



Statement by the Minister for Resources, Energy and Tourism, the Hon
Martin Ferguson AM, MP

The Vast Potential of Australia's Geothermal Resources

16th September 2008

Australia's geothermal energy resources have tremendous potential for Australia's clean energy future and its long term energy security – the possibility of supplying low emission base load electricity for thousands of years.

Geoscience Australia estimates that if we were able to extract just one percent of Australia's geothermal energy, it would be equivalent to 26,000 times Australia's total annual energy consumption.

These are staggering numbers.

Australia's geothermal resources are different from those typically utilised for localised projects in other parts of the world.

Australia's resources are in the form of deep hot rocks – rather than shallow volcanic systems – and they are huge.

The nature of geothermal energy is often poorly understood with some erroneous claims that it is non-renewable and even radioactive.

Hot rock geothermal is a naturally replenishing energy resource and thirty years of experimentation has not shown a radiation hazard.

The facts are that geothermal is renewable and it is not radioactive.

Geothermal energy is produced by pumping water deep into the earth's crust – sometimes as deep as 5 kilometres – where it is circulated through high temperature rock formations and returned to the surface as very hot fluid that is passed through a surface heat exchanger in a power plant to generate electricity.

This is a very clean source of energy with water circulation occurring in a closed loop system – there is no waste produced.

The challenge Australia faces is to develop the technologies and techniques needed to produce this heat from deep below the earth's surface, convert it into power, and get it to market – economically.

The good news is that the Australian Government, State Governments and the private sector are working in partnership and paving the way to make this happen.

In fact it is possible that we could see Australia's first commercially viable geothermal power plants in place within five years.

Around Australia, governments have either established their geothermal exploration and production regimes, or are in the process of doing so.

The centre of activity at the moment is in the Cooper Basin in South Australia.

There are also prospective geothermal resources in the Hunter Valley in New South Wales, near Cloncurry in Queensland, in the Otway and Gippsland Basins in Victoria, in Tasmania, and in Western Australia.

Geodynamics Limited is working to demonstrate proof-of-concept for the production of geothermal energy, by circulating fluids between two deep wells at its Habanero project in the Cooper Basin.

The company is also drilling a deep well at a second site nearby and plans to drill at a third site before deciding where to build a one-megawatt, pilot scale power plant to supply the local township of Innamincka.

The company's proposal is to scale up to 500 megawatts by 2015.

Others are also working on proof-of-concept projects, including Petratherm which has secured a drilling rig for December this year to complete the first of two deep wells at its Paralana project in the Arrowrie Basin.

Petratherm's drilling rig will also be made available to others in the market and thereby help accelerate exploration and proof-of-concept drilling.

Projects in the Gippsland and Otway Basins by companies including Panax, Greenerth and Granite Power are also being progressed.

Ongoing exploration investment is vital if we are to realise the opportunity to establish Australia as a world leader in geothermal energy.

That is why, on 20th August 2008, I launched the \$50 million Geothermal Drilling Program on behalf of the Australian Government.

The Geothermal Drilling Program is the first program to be launched under the Government's \$500 million Renewable Energy Fund announced in the 2008 Budget.

The program will provide grants of up to \$7 million on a matching funding basis to support the high cost of drilling deep geothermal wells for proof-of-concept projects.

These are the projects which will demonstrate it is possible to drill into deep, hot rocks, circulate fluids between two wells, and produce sufficient heat for electricity generation.

Proof-of-concept is a critical step for the industry.

Once proof-of-concept is demonstrated, geothermal energy will be much more attractive to private investors.

According to a recent report for the Australian Geothermal Energy Association, the emerging Australian geothermal energy industry can be expected to provide up to 2,200 megawatts of base load capacity by 2020.

That's about 5 percent of Australia's generating capacity today.

Moreover, the cost of generating electricity from geothermal resources is expected to move rapidly down the cost curve to around \$90 per megawatt hour for commercial scale plants by 2020.

Cost-competitiveness will be vital to the future development of the industry.

So will government policies to promote the establishment of this sunrise energy industry.

Policies such as the Carbon Pollution Reduction Scheme and the Renewable Energy Target will go a long way to promoting its development.

Geoscience Australia's Geothermal Energy Project is another very important initiative of the Australian Government.

Under the Onshore Energy Security Program, the Geothermal Energy Project will compile a single dataset to give us a better understanding of the distribution of temperature in the continent's upper crust and other geological factors.

This "national heat mapping" will provide pre-competitive geoscience information to lower the risk to explorers and investors as they decide which areas to target for commercial exploration and demonstration activities.

Geoscience Australia is working collaboratively with State and Territory Geological Surveys as well as industry to add to this data collection.

The Ministerial Council on Energy, of which I am the Chair, has directed the Australian Energy Market Commission to conduct a review of the energy market frameworks to determine whether amendments are needed to accommodate the introduction of the Carbon Pollution Reduction Scheme and the Renewable Energy Target.

Given the remoteness of many geothermal resources from markets, transmission is one area the review will consider.

The industry will have other policy challenges as the regulatory framework for the industry develops in areas from land access to resource taxation.

To start to address these, I released a Draft Geothermal Industry Development Framework in August.

The framework, to be finalised before the end of the year, was developed in close consultation with industry, researchers and State and Territory Governments and recognises the challenges facing the industry including:

- attracting private investment to the sector
- building networks within Australia and overseas
- making sure that the necessary skills and expertise are available to the industry
- making sure that the community understands the potential of geothermal energy, and
- understanding and contributing to the development of the institutional framework in which the industry will operate.

The framework proposes a range of actions on these and other issues, which companies, researchers and governments can pursue.

As one of the first outcomes, the Australian Government is exploring opportunities to build international linkages on geothermal technology.

The framework recommends Australian governments and industry learn from experiences in other countries by building strong international linkages.

To this end, the Australian Government is about to enter into an International Partnership on Geothermal Technology with the United States and Iceland.

A strong private sector involvement in this Partnership is vital to its success.

The main goal of the Partnership will be to give Australian companies a chance to leverage from efforts in other countries.

The United States Department of Energy estimates more than 100,000 megawatts of economically viable capacity from engineered geothermal systems may be available in the continental United States.

This is about 10 per cent of the overall US generation capacity today.

The United States has large domestic programs underway to demonstrate technologies and develop these resources.

Iceland's Deep Drilling Program is exploring the techniques and technologies to drill wells 4 to 5 kilometres deep into geothermal systems of 400 to 600 degrees Celsius.

Australian companies may well benefit from information sharing with their counterparts in the US and Iceland, and our governments may also benefit from shared policy discussions about energy market frameworks to accommodate geothermal energy.

Of course, greater investment will follow market confidence and all of these initiatives will contribute to this outcome.

The Australian Geothermal Energy Group and the Australian Geothermal Energy Association have created a Geothermal Reporting Code which will set the standard for ASIC reporting and initial public offers.

In my view it is very timely and it is good to see the industry taking such an active role in ensuring the integrity of corporate governance frameworks for its future.

The Code provides a methodology for public reporting of the estimation, assessment, and quantification of Geothermal Resources and Reserves to promote transparency, consistency and confidence.

But the Code is more than that.

It is the sign of an industry coming of age.

Geothermal is now ready to present itself to the market with a new level of transparency – a level we have come to expect from mining and energy companies seeking to raise capital from their unrealised deposits.

In addition, the Australian Government's Geothermal Drilling Program will give the industry the push it needs to bridge the gap between being a good idea and being an important contributor to Australia's clean energy future and its long term energy security.