APPLIED

Australian Academy of
Technology & Engineering

POSITION STATEMENT
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A Sustainable Energy Future For Australia

To support its sustainable development and future prosperity, Australia must move to low-emission energy systems that are affordable, secure and reliable.

Our place in the world

Energy is essential to Australia's economy. Its availability, affordability and efficient use are key drivers of business productivity and social well-being. Importantly, Australia is a net energy-exporting nation, with considerable national wealth derived from our exports of energy resources, including coal, uranium and liquefied natural gas.

The coal and petroleum industries contributed around $54 billion to industry gross value added in 2010–11, representing 4 per cent of the Australian total. The electricity and gas supply industries contributed another $24 billion, and all these industries also provide significant employment and infrastructure.[1]

Australia is heavily reliant on fossil fuels for its domestic energy needs. In 2013, approximately 34 per cent of total domestic energy was sourced from coal, 39 per cent from petroleum products, 23 per cent from natural gas and 4 per cent from renewables. Energy consumption is dominated by transport (38 per cent) followed by manufacturing and construction (25 per cent), mining and agriculture (16 per cent), residential (11 per cent) and commercial and other (10 per cent).

Australia is an inventor and adapter/adopter of energy technologies, but rarely a commercial energy equipment manufacturer and supplier due to geographic location, market size and cost.

Australia's energy challenge

Australia has for many years enjoyed comparative advantage through the wide availability of large, low cost energy sources, particularly for electricity generation. With national and international efforts and agreements to reduce emissions, natural gas moving towards international parity price and coal recovery cost following at a lesser pace to price levels that are not affordable within the present Australian context, this advantage is quickly disappearing.

Federal and State government programs have supported, and continue to support, electricity supply from renewable resources. Fossil fuels are, though, forecast to dominate energy supply for many more years. This is a problem shared with other countries as many struggle to reach agreed emission reduction targets.

Developing and implementing policies that will deliver a transition to a low emissions energy future while maintaining adequate, reliable and competitive energy supply is Australia's—and the world's—key challenge.

Policies, programs and regulatory mechanisms are essential to support the development of new technologies and their integration into existing supply chains to foster the transition to low-emission energy technologies. Market forces and enabling regulatory regimes must drive Australia's energy transition.

Priority focus areas

Growth and investment

Large investments are required if Australia is to transition to low-emissions energy production. Investment decisions are driven by an investor's view of risks (including sovereign risk) and how each can be managed or mitigated to meet their required return on that investment. In particular, an investment environment that encourages replacement of old assets with new, efficient, low-emission technologies is essential.

Policy instability, such as an absence of a bipartisan political agreement, has meant continuing uncertainty. Consequently Australian companies have been reluctant to invest in energy generation. Further, overseas companies who have many other options available to them are able to seek more accommodating investment climates elsewhere. The problem is compounded by the fact that one of the few areas where all political parties are in agreement at present is that nuclear energy, an option for low-emission generation, is excluded from consideration as an option for Australia.

Australia must have a national energy policy that is balanced (between the sometimes conflicting objectives of security, affordability and emissions reduction), is coordinated (between innovation, industry, climate change and investment policies) and is stable to attract the large investments required to transition.

1. *Energy in Australia*, Bureau of Resources and Energy Economics, May 2013

Energy innovation

Investing in the development of new technology is challenging but the transition to a low-emissions economy will not be possible without competitive and technologically reliable energy supply and use solutions. This requires research and technical innovation. However, in the absence of stable policy settings and a strong signal on the future basis for pricing of carbon, the energy industry locally and globally has little or no incentive to invest in low-emissions energy technology development and deployment.

Past experience and the inability of Australian firms to fully capture the benefits of research makes it unlikely that the private sector alone will provide sufficient investment in the research, development and demonstration (RD&D) of low-emissions technologies.

Improved education and training must be encouraged and supported in order to maintain a domestic competitive advantage and to equip Australia with the skills needed to adopt and adapt energy technology solutions from around the globe. This should include developing home-grown RD&D talent, attracting international expertise to Australia and fostering international connections of researchers and industry to encourage inward streams of investment, information and skills.

Commonwealth, State and Territory Governments must intervene to provide strategic support for RD&D of new energy technologies, which must have close links with innovation policy. The long time frames for RD&D make it especially critical that policies to drive energy innovation are stable and predictable over the long term.

The way forward

The Academy believes that for Australia to ensure that its energy system is secure, low-emission and cost effective, there are four key themes that need to be considered in an integrated approach to effective Government policy.

Theme 1: Improved and new regulatory, market and information measures to double Australia's energy productivity by 2030.

Expand the scope of and progressively toughen regulations and standards to deliver major improvements in building, appliance and industrial energy efficiency; vehicle fuel efficiency; and consumption information for energy consumers (particularly residential and commercial).

Theme 2: Supply systems and market measures that deliver reliable, competitive, low emissions electricity.

Reform Australia's electricity markets to support investment in low-emissions electricity supply capacity that is appropriate to the levels (utility-to-residential-scale generation; transmission; distribution) in Australia's electricity supply systems and to meeting the reliability, economic, environmental and social needs of consumers, suppliers and governments.

Theme 3: Supply systems and market measures that deliver reliable supply of competitively priced, low-emissions fuels for transport.

Reform Australia's transport fuel supply and use policies—including excise and subsidies—to ensure progressive and efficient transition without supply constraints to low-emission liquid fuels (particularly for aviation, maritime and heavy logistics) and electricity (particularly for passenger and light-duty logistics vehicles), including fostering local production of transport energy supplies that significantly reduce Australia's growing dependence on imported liquid fuels.

Theme 4: Strategic investments in innovation of low-emissions energy technologies.

Support and fund research, development, demonstration and deployment (RDD&D) for a portfolio of technology options where:

- Australia has a competitive position;
- An economic, commercially viable option can be demonstrated for immediate, mid-term or potential future deployment;
- Increased innovation investment drives transformational gains;
- Regulatory, social and market barriers to deployment are reduced using and evidenced-based approach;
- Private sector investment in new energy technology is incentivised and leveraged; and
- Domestic investment is leveraged through international collaboration.

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