appea the voice of australia's oil and gas industry

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Special Review Second Draft Report: Australia's climate policy options, November 2015

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INTRODUCTION

Since 1959, the Australian Petroleum Production & Exploration Association (APPEA) has been the peak national body representing the upstream oil and gas exploration and production industry. APPEA has around 80 member companies that explore for and produce Australia's oil and gas. In addition, APPEA's more than 200 associate member companies that provide a wide range of goods and services to industry. Further information about APPEA can be found on our website, at www.appea.com.au.

APPEA has been engaged in the greenhouse policy debate since its inception and has participated in every major consideration of national climate change policy approaches in Australia. APPEA has been engaged with policymakers, for example, on every consideration of an emissions trading scheme (ETS) commencing with the 1999 series of discussion papers released by the Australian Greenhouse Office.

APPEA welcomes the opportunity to provide comment to the Climate Change Authority (the Authority) on the *Special Review Second Draft Report: Australia's climate policy options, November 2015* (the Second Draft Report).

APPEA is committed to working with policymakers as they develop policy responses to climate change. With that in mind, APPEA has recently released a second edition of its *Climate Change Policy Principles* – a copy of which is at Attachment 1[1] – setting out the principles that APPEA considers should underpin Australia's response to climate change. The importance of these *Principles* in assessing future policy approaches is considered later in this submission.

Most importantly, APPEA supports a national climate change policy that delivers greenhouse gas emissions reductions at least cost and facilitates broad-based investment decisions consistent with an international price on carbon.

APPEA is also a member of the Australian Industry Greenhouse Network (AIGN), a network of industry associations and individual businesses that contribute to the climate change policy debate and see value in joint industry action on climate change policy issues in order to promote sustainable industry development[2]. APPEA has contributed to the AIGN submission to the Second Draft Report.

In addition to the APPEA submission, a number of APPEA members have made individual submissions to the Second Draft Report. This response should be read in conjunction submissions from individual APPEA members.

APPEA's submission addresses specific aspects of the Second Draft Report, focussing on those areas that are particularly important for the upstream oil and gas industry.

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[1] A copy of APPEA's *Climate Change Policy Principles* can also be found at www.appea.com.au/2016/02/appea-updates-climate-change-policy-principles.

[2] See www.aign.net.au for further information.

THE AUSTRALIAN UPSTREAM OIL AND GAS INDUSTRY

It is also important to place our views on the issues raised by the Authority in the Second Draft Report within the context of the current state and potential future contribution of the upstream oil and gas industry to the Australian economy and to the welfare of all Australians.

Reliable, secure and competitively priced energy is crucial to our everyday lives in Australia. Within this framework, oil and gas plays a key role in meeting many of our energy needs.

Australia has vast resources. Geoscience Australia[3] recently estimated that Australia's total gas resources are around 819 trillion cubic feet (tcf) or 900,500 petajoules (PJ). By way of comparison, Australia's production of natural gas in 2014-15 (including exports) was around 2.4 tcf or 2,600PJ[4], meaning Australia has more than enough gas to service both domestic and export markets for decades.

Our abundant natural gas resources, in particular, place Australia in an enviable position to maintain long-term, cleaner energy security domestically and internationally. Natural gas makes it possible for Australia to meet the world's growing energy needs over the coming decades while incorporating a strategy to curb emissions and address the risks posed by climate change.

Just as importantly, the industry creates significant wealth for the country, including through the employment of many Australians, underpinning the revenue collections of governments and generating valuable export revenue for the Australian economy. In recent years, the industry has invested around $200 billion in oil and gas projects including seven major liquefied natural gas (LNG) export projects, adding to the three LNG projects that were in operation[5]. This investment is still underway – three of these new projects have commenced operation while the other four will commence operation in coming years.

Australia's oil and gas industry has underpinned much of Australia's economic prosperity and growth since at least the early 1960s. A 2014 PwC report, *Value Adding: Australian Oil and Gas Industry*[6], shows that:

- The oil and gas industry's production profile directly represents around 2 per cent of current GDP, with value-added of approximately $32 billion in 2012-13.

[3] Geoscience Australia, Department of Industry and Bureau of Resources and Energy Economics (2014), *Australian Energy Resource Assessment: Second Edition*, page 97 *(*available at www.ga.gov.au/metadata-gateway/metadata/record/gcat_fa6d674d-ecbb-6629-e044-00144fdd4fa6/Australian+Energy+Resource+Assessment+-+Second+Edition).

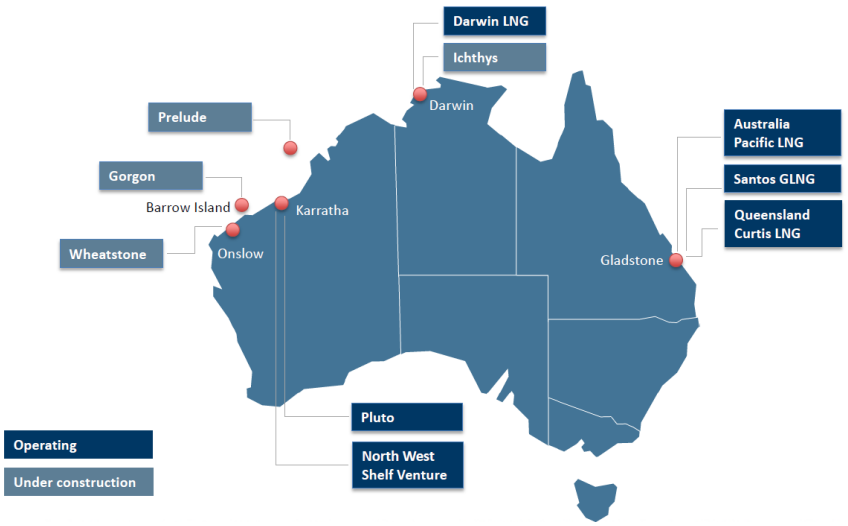
[4] Department of Industry, Innovation and Science (Office of the Chief Economist) (2016), *Energy in Australia 2015*, page 78 (available at www.industry.gov.au/Office-of-the-Chief-Economist/Publications/Pages/Energy-in-Australia.aspx).

[5] See Department of Industry, Innovation and Science (Office of the Chief Economist) (2015), *Resources and Energy Major Projects*, for a listing of upstream oil and gas projects at the Publicly Announced Stage, Feasibility Stage, Committed Stage and Completed Stage (available at www.industry.gov.au/Office-of-the-Chief-Economist/Publications/Pages/Resources-and-energy-major-projects.aspx).

[6] PwC (2014), *Value-adding: Australian Oil and Gas Industry, September 2014,* pages 28-29 (available at www.appea.com.au/wp-content/uploads/2014/11/PwC-Report-Oil-and-Gas-Industry-Sept-2014-FINAL.pdf).

- At current projected investment levels, the total forward contribution of the combined oil and gas and exploration sectors is projected to double to approximately $53 billion in 2019-20 and $67 billion in 2029-30.
- Driving strong value-add from the industry is an increase in gas exports over the next decade. The value of natural gas exports (already Australia's third largest export, after iron ore and coal) is expected to reach around $60-70 billion by the middle of 2019 and production is expected to double over the next five years.
- In 2030, when production (on the basis of current and forthcoming capacity) and prices are expected to stabilise, the oil and gas industry's total economic contribution is projected to be around 2.6 per cent of the Australian economy.
- After accounting for its inter-linkages with the rest of the economy (companies all over Australia supply goods and services to the oil and gas industry, and the use of fly-in, fly-out staffing is spreading the benefits of the industry) the sector is projected to be around 3.5 per cent of national output.

Figure 1: Australian LNG projects: by liquefaction status



Source: Department of Industry, Innovation and Science (2015).

