment.
10. Consider the impact of renewable energy growth on putting downward pressure on wholesale electricity prices now and in the future.
  11. Consider the resource development framework needed to further develop renewable technologies such as geothermal and solar thermal.
  12. Examine the role of Carbon Capture and Storage in reducing Australia's emissions from existing fossil fuel power plants, and for industrial process that cannot currently be converted to renewable alternatives.
  13. Include an assessment of efficient and effective policies needed to support the transition to competitive renewable energy, including current institutions and schemes such as Australian renewable Energy Agency (ARENA), Clean Energy Finance Corporation (CEFC), Renewable Energy target (RET), and ETS, the proposed ERF. Consideration should also be given to the role of regulation such as emissions performance standards in driving reform. The assessment should consider the role these various agencies and schemes play to complement each other and in meeting different policy objectives including, investment in R&D for new technology development, demonstrating and commercialising technologies, and supporting a range of technologies to ensure a competitive and reliable energy system.

## D. Domestic Transport

Transport accounted for 15 per cent of Australia's total domestic emissions in 2012.<sup>10</sup> An energy paper that focuses on fossil liquid fuels such as oil, tar sands oil, coal-to-liquids (CTL), and gas-to-liquid (GTL), as the solution ignores the transition that will be required in the transport sector to significantly reduce Australia's emissions and will therefore fail to provide an adequate framework to consider the transformation, infrastructure and investments needed.

Tar sand oil, CTL and GTL are energy intensive to produce<sup>11</sup>. With respect to carbon emissions, GTL is no better than conventional petroleum on a life cycle basis and CTL is twice that of conventional petroleum. In addition the process of CTL is water intensive.

The only sustainable approach is to tackle the problem at its root cause and transform the transport sector.

WWF recommends shifting from reliance on combustion engines and their reliance on liquid fuels to an electric transport system; shifting more freight to rail; and investing in biofuels to support the transition to electric system and as the main fuel source for aviation and shipping.

### Recommendations

14. The Energy White Paper must include an analysis of appropriate frameworks and policies to reduce emissions in our transport energy sector, including:
  - a. Increasing use of other modes of transport such as public transport and cycling, and appropriate funding models;

<sup>10</sup> DOE (2013) Australia's Abatement Task and 2013 Emissions Projections, Canberra, p.11

<sup>11</sup> WWF (2009) Plugged In: The End of an Oil Age. [http://assets.panda.org/downloads/plugged\\_in\\_full\\_report\\_\\_\\_final.pdf](http://assets.panda.org/downloads/plugged_in_full_report___final.pdf)

- b. Reducing emissions from passenger and commercial vehicles including best practice fuel vehicle efficiency standards and electrification of the transport sector;
- c. Shift from freight to rail; and
- d. Developing a biofuels industry for aviation and shipping.

## E. Energy Export

WWF would support a goal of growing an energy export market including value added products and services if its primary focus was on renewable energy, where Australia can play a significant role in export of new technologies, skills, and potentially high end manufacturing.

However the focus to date has been on increasing oil, gas and coal exports. This growth in fossil fuels is inconsistent with the IEAs 450ppm global energy scenario which predicts a decline in fossil fuels as a share of the global energy mix and could risk Australian being left with stranded assets associated with the extraction, production and transport of fossil fuel exports.

The IEA notes that country-by-country analysis reveals that 80 per cent of the total CO<sub>2</sub> emitted over the Outlook period in the 450 Scenario is already "locked-in" by our existing capital stock (e.g. power plants, buildings, factories), leaving little additional room for manoeuvre and grown new growth.<sup>12</sup>

Similarly The Carbon Tracker Initiative has undertaken analysis on fossil fuel reserves and global carbon budgets. It has found that that only 20 per cent of the total reserves can be burned unabated, leaving up to 80 per cent of assets technically unburnable.<sup>13</sup> An analysis by Carbon Tracker and The Climate Institute found that expansion beyond the current 11 per cent market share is highly unlikely due to rising costs and changes in policies of export markets like China.<sup>14</sup>

Nick Robins, head of the HSBC climate change centre of excellence in London has been quoted as saying that "[a]ccording to the most likely projections by climate scientists, at least one-half of fossil fuel assets will have to be left in the ground. We're still pricing [companies in the extractives sector] as if they are all going to be exploited.... creating the risk of stranded assets."<sup>15</sup>

Growing fossil fuel exports also ignores the fast growing contribution it's making to domestic emissions.<sup>16</sup> For example a recent report, prepared by Professor Paul Hardisty, the global director, Sustainability and EcoNomicsm for WorleyParsons<sup>17</sup>, calls into question the greenhouse gas profile of LNG and CSG exports, which if proven to be correct may cause the IEA to reassess its estimations for Australia. The report said that a worst case fugitive emissions scenario for CSG, "shows that if best practice is not applied in Australia's emerging CSG industry, life-cycle GHG footprint becomes similar to or in some cases worse than black coal." The report also finds that "[w]hen exported to China for

<sup>12</sup> IEA (2011) World Energy Outlook. Page 205 [www.worldenergyoutlook.org](http://www.worldenergyoutlook.org)

