

ACTU Submission

to the Prime Minister's Task Group on Energy Efficiency



CONTENTS

1. INTRODUCTION

- 1a. The Union Movement's Interest in Energy Efficiency
- 1b. Australian Energy Efficiency in an International Context
- 1c. The Policy Framework for a Low-carbon Economy
- 1d. Governance
- 1e. Energy Efficiency Measures

2. ENERGY PRODUCTION EFFICIENCY

- 2a. Industry Policy
- 2b. Cogeneration
- 2c. Feed-in Tariff
- 2d. Recycling
- 2e. Energy Efficiency in Transport Manufacturing
- 2f. Getting the framework Right for Boosting R&D in Energy Efficiency
- 2g. Encouraging Investment

3. ENERGY EFFICIENCY IN ENERGY MARKETS

- 3a. Necessary Regulation
- 3b. The role of Energy Efficiency in Protecting Equity

4. ENERGY USE EFFICIENCY

- 4a. New 'Green' Buildings
- 4b. 'Greening' Existing Building Stock
- 4c. Building Management
- 4d. Energy Efficient Hotels
- 4e. Sustainability in public sector health facilities
- 4f. Local, State and Federal Government Leadership on 'Green' Buildings

5. EMBEDDING BEHAVIOURAL CHANGE

- 5a. Job Creation and Employment Opportunities
- 5b. Green Skills Training
- 5c. Local Industry Capabilities Assessment
- 5d. Procurement Policy
- 5e. Public Education

6. SUMMARY OF RECOMMENDATIONS

APPENDIX ONE

1. INTRODUCTION

1a. The Union Movement's Interest in Energy Efficiency

The Australian Council of Trade Unions (ACTU) is the peak council for organised labour in Australia. Unions affiliated to the ACTU cover all sectors of the economy, across all states and territories, representing more than 1.8 million workers. The ACTU is an affiliate of the International Trade Union Confederation, a body established to promote and defend workers' rights and interests globally through international cooperation.

The ACTU in partnership with the AMWU, ANF, AWU CFMEU, ETU and LHMU welcomes the opportunity to make this submission to the Prime Minister's Task Group on Energy Efficiency. **The intention of this submission is to outline how energy efficiency makes good environmental and economic sense as the economy transitions to a more sustainable, lower carbon future.**

Our position reflects our joint experiences supporting workers to attain safe, secure and rewarding employment and which emphasises the opportunities stemming from energy efficiency policies for industry and as a consequence for investment and jobs. Our comments reflect the union movement's aim to create and consolidate a commitment to fairness, equality, sustainability, safety and up-skilling in the transition to a lower carbon economy.

1b. Australian Energy Efficiency in an International Context

Across the OECD, Australia lags behind best practice in energy efficiency and the uptake of energy efficiency improvement measures. This impacts on Australia's current capacity to be competitive internationally in the provision of manufacturing equipment and services related to energy efficiency. It also negatively affects Australia's total end use energy efficiency, with the International Energy Agency reporting improvements in Australia at a rate three times slower than the OECD average.¹

¹ Figure for 1990-2004. OECD cited in The Climate Institute, 'Boosting Australia's Energy Efficiency and Productivity', <http://www.climateinstitute.org.au/images/cieebriefing.pdf> (accessed 29 April 2010), July 2009.

When Australia's 'low carbon competitiveness'² is compared with other G20 countries, Australia is ranked fifteenth out of nineteen countries (higher only than South Africa, India, Saudi Arabia and Indonesia).³ In fact, Australia is characterised by the study on low carbon competitiveness as 'falling well short of the required improvement in carbon productivity' and grouped with the countries requiring the most significant turnaround in carbon productivity of the G20 countries. Apart from the negative impact on the environment, this is a risk to our economic competitiveness; particularly as investment risk is increasingly measured against broader environmental criteria.

Many countries have also pulled ahead in the environmental sustainability race as a direct result of stimulus expenditure. The US government allocated \$94 billion to green measures in its stimulus package and pledged a strategic investment of \$150 billion in clean technologies, energy efficiency and building efficiency over ten years. China allocated US\$220 billion to green initiatives and South Korea has allocated 80 percent of its \$31 billion stimulus to green- and climate-related infrastructure and initiatives.