By 2020, the sector's economic contribution to the national economy will more than double to $70 billion and taxation paid will rise from $8.8 billion in 2012 ($4.9 billion in corporate taxes and $3.8 billion in production taxes) to reach almost $13 billion.

This means that the stakes are high in realising the industry's potential benefits.

THE KEY ROLE NATURAL GAS PLAYS IN REDUCING GLOBAL GREENHOUSE GAS EMISSIONS

Greater use of Australian natural gas – in the domestic market, and in Asia as LNG exports – can significantly reduce greenhouse gas emissions.

NATURAL GAS: INTEGRAL TO A LOW CARBON AUSTRALIAN ECONOMY

Australia could generate significant additional national economic, environmental and social benefits through greater utilisation of its substantial natural gas resources.

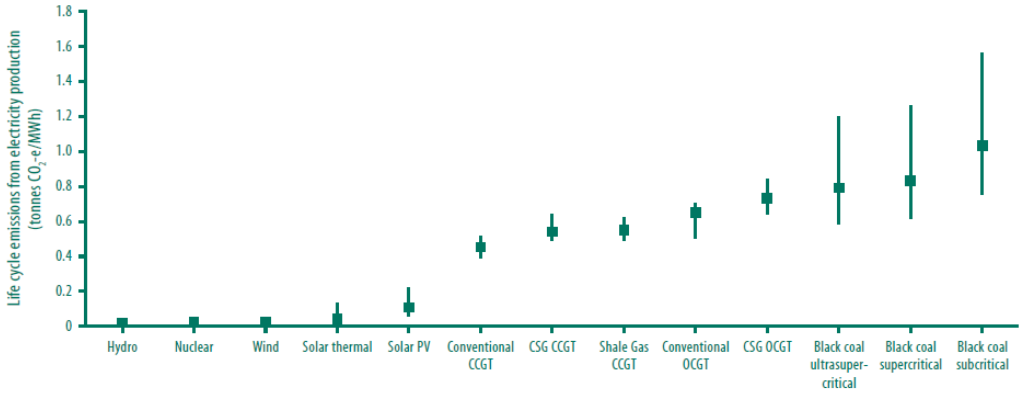
Using more natural gas in Australia's power generation and resource processing would significantly enhance the nation's ability to meet increasing energy needs while at the same time reducing greenhouse gas emissions.

These outcomes are possible because currently available natural gas power generation technologies can reduce greenhouse gas emissions by 40-50 per cent, and by as much as 75 per cent in some circumstances[7], compared to coal-fired power generation technologies. According to the Commonwealth Scientific and Industrial Research Organisation (CSIRO), the Australian Council of Learned Academies (and a range of energy industry analysts), current generation coal-fired power stations produce between 0.8 and 1.2 tonnes of carbon dioxide equivalent greenhouse gas emissions (CO_2-e) per megawatt hour (MWh) of generation while a combined cycle gas turbine power station produces only around 0.35 to 0.36 tonnes CO_2-e/MWh.

The Australian Council of Learned Academies has found using gas to provide more baseload and peak electrical power generation in Australia – in scenarios of higher use of both renewables and gas – would deliver substantial emissions reductions. The Council found such an outcome would reduce the Australian electricity generation sector's emissions by between 54 Mtpa and 103 Mtpa CO_2-e (million tonnes per annum, carbon dioxide equivalent) by 2030 – a reduction of 27 per cent to 52 per cent from the base case of 197 Mtpa CO_2-e in 2012.

This is illustrated in Figure 2, which shows the significantly lower greenhouse gas emission associated with the gas-fired electrical power generation compared to the use of other conventional fuels.

Figure 2: Emissions intensity of various fuel types for electricity generation (tonnes CO_2-e/MWh)



Source: Australian Council of Learned Academies (2013).

The increased use of natural gas also has several additional environmental benefits, such as:

[7] See Australian Council of Learned Academies (2013), *Engineering Energy: Unconventional Gas Production*, June (available at www.acola.org.au/index.php/projects/securing-australia-s-future/project-6). While the emissions benefit is lower when compared to ultra-supercritical coal-fired power generation, as the Council noted on page 146 "*gas-fired electricity generation will generally replace existing coal-fired boilers that are less efficient subcritical facilities*".

- Reduced emissions of fine particulates.
- Reduced emissions of sulphur dioxide (an important contributor to smog and acid rain) and nitrogen oxides.
- Significantly lower demand for water for power station cooling.

Much greater use of Australia's extensive gas resources will be crucial in meeting the challenge of significantly reducing global greenhouse gas emissions at least cost whilst enhancing Australia's economic and export performance.

NATURAL GAS: INTEGRAL TO LOW CARBON ECONOMIES IN ASIA

In considering Australia's climate change policy responses and Australia's contribution to global emissions reduction efforts, it is important to acknowledge the positive contribution Australia's LNG exports make now and will increasingly make to that global effort.

Australia's LNG industry is in a unique position to contribute substantially to the economic development of the nation and to reduce greenhouse gas emissions. Australia's vast resources of natural gas and proximity to growing markets make us well-placed to meet the global climate change challenge while substantially contributing to Australia's economic growth.

While the demand for energy as part of the industrialisation of Asian economies is a key driver, the cleaner properties of natural gas as a lower emitting and cleaner burning fuel is also driving much of the international demand for LNG.

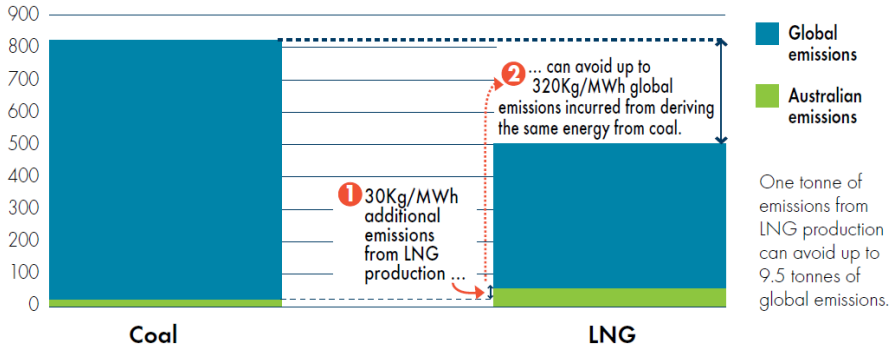
This should be recognised by the Authority in its Special Review. Action on climate change is entirely consistent with strong demand for LNG.

A 2008 (updated in 2011) study by WorleyParsons[8], for example, compares lifecycle greenhouse gas emissions of Australian LNG exports from the North West Shelf Project with Australian east coast black coal exports in terms of lifecycle greenhouse gas emissions: from extraction and processing in Australia through to an end use of combustion (using different power generation technologies) in China for power generation. Figure 3 below is derived from data within the study, and shows that:

- For every tonne of CO_2-e emitted in LNG production within Australia, between 5.5 and 9.5 tonnes of emissions from the coal alternative can be avoided globally.
- LNG has a substantially lower greenhouse footprint associated with it compared to coal – not just in combustion emissions, but throughout its lifecycle.
- The lifecycle greenhouse intensity for LNG is about 50 per cent lower than that of coal.

[8] WorleyParsons (2008; 2011), *Greenhouse Gas Emissions Study of Australian LNG*, originally prepared August 2008; updated for public release, March 2011.

Figure 3: Displacement of coal by LNG (kg/MWh CO_2-e by fuel source)



Source: Derived from data in WorleyParsons (2008; 2011).

