précis

from abare research report 07.16

toward a low emissions future through enhanced technologies

- Under current policy settings (the 'reference case'), global and Australian energy consumption and greenhouse gas emissions are likely to rise significantly by 2050.
- ABARE's modelling indicates that using currently available and plausible future energy efficient and low emission technologies could reduce global energy consumption by about 30 per cent and greenhouse gas emissions by 45 per cent, relative to the reference case, at 2050.
- In Australia, enhanced technologies could lead to a reduction in energy consumption of about 28 per cent and in greenhouse gas emissions of about 50 per cent, relative to the reference case, at 2050.
- While other mitigation and adaptation measures will be required to further reduce greenhouse gas emissions, greater use of cleaner and low emission technologies are a key instrument in addressing the climate change challenge.
- Enhanced technologies can weaken the links between economic growth, energy consumption and greenhouse gas emissions.
- Governments have a key role to play in creating policy environments that are conducive to increased efforts in research and development in both industry and government.
- Measures such as education and training initiatives, performance and emission standards, financial instruments and explicit emission pricing will encourage the uptake of enhanced technologies.

continuing current policy settings will lead to increased energy demand and emissions

- Strong projected growth in global and regional population and income is estimated to drive significant increases in energy demand into the future. The continued reliance on fossil fuels to meet this rising demand for energy is projected to lead to considerable increases in greenhouse gas emissions.
- Global and Australian greenhouse gas emissions are projected to increase by about 148 per cent and 58 per cent respectively over the period 2004–50.

technology is the key to weakening the links between emissions and economic growth

- The key to limiting greenhouse gas emissions, while simultaneously pursuing strong economic growth and other policy objectives, is through the development, uptake and transfer of energy efficient, lower emission and cleaner technologies, including carbon capture and storage, renewable and nuclear technologies.

ABARE analysis

- ABARE compared a business as usual scenario (the 'reference case') with a scenario in which there is significant uptake of currently available and plausible future enhanced energy efficient and low emission technologies. This 'enhanced technology' scenario represents a much greater uptake of technologies than under current policy settings.

key results – under the enhanced technology scenario

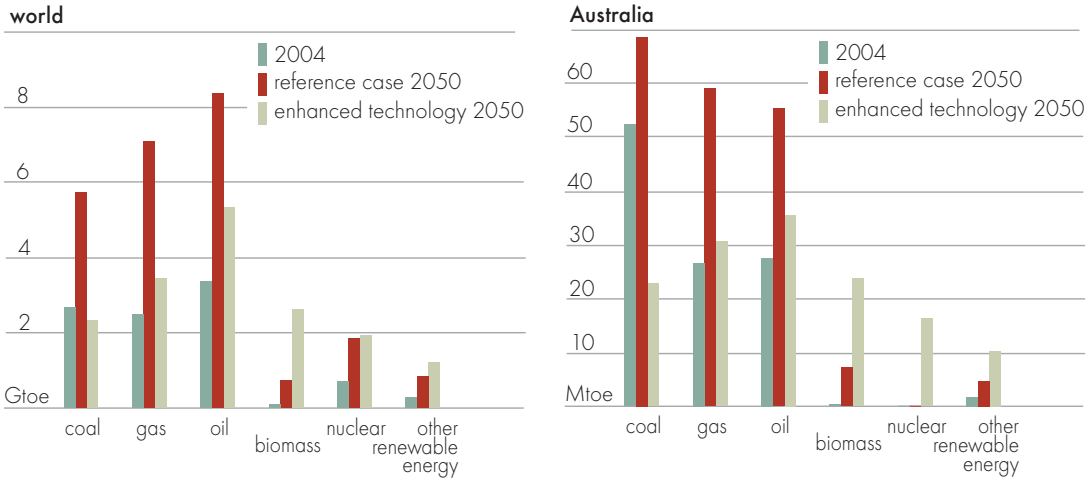
cleaner, more efficient and reduced energy consumption

» The enhanced development and deployment of emission abatement technologies can considerably reduce the overall growth in primary energy consumption (figure 1).

» The composition of primary energy consumption is also projected to change, with renewable energy and nuclear power increasing their share significantly.

» Despite this, fossil fuels remain the dominant source of primary energy consumption throughout the projection period to 2050.

fig 1 **primary energy consumption**



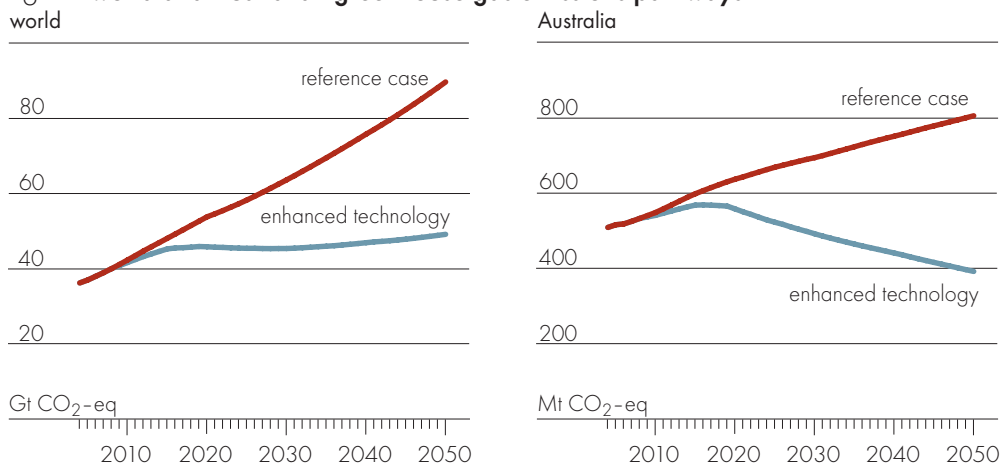
greenhouse gas emissions reduced

» Global greenhouse gas emissions are projected to be about 45 per cent lower than in the reference case at 2050. However, global emissions are projected to continue to rise throughout the projection period, increasing by about 35 per cent over the period 2004–50 (figure 2).

» In Australia, emissions are projected to peak before 2020 and decline to 23 per cent below 2004 levels by 2050 – a 50 per cent reduction in emissions relative to the reference case at 2050.

» Energy efficiency is estimated to directly account for about 58 per cent of projected global emissions abatement in 2050 and about 55 per cent of projected Australian emissions abatement at 2050.

fig 2 **world and Australian greenhouse gas emissions pathways**



Report: Gurney, A., Ford, M., Low, K., Tulloh, C., Jakeman, G. and Gunasekera, D. 2007, *Technology: Toward a Low Emissions Future*, ABARE Research Report 07.16 prepared for the Australian Government Department of Industry, Tourism and Resources, Canberra, September.