It is now generally recognised, however, that Australia's improvement in carbon productivity does not need to be at the expense of economic growth (see Appendix One). In 2004, research indicated that the economic benefit of an energy efficiency target was between \$2.4 and \$6.6 billion. In fact, investing in energy efficiency and innovating in lower carbon technologies now will give Australia more time to transition sustainably. Furthermore, many of the currently available energy efficiency measures offer low cost abatement opportunities and, over the longer term, will drive the development of environmentally clean technologies for product manufacturing (locally) and power generation.

The establishment of the Australian Carbon Trust which will incorporate an Energy Efficiency Trust and an Energy Efficiency Savings Pledge Fund is an important start. However, a more comprehensive energy efficiency strategy is required to take advantage of opportunities and because the longer Australia fails to adequately respond, the more costly (economically, socially and politically) the eventual transition to a low-carbon economy will be.

² The low carbon competitiveness index measures the capacity of each country to be competitive and generate material prosperity to its residents in a low carbon world, based upon each country's current policy settings and indicators. See Vivid Economics, 'G20 Low Carbon Competitiveness', *Report prepared for E3G and The Climate Institute*, September 2009.

³ Ibid. See also International Energy Agency and MMA cited in The Climate Institute, 'Australia's National Strategy for Energy Efficiency', *Policy Paper*, November 2008.

1c. The Policy Framework for a Low-carbon Economy

The introduction of an emissions trading scheme (ETS) is fundamental if Australia is committed to shifting to a low-carbon economy. Without it, there is a lack of a strong carbon price that underpins the commercial viability of low emission technologies. However, even with the introduction of an ETS, a range of supporting policies (including energy efficiency policies and programs) are necessary to lay the foundation that ensures progress in moving to a lower carbon economy prior to the carbon price fully reflecting opportunity costs. This is because the ETS cannot sufficiently promote the renewable energy industry and energy efficiency efforts in the period before the carbon price is high enough to make them competitive in the market. Furthermore, there are a number of cost effective energy efficiency opportunities that remain unexploited as a result of market failures that the ETS cannot overcome.⁴

Energy efficiency measures are important alongside an ETS to ensure Australia meets its reduced emissions aspirations. In the absence of an ETS and/or transition to a viable carbon price, the renewable energy target (RET) provides the overarching framework for generating investment in energy efficiency measures. Thus, unions welcome an expanded RET to work alongside energy efficiency measures. A clear, coherent and comprehensive energy efficiency strategy can work as an overarching policy that can streamline and better target government policies and measures at a national and state/territory level.

The introduction of an ETS (in the near future), alongside the RET and an energy efficiency strategy, will ensure a comprehensive and integrated climate change agenda in Australia.

1d. Governance

Effective governance structures and practices will be essential to successfully implementing energy efficiency measures across industries and communities. When considering the governance mechanisms, at least three considerations need to be taken into account. First, the wide range of existing energy efficiency initiatives, as well as new energy efficiency initiatives, need to be harmonised across the country. This should include the introduction of

⁴ The Climate Institute, 'Boosting Australia's Energy Efficiency and Productivity'.

national targets to establish a clear commitment and consistent commitment to drive investment in energy efficiency.

Second, rather than dividing responsibility for clean energy policies between Commonwealth government portfolios, it makes sense to target the key themes – investment, innovation, research and development (R&D), industry policy – as a way of harnessing the full range of policy initiatives and mainstreaming renewable energy and energy efficiency with other parts of government; for example, linking energy efficiency with assistance with infrastructure spending.

Third, so that progress can be tracked (and modifications to policy, if necessary, are informed by quantitative and qualitative reporting) the government needs to clearly articulate how energy efficiency improvements will be measured. An effective model would include requiring companies and businesses participating in programs to self-audit and report on their initiatives to the funding trust/department/fund.

1e. Energy Efficiency Measures

A focus on energy efficiency measures is very appropriate. Improvements in energy practice – particularly in the commercial and manufacturing sectors – can do the bulk of the ‘heavy lifting’ in achieving emissions saving targets. This is demonstrated by the various studies indicating the extensive untapped energy savings present in the commercial sector (10-70 percent) and manufacturing industries (6-46 percent);⁵ with some of the largest energy saving opportunities existing in companies that are large consumers of energy.⁶ The Government’s recent *First Opportunities* audit of 199 large energy users found the biggest savings were possible in industries using large amounts of energy - metals, manufacturing and mining.