A similar 2011 WorleyParsons study[9] compared lifecycle greenhouse gas emissions of Australian LNG projects from Queensland using natural gas from coal seams as the fuel source with Australian east coast black coal exports. The analysis considered lifecycle greenhouse gas emissions: from extraction and processing in Australia through to an end use of combustion (using different power generation technologies) in China for power generation. It found that, in the case of Queensland LNG exports:

- For every tonne of CO_2-e emitted in LNG production within Australia, between 2.5 and 4.3 tonnes of emissions from the coal alternative can be avoided globally.
- Considering savings from a 30 year 10 million tonnes per year (Mtpa) Queensland onshore gas LNG project, if this gas is combusted in a combined cycle gas turbine (CCGT) plant instead of a subcritical coal plant, the life cycle emissions are 42.7 Mt CO_2-e per year, the annual savings 37.2 Mt CO_2-e and the project life savings 1,114 Mt CO_2-e[10]. For combustion in a CCGT plant instead of a supercritical coal plant the annual savings and project life savings are 21.7 Mt CO_2-e and 652 Mt CO_2-e respectively.
- The lifecycle greenhouse intensity for LNG is about 40 per cent lower than that of coal.

In addition, burning gas instead of coal improves urban air quality. This is particularly important in many Asian countries that are importing Australian LNG or considering imports.

There are significant benefits to Australia and internationally from the greater use of gas as a lower greenhouse gas emitting energy source.

Much greater use of Australia's extensive gas resources will be crucial in meeting the challenge of significantly reducing global greenhouse gas emissions at lowest possible cost whilst enhancing Australia's economic and export performance.

[9] WorleyParsons (2011), *Greenhouse Gas Emissions Study of Australian CSG to LNG*, April (available at www.appea.com.au/wp-content/uploads/2013/05/FullReport_appea_worley_CSGemissions2011.pdf).

[10] This compares to total Australian annual emissions in 2014-15 of 549.3 Mt CO_2-e (see www.environment.gov.au/climate-change/greenhouse-gas-measurement/publications#quarterly).

The Authority should in its Final Report and advice to government recognise the vital role Australian LNG exports can play in global greenhouse emissions reductions.

SYNTHESIS REPORT OF THE FIFTH ASSESSMENT REPORT (AR5) BY THE INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE (IPCC): HIGHLIGHTING THE ROLE OF NATURAL GAS

The key role natural gas can play in reducing global emissions was highlighted in the Synthesis Report of the Fifth Assessment Report (AR5), released by the Intergovernmental Panel on Climate Change (IPCC) in November 2014[11].

In considering the role of natural gas, the AR5 Synthesis Report found (on page SYR-51):

> *GHG emissions from energy supply can be reduced significantly by replacing current world average coal-fired power plants with modern,* ***highly efficient natural gas combined-cycle power plants*** *or combined heat and power plants … {WGIII SPM.4.2}* [EMPHASIS ADDED]

COMMENTS ON SPECIFIC ISSUES RELEVANT TO THE DRAFT SECOND REPORT

PRINCIPLES FOR ASSESSING POLICIES

APPEA notes the Second Draft Report sets out in Chapter 2 a set of principles that the Authority proposes to use as part of an "evaluation framework" to compare and assess Australia's climate policy options. APPEA further notes this framework comprises three key principles: cost effectiveness environmental effectiveness; and equity.

As noted earlier in this submission, APPEA has developed a set of *Climate Change Policy Principles* to assist policymakers in developing efficient and effective responses to deal with climate change.

As part of this, APPEA supports a national climate change policy that delivers greenhouse gas emissions reductions at least cost and facilitates broad-based investment decisions consistent with an international price on carbon. That should be the overarching objective of Australia's policy response and a key feature of the Authority's evaluation framework.

APPEA's *Climate Change Policy Principles*, reproduced in Box 1, contain four key points:

1. International engagement is crucial.
2. Climate change and energy policies must be integrated and harmonised.
3. Climate change adaptation strategies are necessary.
4. Climate policy must not compromise national or global economic development or energy security.

[11] See www.ipcc.ch/report/ar5/index.shtml and www.ipcc.ch/report/ar5/syr/ for further information.

In considering the APPEA *Climate Change Policy Principles* and the evaluation framework set out by the Authority, APPEA makes the following comments:

- APPEA agrees with the Authority that policies should help Australia meet its emissions reduction goals at least cost and that these costs have a number of elements (direct costs, indirect costs and compliance and administration costs), all of which should be kept as low as possible.
    - While keeping the whole of these costs as low as possible is vital, the distribution of costs remains important and the impact on particular groups (for example, trade-exposed industries) is a critical element of ensuring policy options facilitate efficient and broad-based investment decisions.
    - In addition, as the Centre for International Economics (CIE) found in its 2015 report, *Understanding emissions reduction efforts*[12], the costs of climate change mitigation are borne by: trade-exposed industries where they are placed at a competitive disadvantage compared to competing industries in other countries; domestic consumers where the cost of addressing climate change is reflected in higher domestic prices; and taxpayers where climate change policies are funded by the government. This reinforces the importance of minimising the quantum of costs and being conscious of their distribution when evaluating and designing policies.
- APPEA welcomes the recognition by the Authority, when discussing the importance of environmental effectiveness, that such effectiveness should be seen from a global perspective. There are, however, three (not two as outlined on page 12 of the second Draft Reports) aspects that are important.
    - In particular, APPEA's *Principles* highlighted the important role international permits and credits can play and highlight that APPEA supports a policy that allows for the unrestricted flow of credible emissions units between international jurisdictions.
    - APPEA also agrees that the environmental effectiveness of Australia's policies can be eroded if they trigger increases in emissions in other countries (noting, as will be considered further below, this is only one aspect of the importance of ensuring that the international competitiveness of trade-exposed industries are maintained).
    - The third and equally important element is the positive role cleaner energy exports, such as LNG, play now and will increasingly play in the future in contributing substantially to the economic development of the nation and to reduce greenhouse gas emissions. These issues were considered earlier in this submission, but are an equally important element of the environmental effectiveness of any climate change policy response.
- A key aspect of the Authority's consideration of horizontal equity, described by the Authority on page 12 as *"it is important to treat individuals or firms in similar situations the same"*, extends to the international competitiveness of trade-exposed industries. These industries should be treated in a similar way to trade competitors, where those competitors do not face carbon costs that could be faced by Australian companies. These issues are considered in detail below.

[12] A copy of the report is also available at aign.net.au/file_download/1090/CIE+report+Understanding+emission+reduction+efforts+24+April+2015.pdf.

Box 1. APPEA's *Climate Change Policy Principles*

1. International engagement is crucial.

Australia should continue to engage the international community to pursue environmentally effective and economically efficient climate change policies[1].

An international policy framework should:

- Promote international participation.
- Minimise the costs and distribute the international burden equitably.
- Be comprehensive in its coverage.
- Allow for the unrestricted flow of credible emissions units between international jurisdictions.
- Be underpinned by transparent reporting arrangements.

2. Climate change and energy policies must be integrated and harmonised.

Australia's policy response should seek to:

- Deliver lowest cost greenhouse gas emissions abatement through an appropriately designed mechanism that provides an economy-wide transparent price signal to shape business and consumer plans and investments. The mechanism should be efficient, have low compliance costs, and support international trade that recognises different national circumstances.
- Recognise and allow the use of the widest range of credible domestic and international offsets.
- Provide a level playing field for new entrants.
- Avoid penalising early movers who have previously implemented abatement measures.
- Support research into low-emissions technologies, and development and deployment of such technologies.

In the event Australia takes action before comparable action is taken by the nations with which we compete, the Australian policy response should maintain the competitiveness of Australian trade exposed industries, such as LNG, by minimising the costs the industry faces in the absence of a carbon price being imposed on energy sources in customer countries and competitors.

Polices inconsistent with the principles should be phased out and additional measures should only apply to sectors of the economy that are not covered by the price signal on greenhouse gas emissions.

3. Climate change adaptation strategies are necessary.

Australia must:

- Continue to support international and national modelling to provide location-specific climate change forecasts.
- Develop risk-management strategies to reflect likely impacts of climate variability.

