

# Energy in a Changing Climate

## Garnaut's 2020 targets not achievable in practical terms

CLIMATE scientists and conservationists have demanded we cut our emissions to 25 per cent below the 2000 level in absolute terms by 2020. Ross Garnaut agrees with this target if the rest of world supports such an ambitious agreement. But is it realistic? A 25 per cent cut means total emissions in 2020 need to be 415 million tonnes. This is a 290 million tonne reduction in emissions by 2020, about 40 per cent below business-as-usual emissions. Confused? Well, yes, a 25 per cent cut below 2000 levels really does mean a 40 per cent cut in total emissions from where we are heading, based on forecast population growth and without mitigation; in other words business as usual.

Two-thirds of our emissions come from the energy sector. If big cuts are to be made in emissions (and 40 per cent is a big cut), this is the sector that needs to be targeted. There are basically two ways we can reduce emissions. The first is by using less energy per person. The second is by reducing what is called the emissions intensity, that is the emissions per unit of energy used. This means improving energy efficiency in our homes, workplaces and factories and decarbonising our energy generation.

Let's deal with the easy one first: improving energy efficiency. Consultancy firm McKinsey, in the report [An Australian Cost Curve for Greenhouse Gas Reductions](#), published in February 2008, estimated that energy-efficiency measures could contribute about 25 per cent to our target reduction by 2020. Most of these cuts are in commercial and residential buildings plus transport and can be achieved using existing technology at negative cost (they actually save money), so it makes sense to do them with or without a carbon pollution reduction scheme. Unfortunately, based on the past performance of energy-efficiency incentive schemes, we will have done extremely well if we achieve the full efficiency savings by 2020. That leaves us with three-quarters of the reduction target to come from decarbonising stationary energy, transport and industry plus rural land use.

These reductions will need a carbon price to make them happen. Below \$40 a tonne, McKinsey sees a further 30 per cent potential reductions mainly from the rural sector and industry. At \$50, there is an additional 15 per cent from avoiding deforestation. Note that below \$40, very little mitigation is coming from decarbonising stationary energy. If everything goes to the McKinsey plan, we could save 200 million tonnes of emissions below \$50 a tonne by 2020. That leaves us 90 million tonnes to find from decarbonising stationary energy. This will mean a coal-to-gas shift, wind power and biomass. With only 12 years to go, carbon capture and storage, geothermal and large scale solar won't be available. Most of the decarbonising will come from replacing the worst polluters, brown and black coal, with gas, wind and biomass or other renewables if available. If we replaced some of the coal, half with gas and half with renewables, then we will need to replace all the brown coal and half the black coal to save 90 million tonnes of emissions. This would require almost tripling the present gas generation capacity and building close to 60,000 gigawatt hours of renewable capacity, about 20 times the installed capacity of wind and biomass, just to replace the coal

generation. This will be on top of the increased capacity needed to service the increased population.

This raises the serious question of whether this is practical in the next 12 years. It's not difficult to see why the electricity generation industry is concerned about such targets in such a short time frame.

Written by Martin Nicholson and first published in The Australian 6 October 2008