At present, however, privately and socially cost effective energy efficiency options are currently not being adopted. A range of price and non-price market failures are at fault including information failures, transaction costs, incentive misalignments, capital

⁵ The Climate Institute, ‘Australia’s National Strategy for Energy Efficiency’.

⁶ EPA, Energetics and Allen Consulting Group cited in The Climate Institute, ‘Australia’s National Strategy for Energy Efficiency’.

constraints, public good information and behavioural barriers.⁷ The challenge for government is to respond adequately addressing incentive misalignments, bounded rationality, and capital constraints.⁸

The major role of supportive government measures and incentives in the shift to a low-carbon economy needs to be acknowledged. In particular, the integral role of government in contributing to clear direction, supportive policies, investment and support for stakeholders needs to be recognised.⁹ This requires overarching environmental policy that is clear and ambitious as well as integrated so that energy efficiency policy is matched by industry policy; to support companies and researchers in producing the solutions to Australia's energy efficiency and emission reduction requirements.

Drawing on international experience, no single policy will promote energy efficiency. A broad suite of integrated government policies is essential, including:

- National targets to define ambition
- Financial incentives including tax credits, accelerated depreciation, or other equivalent measures
- Targeted subsidies (for example, for low income groups and high capital cost investments)
- Regulation
- Sourcing locally and maximising procurement opportunity
- Mandatory auditing
- Mandatory appliance and building standards
- Efficiency labelling
- Information and awareness campaigns¹⁰

The first decade of the twenty-first century was one of missed opportunities for Australia's low carbon economy. A delay in implementing an ETS compounded by the need to respond quickly to mitigate the possible negative impacts of the global financial crisis has resulted in

⁷ The Climate Institute, 'Australia's National Strategy for Energy Efficiency'.

⁸ See Australian Sustainable Built Environmental Council, *The Second Plank – Building a low carbon economy with energy efficient buildings*, Melbourne, 2008.

⁹ ACTU and ACF, *Green Gold Rush: How ambitious environmental policy can make Australia a leader in the global race for Green Jobs*, Melbourne, October 2008.

¹⁰ The Climate Institute, 'Australia's National Strategy for Energy Efficiency'.

a misalignment of climate change policies and sustainable industry policy. This has exacerbated the pre-existing lack of coherence in the numerous policies and programs promoting energy efficiency. With the GFC now receding, there is scope to better align and consolidate climate change policy with industry policy (for example the Green Car Fund) in a manner which is advantageous to Australian industries, workers and the economy more broadly.

2. ENERGY PRODUCTION EFFICIENCY

2a. Industry Policy

Energy efficiency and clean energy initiatives that focus on investment, efficiency and innovation makes environmental policy good industry policy. As such, initiatives need to have an accompanying industry policy focus so that outcomes can be maximised. This includes associated job benefits, national interest considerations in sourcing locally, generating demand and jobs, consequently accelerating growth through the transition to a low carbon economy; and with it, the contribution to national income. However, this is currently the vital 'missing link' in government policy.

In 2008, the United Nations Environment Program (UNEP) reported that industries producing basic materials (including iron and steel, chemicals, cement, aluminium, and pulp and paper) were among the most energy-intensive industries.¹¹ The policy response proposed by the UNEP focused on boosting energy and materials efficiency, curtailing pollution and enhancing the use of scrap for recycling. This submission prepared by unions shares this position and proposes cogeneration as a central industry policy that can markedly improve energy efficiency. More generally, unions are seeking improved support for research and development and greater investment in energy efficiency initiatives proposed by industry.

2b. Cogeneration

Cogeneration is recognised internationally as a well-proven, reliable and cost-effective technology that provides a cleaner alternative to traditional centralised power generation. The International Energy Agency (IEA) states the benefits of cogeneration as: dramatically increased fuel efficiency; reduced emissions of CO₂ and other pollutants; cost savings for the energy consumer; reduced need for transmission and distribution networks; and beneficial use of local energy resources, providing a transition to a low-carbon future.¹² Cogeneration

¹¹ United Nations Environment Program, *Green Jobs: Towards decent work in a sustainable, low-carbon world*, Nairobi: UNEP, 2008; International Energy Agency, *Energy Use in the New Millennium: Trends in IEA Countries*, Paris: IEA, 2007.