4. Climate policy must not compromise national or global economic development or energy security.

Australia's policy response should recognise that:

- Increasing global population and urbanisation generate growing demand for energy.
- Secure energy supply is crucial for a strong modern economy and a healthy, vibrant society.
- Natural gas has a key role to play in the transition to a low-carbon economy – switching to gas could halve the emissions from the Australian electricity sector – and if solar and wind power are to deliver genuine emissions reductions they must have gas-fired back-up.

1 Australia's contribution to the global climate change effort as set out here reflects the principle in Article 3.1 of the United Nations Framework Convention on Climate Change (UNFCCC) (see unfccc.int/files/essential_background/background_publications_htmlpdf/application/pdf/conveng.pdf). In determining Australia's differentiated responsibilities and capabilities, consideration should be given to matters such as Australia's economic growth and structure, population growth, energy production and energy use.

POLICY OPTIONS

As noted above, APPEA supports a national climate change policy that delivers greenhouse gas emissions reductions at least cost and facilitates broad-based investment decisions consistent with an international price on carbon.

APPEA's *Climate Change Policy Principles* have been developed to assist policymakers in developing efficient and effective responses to deal with climate change and to assess policies of the kind outlined in Chapter 4 of the Draft Report.

In particular, as the *Principles* note, Australia's climate change policy response should seek to:

- Deliver lowest cost greenhouse gas emissions abatement through an appropriately designed mechanism that provides an economy-wide transparent price signal to shape business and consumer plans and investments. The mechanism should be efficient, have low compliance costs, and support international trade that recognises different national circumstances.

- Recognise and allow the use of the widest range of credible domestic and international offsets.
    - Allowing access to international carbon credits/permits is vital to ensuring any policy approach is able to drive low cost and effective emissions reductions both in Australia and across the region. APPEA has long advocated the use of credible international permits/credits in order to meet any obligation under Australian laws to manage greenhouse gas emissions.
    - Access to international permits can be designed to ensure that only credible permit/credits, on an approved list, are valid under the policy approach. This process can ensure that the use of 'dubious' credits/permits from some parts of the world are avoided.
- Provide a level playing field for new entrants.
- Avoid penalising early movers who have previously implemented abatement measures.
- Support research into low-emissions technologies, and development and deployment of such technologies.

Most importantly, and as will be considered further below, in the event Australia takes action before comparable action is taken by the nations with which we compete, the Australian policy response should maintain the competitiveness of Australian trade exposed industries, such as LNG, by minimising the costs the industry faces in the absence of a carbon price being imposed on energy sources in customer countries and competitors.

Polices inconsistent with the *Principles* should be phased out and additional measures should only apply to sectors of the economy that are not covered by the price signal on greenhouse gas emissions.

FINDING THE RIGHT FIT BETWEEN SECTORS AND POLICIES

APPEA agrees with the statement on page 32 of the Second Draft Report that any "suite" of climate change policies must operate in a cohesive way to keep costs low and minimise competitive distortions.

This means that with a national greenhouse policy approach in place (such as the Direct Action Plan or a carbon pricing mechanism), any additional measures targeted at reducing greenhouse gas emissions should only apply to sectors of the economy that are not covered by the national approach.

This is not the case at present, and means there is an urgent need to comprehensively streamline Australia's greenhouse policies and programmes. It is imperative that governments expedite the removal of the plethora of other policies and programmes regulating greenhouse gas emissions in Australia.

The growth of separate Australian Government and State and Territory Government policies and greenhouse initiatives and their lack of consistency are increasing costs and uncertainty for Australian industry, including the upstream oil and gas industry.

This cost and uncertainty and the associated sovereign risk, misallocation of resources and deadweight losses to the economy associated with the hotchpotch of greenhouse measures in Australia is significant and is growing.

A single, nationally coordinated approach by all Australian governments is urgently required. In particular, State governments should not introduce policies and mechanisms inconsistent with a national approach.

A significant rationalisation of greenhouse measures across all Australian jurisdictions is urgently required. Every existing measure should be subjected to a rigorous cost-benefit analysis and only those measures that can definitively demonstrate their net benefits should be considered for retention. Under no circumstances should any policy option recommended by the Authority merely be added to the hotchpotch of existing measures.

ADDRESSING INTERNATIONAL COMPETITIVENESS CONCERNS

The major challenge to the upstream oil and industry's continued growth is maintaining Australia's international competitiveness in the face of challenging market conditions and growing global competition. In the case of LNG exports, a high-cost local environment and the emergence of new LNG competitors in East Africa, North America and other locations has increased the level of competition Australia faces as its seeks to win market share and attract investment.

The industry and governments must do everything possible to ensure the $200 billion in projects under construction commence production in a timely manner and that Australia secures future oil and gas investment to supply to domestic and international needs.

Some factors affecting current and future investment, such as the fall in oil prices, are beyond the ability of the Australian industry to influence. However, other key challenges must be addressed. In particular, the industry and its suppliers need to work harder at constraining cost growth and to meeting skilled labour requirements while government focuses on streamlining policy and reducing green and red tape.

There are also critical policy areas that require genuine reform. Australia's national approach to climate change policy is one of those critical areas. The development of the any climate change policy approach should be aimed at enhancing Australia's international competitiveness as a destination for oil and gas investments. It should not add to the cost burden facing the industry.

The importance of this issue cannot be underestimated: any climate change policy approach that imposes costs on Australian industry that its competitors do not fact would be highly prejudicial to Australia's economic performance without a provision to preserve industry's international competitiveness.

The key issue for the upstream oil and gas industry in this area is the treatment of trade-exposed industries. As has been considered and accepted by every major credible analysis of, for example, an emissions trading scheme undertaken in Australia and internationally, if policies and measures such as emissions trading schemes (or other policy options that impose an effective price on carbon) are implemented in some countries and not in others, there will be distortions. These distortions will occur as a result of the escalation in production costs in the countries that have implemented greenhouse policies relative to those that have not.

As was outlined earlier, APPEA has considered this issue as part of its *Climate Change Policy Principles*, which note the following

> *In the event Australia takes action before comparable action is taken by the nations with which we compete, the Australian policy response should maintain the competitiveness of*

> *Australian trade exposed industries, such as LNG, by minimising the costs the industry faces in the absence of a carbon price being imposed on energy sources in customer countries and competitors.*

The Terms of Reference for this Special Review state that the Authority must consider:

> *… whether Australia should introduce an ETS* ***that does not harm Australian businesses international competitiveness*** … [EMPHASIS ADDED]

Most importantly, this means the terms of reference directly require the Authority to only consider whether Australia should introduce an ETS that does not harm Australian businesses international competitiveness and not to merely to, as the Draft Report asserts on page 34 *"… consider possible effects of emissions reduction policies on the international competitiveness of Australian businesses"*.

This means the assessment against the principles outlined in the Second Draft Report is not necessarily required – to meet the terms of reference, any ETS recommended by the Authority must be one that does not harm Australia's international competitiveness.

In addition, given the global nature of climate change and economic activity, the international context is important when considering Australia's climate policy options. The international context is also relevant to how Australia's economy will change over time, and can affect the competitiveness of Australian industry. This last issue is of particular importance, but is often overlooked in the public debate on international action.

A key area of focus for Australia's upstream oil and gas industry, particularly the export-focused LNG industry, is the action of Australia's trade competitors. One of the key factors to consider when assessing any policy approach is the action or inaction of trade competitors.

The importance of this issue has not been lessened by the Paris Agreement. The Paris Agreement is an important step in the world moving together on climate change. However, it still shows significant differences between countries in their targets and, importantly, the resultant impact on businesses. Until our major competitors are imposing comparable costs, issues around trade competitiveness remain valid in any future policy development in Australia, and must be addressed to minimise differences in the cost of carbon[13].