<sup>13</sup> Carbon Tracker (2011) Unburnable Carbon – Are the world's financial markets carrying a carbon bubble? <http://www.carbontracker.org/wp-content/uploads/downloads/2011/07/Unburnable-Carbon-Full-rev2.pdf>

<sup>14</sup> <http://www.climateinstitute.org.au/unburnable-carbon.html>

<sup>15</sup> The comments were made at ACCA / NSFM event reported by Environmental Finance <http://www.environmental-finance.com/news/view/1665>

<sup>16</sup> Fugitive emissions from fuels (the fugitives sector) accounted for around 7 per cent of Australia's total domestic emissions in 2009 at 39 Mt CO<sub>2</sub>-e. Baseline fugitive emissions are projected to average 43 Mt CO<sub>2</sub>-e per year in the Kyoto period (2008-2012), 46 per cent above 1990 levels. In 2020, fugitive emissions are projected to be 69 Mt CO<sub>2</sub>-e, 97 per cent higher than in 2000. Fugitive emissions from coal mining account for the largest proportion of emissions in the sector, averaging 31 Mt CO<sub>2</sub>-e per year over the Kyoto period and 48 Mt CO<sub>2</sub>-e in 2020. Emissions from oil and gas extraction are expected to average 11 Mt CO<sub>2</sub>-e per year over the Kyoto period and 21 Mt CO<sub>2</sub>-e in 2020.

<http://www.climatechange.gov.au/en/publications/projections/australias-emissions-projections/fugitive-emissions.aspx>

<sup>17</sup> Hardisty, P.E., Clark, T.S., and Hynes, R.G. (2012) Life Cycle Greenhouse Gas Emissions from Electricity Generation: A Comparative Analysis of Australian Energy Sources. <http://www.mdpi.com/1996-1073/5/4/872/pdf>

electricity production, conventional LNG was found to be 22-36 times more GHG intensive than wind and concentrated solar thermal power and 13-21 times more GHG intensive than nuclear power.”<sup>18</sup>

Further, growth of fossil fuels ignores the other environmental impacts resulting from mining and port expansion. For example, the massive increase in coastal infrastructure development along the Great Barrier Reef coastline to facilitate the growth in Queensland’s coal and gas exports is causing major concern for the Reef’s health. In particular the impacts from dumping dredge spoil are adding considerable pressure to an ecosystem already suffering severe declines and acute stress.<sup>19</sup>

## Recommendations

15. Include an analysis of the IEAs 450ppm scenario, The Carbon Tracker Initiative and other relevant research on risks of stranded fossil fuel assets in Australia.
16. Include an analysis of the impact Australia’s fossil fuel exports would have on global carbon budget.
17. Include an analysis on impacts growing fossil fuel exports is having on environmental significant areas such as the Great Barrier Reef.

## Further Reading

Carbon Tracker (2011) Unburnable Carbon – Are the world’s financial markets carrying a carbon bubble? <http://www.carbontracker.org/wp-content/uploads/downloads/2011/07/Unburnable-Carbon-Full-rev2.pdf>

McKinsey (2009) Road Towards a Low-Carbon Future: reducing Co2 emissions from passenger vehicles in the global transportation system.

[http://www.mckinsey.com/clientervice/ccsi/pdf/roads\\_toward\\_low\\_carbon\\_future.pdf](http://www.mckinsey.com/clientervice/ccsi/pdf/roads_toward_low_carbon_future.pdf)

Reputex (2013) Emissions trading versus direct action: Achieving Australia’s emissions reduction objectives.

[http://awsassets.wwf.org.au/downloads/fs068\\_emissions\\_trading\\_versus\\_direct\\_action\\_30aug13.pdf](http://awsassets.wwf.org.au/downloads/fs068_emissions_trading_versus_direct_action_30aug13.pdf)

Reputex (2013) Policy brief: Renewable Energy and the Carbon Price.

[http://awsassets.wwf.org.au/downloads/fs066\\_policy\\_brief\\_renewable\\_energy\\_and\\_the\\_carbon\\_price\\_13aug13\\_1.pdf](http://awsassets.wwf.org.au/downloads/fs066_policy_brief_renewable_energy_and_the_carbon_price_13aug13_1.pdf)

WWF and Climate Risk (2012) Our Clean Energy Future: 100% Renewable Energy Powering our Future. <http://www.wwf.org.au/?5062/Our-clean-energy-future---100-renewables-powering-Australias-future>

WWF and ECOFYS (2011) The Energy Report: 100% Renewable Energy by 2050.

[http://www.wwf.org.au/news\\_resources/resource\\_library/?1694/The-Energy-Report-100-Renewable-Energy-by-2050](http://www.wwf.org.au/news_resources/resource_library/?1694/The-Energy-Report-100-Renewable-Energy-by-2050)

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<sup>18</sup> Hardisty, P.E., Clark, T.S., and Hynes, R.G. (2012) Life Cycle Greenhouse Gas Emissions from Electricity Generation: A Comparative Analysis of Australian Energy Sources, p.873, <http://www.mdpi.com/1996-1073/5/4/872/pdf>

<sup>19</sup> <http://www.environment.gov.au/resource/improved-dredge-material-management-great-barrier-reef-region>