¹² International Energy Agency, *Cogeneration and District Energy: Sustainable energy technologies for today...and tomorrow*, Paris: IEA, 2009, 13.

has also been identified by a number of studies as a cost-effective means of reducing CO₂ emissions in the near term.¹³

We recommend the Australian Government support cogeneration as a third flagship program. Alongside the Solar and Carbon Capture and Storage Flagship Programs, cogeneration is an essential component of an environmentally sustainable industry sector. It is a driver of greater competitiveness both for traditional and new industries, and provides a capacity to market our industries to global investors seeking to mitigate risk through sustainable investment opportunities.

Cogeneration in the Pulp and Paper Sector

The pulp and paper industry is a major user of electricity with the IEA stating the need for the international pulp and paper industry to adopt the best available technology to increase the industry's energy efficiency and reduce its carbon footprint. Many mills in China, and elsewhere in Asia, are large and modern; adopting the best available technology. As a result, they have low emissions levels and their energy efficiency is often better than (or at least as good as) Australian mills.

In Australia, the pulp and paper industry is committed to an ongoing program of improving energy efficiency and participating in the Australian Government's strategy to reduce greenhouse gas emissions is one of the key items on the industry's agenda. The industry supports and is committed to the Australian Government's 20 percent Renewable Energy Target and most companies in the industry (and many of its customers) have adopted internal carbon emissions reduction targets consistent with Australian government aspirations. For example, Norske Skog has publicly stated its goal to reduce its carbon emissions from its global and Australian operations by 25 percent by 2020. In addition, News Limited (Norske Skog's largest customer) is addressing its own carbon footprint with a commitment to cut greenhouse gas emissions by 20 percent by 2010. This is through its One Degree initiative launched in June 2007.

¹³ McKinsey & Co. study, US EPA study, and Boonekamp et al study cited in IEA Report, International Energy Agency, *Cogeneration and District Energy: Sustainable energy technologies for today...and tomorrow*, 15.

The commitment from pulp and paper companies is focused on long-term, continuous and sustainable improvements in energy efficiency derived from changing manufacturing methods, systems, culture and approach. Where the business case supports investment, commitments in the industry have been in the form of investments in more energy efficient manufacturing technology.

Thus far, improvements in energy efficiency have led to energy savings. At the Aus Paper mill in Marysville, for example, a new onsite power station has resulted in a 25 percent increase in onsite energy generation making the mill the largest industrial renewable energy producer in Victoria. The mill has also improved its use of wood waste by utilising increased steam output from recovery boilers for use in production. As a result, for the past seven years the mill has used 23 percent less energy per tonne of paper produced. Visy's Tumut Mill has incorporated the advanced emissions recovery systems as well as the largest continuous biomass energy producer in Australia (producing 210 gigawatt hours of green electricity per annum) to achieve very low overall emission rates compared to earlier generation mills. Finally, at Kimberly Clarke's Tantanoola pulp mill, 30 percent of all energy consumed is generated through the combustion of black liquor, a renewable energy source.

However, to achieve an energy efficiency 'step change' in the pulp and paper industry, investment in major technological improvements that provide benefits of increased savings that are more significant than the minor improvements achieved thus far is required. For the industry, it is well recognised that this will be achieved mainly through energy efficiency strategies, including technology investment and rigorous and determined continuous carbon reduction efforts. The logical progression in the development of major energy efficiency improvements in the industry is through the utilisation of cogeneration of biomass produced onsite.

Unlike most industries, the pulp and paper industry holds the potential to contribute to renewable energy production through the generation of bioenergy in various forms. Biomass-based cogeneration utilises biomass as the feedstock for pulp and paper production as well as the major energy source for the mill. The black liquor and solid-biomass residues provide steam and electricity for on-site use. Research found biomass to meet 56 percent of the

industry's electricity needs in 1991.¹⁴ Perfecting and adopting biomass and black liquor gasification, along with combined cycle cogeneration systems, could make the paper and pulp industry energy self-sufficient, sustainable and carbon neutral.