The Authority should, in addition to focussing on "major emitters" and "trading partners" in assessing Australia's climate policy options, recognise that while important, major emitters and trading partners are only part of the story. It is the actions of trade competitors that form the key issue for LNG exporters.

[13] For a more detailed assessment, please see *An assessment of the Implications of the Paris Agreement*, at Attachment 2 to the AIGN submission.

The growth in LNG demand has been driven by the economic and industrial transformation of key economies in the Asia-Pacific region. In supplying LNG to the region, Australia's LNG projects face fierce global competition.

Table 1 below lists the specific actions being taken in a number of trading partner and competitor countries – specifically the nature of the Intended National Determined Contribution (INDC) lodged with the UNFCCC[14] – and data from the *BP Statistical Review of World Energy, June 2015*[15].

Table 1: LNG Exporters and INDCs

Country	LNG exports (bcm)	LNG exports (%)	INDC
United States	0.4	0.1	INDC (a 26-28% reduction on 2005 levels by 2025) to be met through a range of regulatory instruments (and a range of state-based measures, which may include market-based mechanisms). No economy-wide ETS proposed. Costs implications for LNG exporters unclear at this stage.
Trinidad and Tobago	19.3	5.8	INDC (a 15% reduction on BAU levels by 2030) is based on its Carbon Reduction Strategy developed for the power generation, transportation and industrial sectors. Actions conditional on access to finance through the Green Climate Fund. Costs for LNG exporters unclear but likely to be small. No ETS proposed.
Peru	5.7	1.7	INDC (a 30% reduction on BAU levels by 2030, partly (10%) conditional on international financing). Costs for LNG exporters unclear but likely to be small. No ETS proposed.
Norway	5.3	1.6	INDC (40% reduction on 1990 levels by 2030) to be met through participation in the EU ETS and international market mechanisms.
Other Europe	8.2	2.5	--
Russian Federation	14.5	4.3	INDC (25-30% reduction on 1990 levels by 2030) to be met through mechanisms to be developed. Implications for LNG unclear but likely to be small. No ETS proposed.
Oman	10.6	3.2	INDC (a 2% on BAU levels by 2030). Costs for LNG exporters unclear but likely to be small (mitigation action includes *"reduction in flaring"*). No ETS proposed.
Qatar	103.4	31.0	INDC does not set out a specific emissions reduction target and none of the actions proposed would have cost implications for LNG exports. No ETS proposed.
United Arab Emirates	8.0	2.4	INDC does not set out a specific emissions reduction target and none of the actions proposed would have cost implications for LNG exports. No ETS proposed.
Yemen	8.9	2.7	INDC (a 14%reduction on BAU by 2030, of which 13% is conditional on international support). None of the actions proposed would have cost implications for LNG exports. No ETS proposed.

[14] See www4.unfccc.int/submissions/indc/Submission%20Pages/submissions.aspx for further information.
[15] See www.bp.com/en/global/corporate/about-bp/energy-economics/statistical-review-of-world-energy.html for further information.

Algeria	17.3	5.2	INDC (a 7-22% reduction on BAU by 2030, conditional on international support). Costs for LNG exporters unclear but likely to be small (mitigation action includes "reduction in flaring"). No ETS proposed.
Angola	0.5	0.1	INDC (a 35% reduction on BAU by 2030 and an additional 15% conditional on international support). None of the actions proposed would have cost implications for LNG exports. No ETS proposed.
Egypt	0.4	0.1	INDC does not set out a specific emissions reduction target. Costs for LNG exporters unclear but likely to be small (mitigation action includes *"reduction in flaring"*). *"A national market for carbon trading may be established"* (but no further details provided).
Equatorial Guinea	5.0	1.5	INDC (a 20% reduction on BAU levels by 2030, conditional on international support). Costs for LNG exporters unclear but likely to be small. No ETS proposed.
Nigeria	25.3	7.6	INDC (a 20% reduction on BAU levels by 2030 unconditional, 45% conditional on international support). Costs for LNG exporters unclear but likely to be small (mitigation action includes *"work towards ending gas flaring by 2030"*). No ETS proposed.
Brunei	8.3	2.5	INDC does not include a specific emissions reduction target (but does target a reduction in total energy consumption by 63% by 2035 compared to BAU). Costs for LNG exporters unclear but likely to be small. No ETS proposed.
Indonesia	21.7	6.5	INDC (a 29% reduction on BAU levels by 2030 unconditional). Costs for LNG exporters unclear but likely to be small. No ETS proposed.
Malaysia	33.9	10.2	INDC (a reduction in the emissions intensity of GDP by 45% by 2030 relative to 2005. This consists of 35% on an unconditional basis and a further 10% is conditional upon international support). Costs for LNG exporters unclear but likely to be small. No ETS proposed.
Papua New Guinea	4.7	1.4	INDC does not set out a specific emissions reduction target and none of the actions proposed would have cost implications for LNG exports. No ETS proposed.
Australia	**31.6**	**9.5**	INDC (a reduction in emissions of 26-28% on 2005 levels by 2030)[16].

Source: UNFCCC (2015); BP (2015).

Table 1 shows that of the 20 countries/regions listed (including Australia), very few have INDCs that propose direct or significant costs for LNG exporters. In most cases, greenhouse policy initiatives that do apply are unlikely to have a material impact on their LNG industries. None, with the exception of Norway (already a participant in the EU ETS) proposes an emissions trading scheme.

A number of countries do not set out a specific emissions reduction target and none of the actions they propose would have cost implications for LNG exports. This includes Qatar, one of Australia's

[16] Australia's INDC is available at dfat.gov.au/international-relations/themes/climate-change/submissions/Pages/australias-intended-nationally-determined-contribution-to-a-new-climate-change-agreement-august-2015.aspx.

major LNG competitors and the world's largest exporter of LNG (with around 31 per cent of global exports).

Future competition (along with that from the United States) is likely to come from east Africa, a region that could not be said to be at the forefront of greenhouse gas reduction policy action.

In summary, the analysis shows that very few of Australia's major LNG competitors are taking on emissions reduction obligations that will place a cost of LNG exporters. Further, notwithstanding the INDC/NDC process forming part of the Paris Agreement, the prospect of our competitors taking meaningful action in the foreseeable future remains low.

In addition, natural gas exports compete for market share with other energy sources, such as coal. In a similar way, many of the major coal exporters (or, in a number of countries, major producers of coal for domestic use in their own right) are also countries that do not have meaningful climate action in place. This places similar competitive pressure on Australian LNG exports.

The continued expansion of Australia's oil and gas industry represents incredible opportunities to all Australians. Australia should be capitalising on these opportunities and maximising growth in living standards and employment by efficiently allocating resources. The economic advancement in our region is overwhelmingly positive for the nation, playing to our comparative advantages as a secure and reliable energy exporter.