Consistent with this, several biomass energy pilot demonstration projects have been approved in North America. Nippon Paper Industries USA Ltd is one of four companies chosen to participate in a US cogeneration plant (using woody biomass to create heat and electricity) feasibility study valued at US\$50 million. Earlier this year in Canada, funding valued at CAD\$292.5 million was announced to support the forestry sector develop renewable energy from biomass.¹⁵ The announcement coincided with the release of a Forest Products Association of Canada study which concluded that the industry needed to make dramatic changes in order to remain viable. Among the strategies proposed is the creation of a repayable revolving fund to provide for capital investment and a revised tax structure which is consistent with tax credits available in the US and abroad.

The Australian pulp and paper industry is committed to improving the proportion of renewable and less-carbon intensive energy, and is actively searching for viable business cases that can deliver these outcomes. The emerging low-carbon energy regime provides the industry with an opportunity to capitalise on investments in green energy and green technologies. This is paralleled with the need to reduce the negative impact rising energy prices is having on profitability.¹⁶

The focus on cogeneration within pulp and paper facilities is twofold. First, due to the limited availability of cross-sectoral linkages that can exploit synergy. Second, the pulp and paper industry is a user of both electricity for power and steam for heating; therefore cogeneration is energy efficient on the scale of the pulp and paper site. Biomass energy generation can

¹⁴ L.J. Nilsson et al., *Energy Efficiency and the Pulp and Paper Industry*, Washington: American Council for an Energy-Efficient Economy, 1996.

¹⁵ This is on top of subsidies to improve the environmental performance and energy efficiency mills were introduced (under the Pulp and Paper Green Transformation Program) in 2009.

¹⁶ In regards to energy prices, rising energy costs are reducing what was once regarded as long-term comparative advantage for manufacturing in Australia. In the mechanical manufacturing aspect of the industry, for example, pulp for newsprint is energy intensive with energy accounting for nearly 20 percent of total newsprint manufacturing costs. With recent increases in the costs of electricity generation and regulated transmission charges, the newsprint sector's profitability has been negatively impacted. However, the energy intensity of newsprint manufacturing also creates opportunities for targeted R&D and the development of plants that use less energy. Such projects include cogeneration, and, potentially, diversification into the production of biodiesel

also provide the baseload power supply for mills. This shift from the national electricity grid, which many pulp and paper facilities are linked to, can occur in a way that requires minimal infrastructure.

This would see the industry switch a significant proportion of its energy use from fossil fuels to carbon-neutral fuels such as wood, wood waste, forest residues and alcohol fuels. In this regard, Australia has a competitive advantage (in comparison to European and Asian countries) due to its large landmass, which holds the potential for growing the required biomass resources.

There are also opportunities for facilities that are strategically located in relation to available feedstock to become pulp, paper and bioenergy production facilities. Whether the bioenergy is ultimately used as an input for manufacturing pulp and paper, sold as electricity into the national grid or sold as a biofuel to other users, its potential volume and value are significant.

Finally, the adoption of new technologies would enable the industry to expand beyond its traditional core business into new product areas, such as electricity generation, biofuels, chemicals, and plastics and composites manufacturing.

Recommendations

Significant improvements in carbon emissions in the industry are possible but widespread implementation of cogeneration requires investment, R&D support and evolving government regulations (including rectification of regulatory barriers). This support needs to be delivered within a mutual contribution framework with the Australian Government and state and territory governments. The Australian government, in particular, needs to be proactive in supporting the adoption of energy efficiency technology in the industry, with cogeneration of biomass onsite as the most cost effective step change available.

Regulation

The industry sees current regulation as preventing it from investing in bio-energy projects that would contribute significantly to achieving the government's goal of reducing Australia's carbon emissions. If those constraints can be removed or mitigated, it will facilitate an

increase in the supply of renewable energy by the industry, and thereby assisting in the overall reduction of Australian emissions. Regulatory amendment in at least three areas is required for the pulp and paper industry to reach its full potential (and economic efficiency) in regards to the generation of renewable energy.