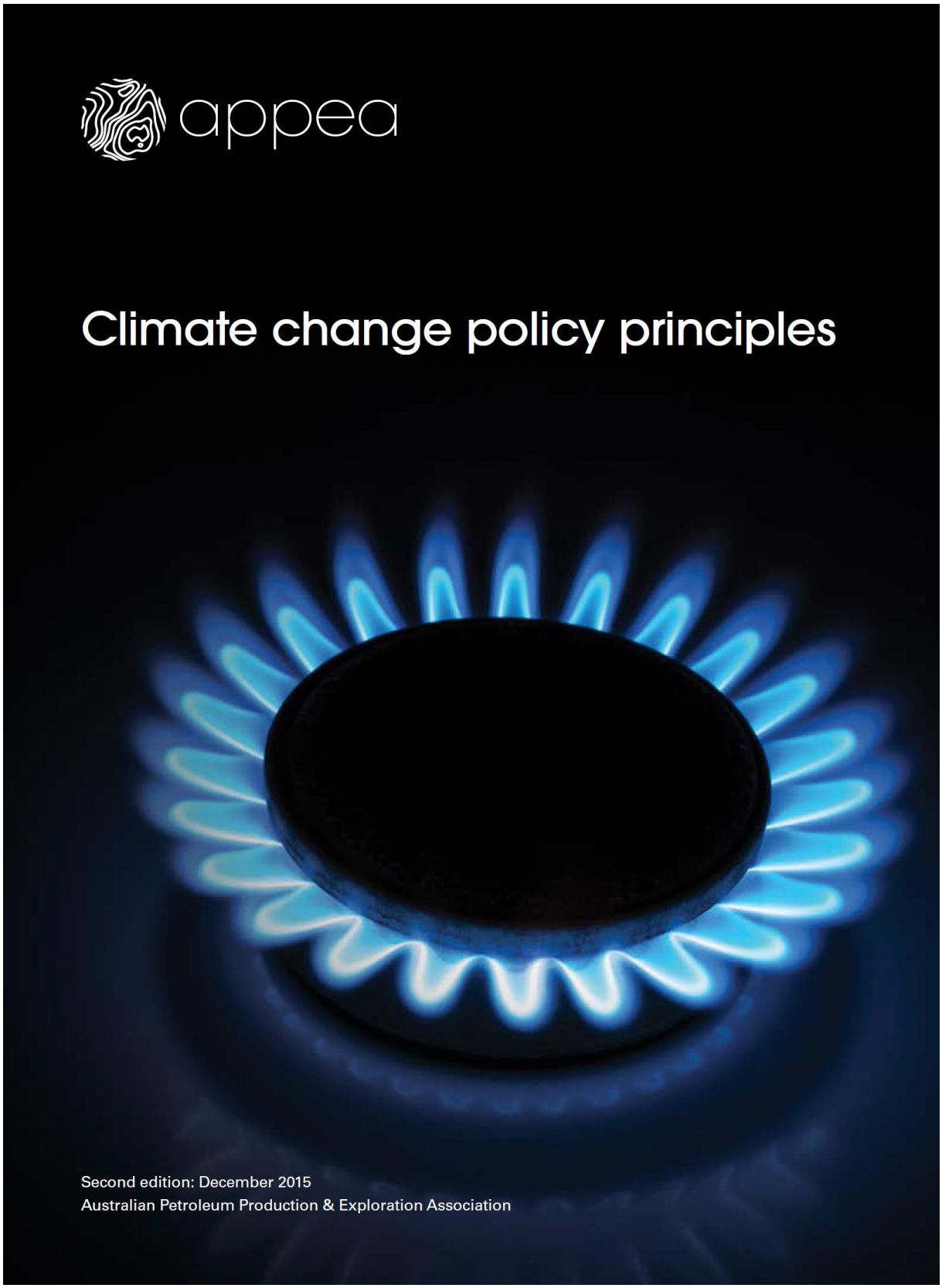
The Authority should, to meet its Terms of Reference, only recommend climate policy options that do not harm Australia's international competitiveness.

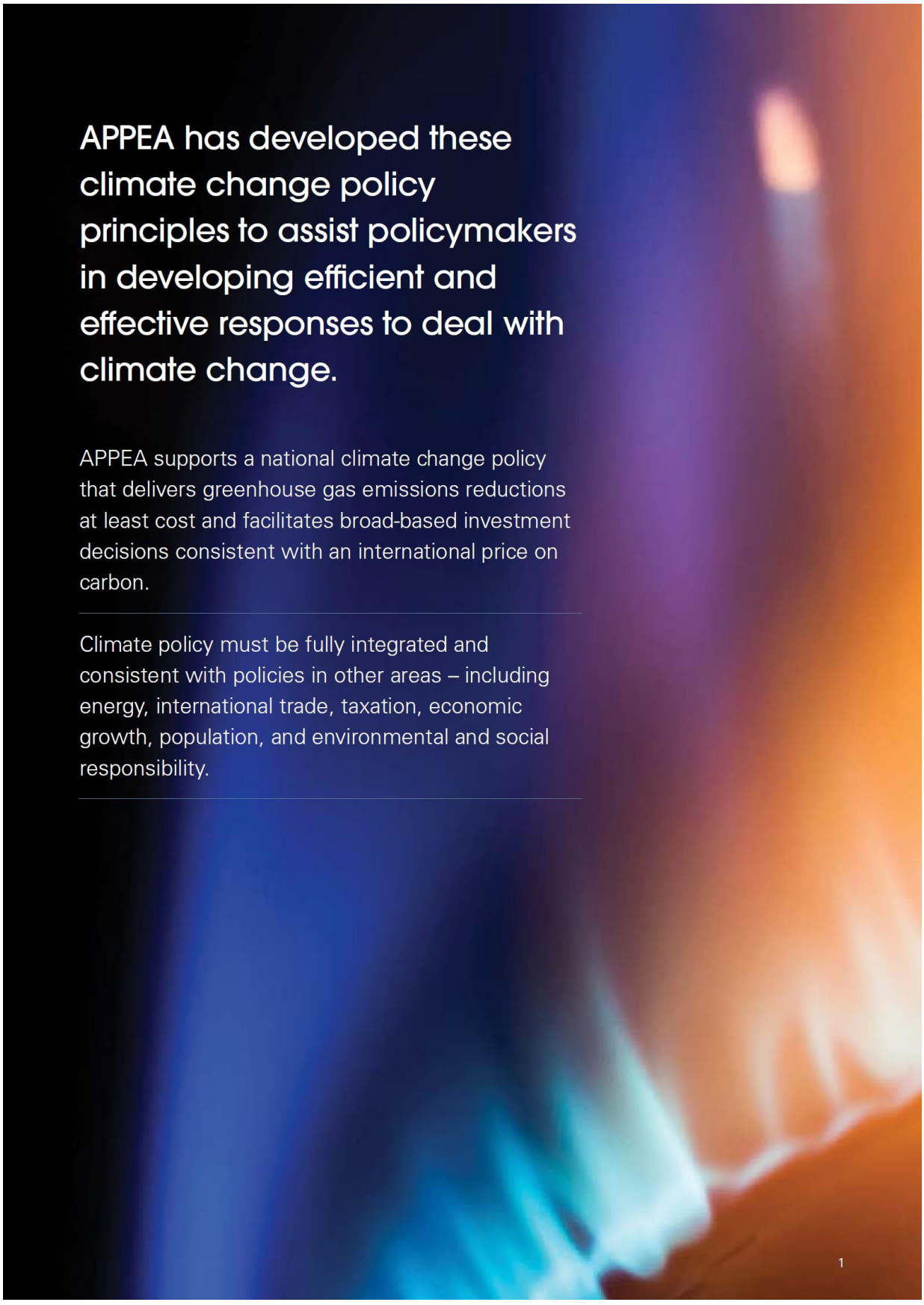
CONCLUSIONS/NEXT STEPS

Our abundant natural gas resources place Australia in an enviable position to maintain long-term, cleaner energy security domestically and internationally. Natural gas makes it possible for Australia to meet the world's growing energy needs over the coming decades while incorporating a strategy to curb emissions and address the risk of climate change.

APPEA will continue to participate in the Authority's work and looks forward to ongoing consultation ahead of the release of the Special Review's Final Report in June 2016.

ATTACHMENT 1. APPEA'S CLIMATE CHANGE POLICY PRINCIPLES




APPEA has developed these climate change policy principles to assist policymakers in developing efficient and effective responses to deal with climate change.
APPEA supports a national climate change policy that delivers greenhouse gas emissions reductions at least cost and facilitates broad-based investment decisions consistent with an international price on carbon.
Climate policy must be fully integrated and consistent with policies in other areas – including energy, international trade, taxation, economic growth, population, and environmental and social responsibility.
1

Policy principles

1. International engagement is crucial.

Australia should continue to engage the international community to pursue environmentally effective and economically efficient climate change policies[1].

An international policy framework should:

- Promote international participation.
- Minimise the costs and distribute the international burden equitably.
- Be comprehensive in its coverage.
- Allow for the unrestricted flow of credible emissions units between international jurisdictions.
- Be underpinned by transparent reporting arrangements.

2. Climate change and energy policies must be integrated and harmonised.

Australia's policy response should seek to:

- Deliver lowest cost greenhouse gas emissions abatement through an appropriately designed mechanism that provides an economy-wide transparent price signal to shape business and consumer plans and investments. The mechanism should be efficient, have low compliance costs, and support international trade that recognises different national circumstances.
- Recognise and allow the use of the widest range of credible domestic and international offsets.
- Provide a level playing field for new entrants.
- Avoid penalising early movers who have previously implemented abatement measures.
- Support research into low-emissions technologies, and development and deployment of such technologies.

In the event Australia takes action before comparable action is taken by the nations with which we compete, the Australian policy response should maintain the competitiveness of Australian trade exposed industries, such as LNG, by minimising the costs the industry faces in the absence of a carbon price being imposed on energy sources in customer countries and competitors.

Polices inconsistent with the principles should be phased out and additional measures should only apply to sectors of the economy that are not covered by the price signal on greenhouse gas emissions.

3. Climate change adaptation strategies are necessary.

Australia must:

- Continue to support international and national modelling to provide location-specific climate change forecasts.
- Develop risk-management strategies to reflect likely impacts of climate variability.

4. Climate policy must not compromise national or global economic development or energy security.

Australia's policy response should recognise that:

- Increasing global population and urbanisation generate growing demand for energy.
- Secure energy supply is crucial for a strong modern economy and a healthy, vibrant society.
- Natural gas has a key role to play in the transition to a low-carbon economy – switching to gas could halve the emissions from the Australian electricity sector – and if solar and wind power are to deliver genuine emissions reductions they must have gas-fired back-up.

1 Australia's contribution to the global climate change effort as set out here reflects the principle in Article 3.1 of the United Nations Framework Convention on Climate Change (UNFCCC) (see unfccc.int/files/essential_background/background_publications_htmlpdf/application/pdf/conveng.pdf). In determining Australia's differentiated responsibilities and capabilities, consideration should be given to matters such as Australia's economic growth and structure, population growth, energy production and energy use.

The global challenge

Throughout the world, policymakers are implementing a variety of regulatory responses to reduce greenhouse gas emissions and mitigate the risks of global climate change.

The Intergovernmental Panel on Climate Change (IPCC) found in its Fifth Assessment Report (AR5) that:

- The human influence on the climate system is clear.
- The more we disrupt our climate, the more we risk severe, pervasive and irreversible impacts.
- Humans can limit climate change and build a more prosperous, sustainable future.[2]

The multilateral United Nations Framework Convention on Climate Change (UNFCCC) has elicited a global commitment to holding the increase in the global average temperature to well below 2 degrees Celsius above pre-industrial levels and to pursuing efforts to limit the temperature increase to 1.5 degrees Celsius above pre-industrial levels.[3]

APPEA's stance on climate change

Societies around the world will continue to face two major, interdependent challenges:

- Maintaining and expanding affordable, secure energy supplies to meet growing consumer demand.
- Addressing the social and ecological risks posed by rising greenhouse gas emissions and climate change.

Managing greenhouse gas emissions and meeting growing energy demand requires action by individuals, companies, and governments. Making genuine progress requires an integrated set of solutions. This includes increasing energy efficiency, advancing lower carbon energy technologies, and supporting effective national and international policies.

Reliable and competitively priced energy underpins economic growth and stability, and is crucial to raising living standards in both developing and advanced nations. Therefore, policies aimed at reducing greenhouse gas emissions must do so at the lowest possible cost.

2 IPCC (2014), Climate Change 2014: Synthesis Report. Contribution of Working Groups I, II and III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change [Core Writing Team, R.K. Pachauri and L.A. Meyer (eds.)]. IPCC, Geneva, Switzerland (available at www.ipcc.ch).

3 UNFCC (2015), Adoption of the Paris Agreement, 12 December (available at unfccc.int/resource/docs/2015/cop21/eng/l09r01.pdf).

Natural gas: integral to a low-carbon economy

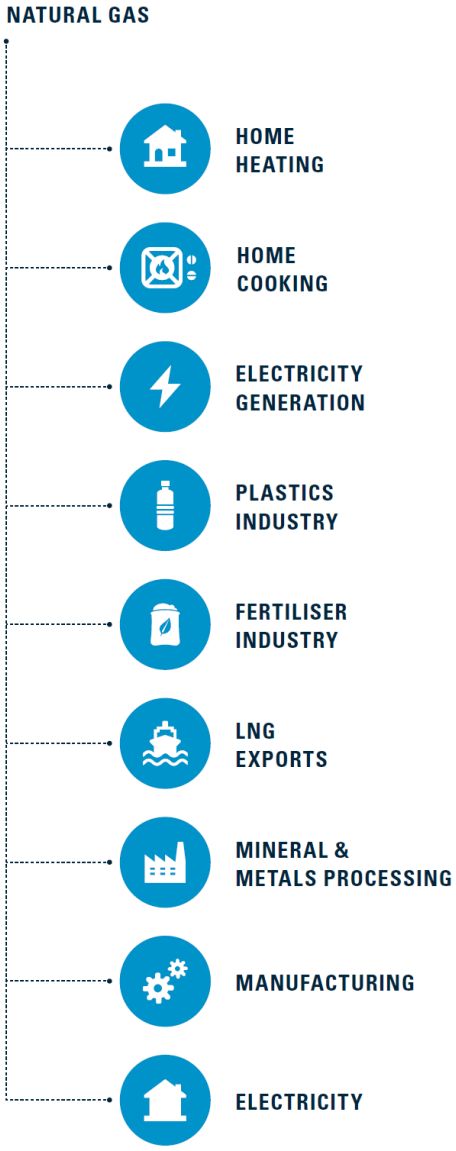
Natural gas is a lower-carbon form of energy suitable for electricity generation, industry and households.

Increasing its use can deliver immediate and substantial carbon savings. Simply switching from coal to natural gas can reduce greenhouse gas emissions by 40-50% and by as much as 75% in some circumstances.[4]

Australia's gas industry, domestically and through our exports of liquefied natural gas (LNG), contributes substantially to the economic development of the nation and reduces global greenhouse gas emissions.

Natural gas is a highly flexible fuel:

- Natural gas is commonly used to generate electricity, heat and steam for industries, including alumina refining, food and beverage manufacturing, and grocery production.
- Natural gas is ideally suited as a complement to renewable electricity generation because gas generation plants can be rapidly turned on and off to respond to changes in intermittent generation from renewable sources.
- Natural gas is the fuel of choice in co- generation and tri-generation. These technologies can provide electricity, heating and cooling at very high thermal efficiencies approaching 80%.[5]
- Compressed natural gas and LNG are used in the transport sector, and this use can be expanded.
- Innovative technologies, such as natural gas fuel cells, have been developed that can provide electricity and heat requirements in applications ranging from a small house to a medium sized office or factory. These technologies can deliver thermal efficiencies as high as 85%.[6]
- Natural gas is also a critical feedstock for industry that often cannot be substituted in producing fertilisers, cleaners, polymers and refrigerants.



4 Australian Council of Learned Academies (2013), Engineering Energy: Unconventional Gas Production, June (available at www.acola.org.au/index.php/projects/securing-australia-s-future/project-6). While the emissions benefit is lower when compared to ultra supercritical coal fired power generation, as the Council has noted "*gas-fired electricity generation will generally replace existing coal-fired boilers that are less efficient subcritical facilities*".

5 These technologies are already being deployed in commercial buildings in Australia (see www.urbanenergy.com.au/projects, www.originenergy.com.au/files/Origin_Coca_Cola_place_FactSheet.pdf, www.cityofsydney.nsw.gov.au/vision/towards-2030/sustainability/carbon-reduction/trigeneration and www.qantas.com.au/travel/airlines/electricity/global/en#power for examples).

6 Recently there have been significant advances in ceramic fuel cells that run on natural gas, with a range of commercial available products now on the market.

Reducing emissions

The Australian Council of Learned Academies has found using gas to provide more baseload and peak electrical power generation in Australia – in scenarios of higher use of both renewables and gas – would deliver substantial emissions reductions.

This would reduce the Australian electricity generation sector's emissions by between 54 Mtpa-103 Mtpa CO2-e (million tonnes per annum, carbon dioxide equivalent) by 2030 – a reduction of 27% to 52% from the base case of 197 Mtpa CO2-e in 2012.

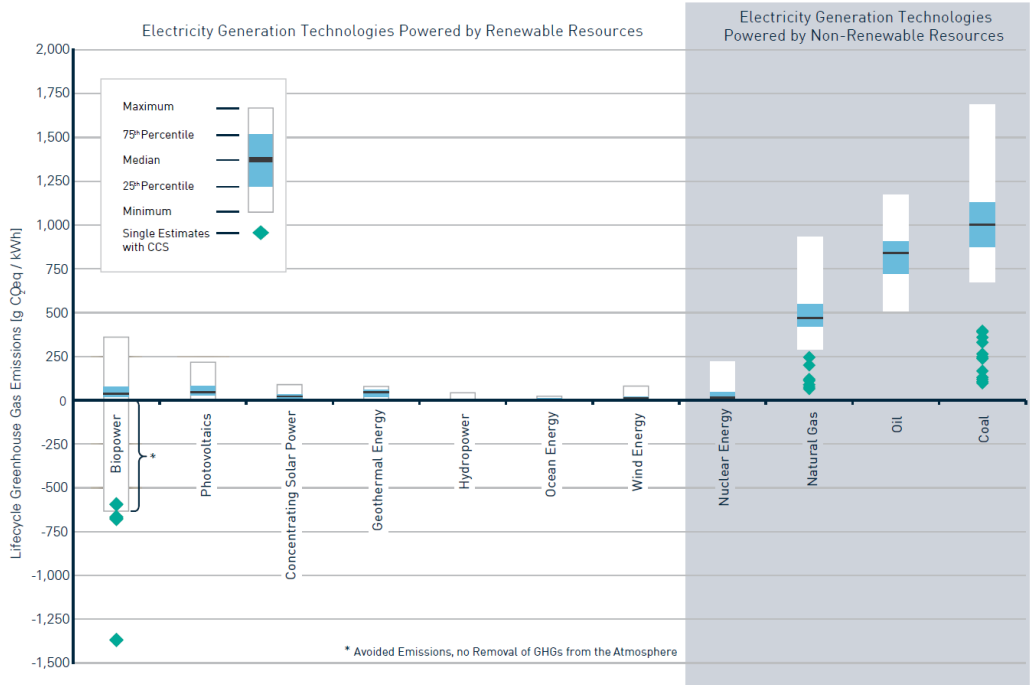
Other environmental benefits

Fuel switching would also have other benefits. Natural gas plants use much less water than coal-fired power and produce much lower levels of noxious substances such as sulphur dioxide, nitrogen oxides and fine particle emissions.

Burning gas instead of coal improves urban air quality. This is particularly important in many Asian countries that are importing Australian LNG or considering imports.

Baseload power is the level of generation needed to meet forecast minimum demands. Baseload power plants must run constantly and at predictable levels. Peaking power is power that can be brought online quickly in periods of peak demand.
Intermittent power is any source of energy (such as solar and wind) that is not continuously available.

The range of life cycle emissions for electricity generation (tonne CO2-e/MWh) from a range of energy sources



	Biopower	Photovoltaics	Concentrating Solar Power	Geothermal Energy	Hydropower	Ocean Energy	Wind Energy	Nuclear Energy	Natural Gas	Oil	Coal
Count of Estimates	222(+4)	124	42	8	28	10	126	125	83(+7)	24	169(+12)
Count of References	52(+0)	26	13	6	11	5	49	32	36(+4)	10	50(+10)

Source: IPCC (2011)[7]

7 IPCC (2011), Summary for Policymakers. In: IPCC Special Report on Renewable Energy Sources and Climate Change Mitigation [O. Edenhofer, R. Pichs-Madruga, Y. Sokona, K. Seyboth, P. Matschoss, S. Kadner, T. Zwickel, P. Eickemeier, G. Hansen, S. Schlomer, C. von Stechow (eds)], Cambridge University Press, Cambridge, UK and New York, NY, USA (available at srren.ipcc-wg3.de/report/IPCC_SRREN_SPM.pdf).

Australia has substantial natural gas resources. Natural gas offers a relatively low-cost emissions abatement opportunity. This means developing these resources can provide significant national environmental, economic and social benefits.

The Moomba gas plant in South Australia.

Carbon capture and storage (CCS)

Greenhouse gas storage is seen as one of the pathways to the continued use of fossil fuels in a low-carbon economy.

The global oil and gas industry is leading the world in the practical deployment of this technology. Norway's Statoil has developed large carbon capture and storage (CCS) projects at Sleipner and Snøhvit. In Canada, Shell has developed the Quest CCS project.

In Australia, the oil and gas industry has been at the leading edge of researching and deploying greenhouse gas storage technologies.

The industry instigated significant research efforts into greenhouse gas storage in the late 1990s through the Australian Petroleum Cooperative Research Centre (which has continued through the CO2CRC Limited).

Since that time, several hundred million dollars has been invested in assessing large greenhouse storage projects.

The Gorgon Carbon Dioxide Injection Project[8] – soon to be commissioned – is the world's largest greenhouse gas mitigation project undertaken by industry.

8 See www.chevronaustralia.com/our-businesses/gorgon/carbon-dioxide-injection for more information.

appea the voice of australia's oil and gas industry

APPEA supports a national climate change policy that delivers greenhouse gas emissions reductions at least cost and facilitates broad-based investment decisions consistent with there being an international price on carbon.

APPEA climate change policy: key points

1. International engagement is crucial.
2. Climate change and energy policies must be integrated and harmonised.
3. Climate change adaptation strategies are necessary.
4. Climate policy must not compromise national or global economic development or energy security.

APPEA and its members will continue to work with all of Australia's governments to:

- Support a national climate change policy response consistent with the policy principles outlined in this paper.
- Expand the use of natural gas in the domestic economy, with consequent reduction in the emissions intensity of the Australian economy, for example, in electricity generation and resource processing.
- Promote development of lower emissions technologies, such as high-efficiency electricity generation and greenhouse gas storage.
- Make Australia more attractive as an investment destination for LNG projects, so that Australian LNG can help Australia's trading partners reduce their greenhouse gas emissions, thereby contributing to a potential significant reduction in global emissions when compared to the use of higher-emitting fuels.

About APPEA

The Australian Petroleum Production & Exploration Association is the peak national body representing Australia's oil and gas exploration and production industry. APPEA has about 80 full member companies. These are oil and gas explorers and producers active in Australia. APPEA members account for an estimated 98 per cent of the nation's petroleum production. APPEA also represents more than 230 associate member companies that provide a wide range of goods and services to the upstream oil and gas industry.

APPEA works with Australian governments to help promote the development of the nation's oil and gas resources in a manner that maximises the return to the Australian industry and community. APPEA aims to secure regulatory and commercial conditions that enable member companies to operate safely, sustainably, and profitably. The Association also seeks to increase community and government understanding of the upstream petroleum industry by publishing information about the sector's activities and economic importance to the nation.

www.appea.com.au