First, a large volume of available biomass cannot currently be used to generate renewable energy. While further work is required to ensure that regulatory amendments will allow for the maximisation of bioenergy generation, there are three specific aspects where regulatory amendment would be beneficial:

- Revise the ‘high value products’ definition in Section 8 of the Renewable Energy (Electricity) Regulations 2001 to include pulp and paper products¹⁷
- Revise Section 8 (1) (d) of the Regulations to include pulp and paper mill residue
- Revise Section 9 of the Regulations to remove unnecessary constraints on the definition of plantations as an energy crop

A significant and ever-growing proportion of the available biomass is held in plantation forests on land that was cleared before 1 January 1990, providing an increasing proportion of wood-based biomass for which renewable energy certificates are available. However, **the eligibility of other forms of wood-based biomass would significantly improve the industry’s potential renewable energy contribution.**

On 30 April 2009, the Council of Australian Governments (COAG) agreed to a design for the expanded RET that maintains the same requirements for the inclusion of waste wood as an eligible renewable energy source for the creation of renewable energy certificates under the RET. **The industry understands that the new RET legislation provides for a review of the expanded scheme in 2014, but requests that earlier consideration be given to its views on the eligibility of renewable energy sources such as waste wood.**

Second, a number of pulp and paper businesses generate energy on site using waste materials from uncommercial feedstock and other industry processes (e.g. biomass). As the pulp and paper industry is a user of both electricity for power and steam for heating, co-generation is an energy efficient facility that can be utilised for these processes. For this

¹⁷ This is consistent with the principal provision of Regulation 2 (b) (i).

reason, some operations in the industry generate significant proportions of their own electricity and steam. Under the RET, black liquor and wood waste are eligible sources; so pulp and paper manufacturers are able to create renewable energy certificates for the electricity they generate. However, renewable energy certificates are only available for electricity generation (and solar hot water systems).¹⁸ **The inability to receive renewable energy certificates for heat or steam energy generated from biomass reduces the economic incentive to use this renewable fuel. This needs to be rectified via regulatory amendment to recognise the energy value of renewable heat from cogeneration systems.**

Investment and Innovation

New pulp and paper facilities built in Asia have been able to take advantage of the latest technology. The newer technology results in higher productivity, greater energy efficiency and better utilisation of resources; and thus lower production costs.

In the past, R&D by Australian pulp and paper companies spawned new technological developments in areas such as eucalypt pulping and paper forming. Today, however, pulp and paper companies undertake relatively little R&D in their own right. Instead, technology is acquired by Australian manufacturers either through the purchase of new capital equipment (with new technology embedded in the capital purchase) or through technology transfer from their foreign parent companies.

Funding mechanisms for R&D and investment into electricity efficiency and cogeneration biomass should include: the Second Generation Biofuels Research and Development Program managed by the Australian Centre for Renewable Energy; Climate Ready; Re-tooling for Climate Change; the Green Building Fund; R&D Tax Concession; the RET scheme; and the Energy Efficiency Opportunities Program. The Climate Change Action Fund, in particular, should provide assistance to larger pulp and paper firms that are investing in cogeneration projects.

Furthermore, a working group to review the incentives that influence investment in site-based electricity and steam generation – with the intent of increasing the take-up of these energy generation options – should be established by COAG.

¹⁸ In other countries, the use of biomass to produce heat is recognised.

Cogeneration under a proposed CPRS

As a result of the government decision to hold off on an ETS until 2013, a market signal has not been introduced. This will moderate the incentive for companies to invest in emissions reduction. For example, Norske Skog Limited recognised the incentives in the 2008 CPRS guidelines and began developing the capital case for building a biofuel boiler and cogeneration plant at its Albury site. However, the company has identified that now the business case for the project has been negatively affected. Other carbon reductions projects have also been placed on hold. It is possible that companies may now choose to retrofit facilities at a later date than undertaken expensive abatement activities now.

The expanded RET and a comprehensive energy efficiency strategy will therefore need to do a lot of the heavy lifting in the interim to the establishment of a carbon price.

Cogeneration in the Steel Industry

In the steel industry, cogeneration is critical infrastructure in modernising Australian steel plants, maintaining international competitiveness and reducing carbon emissions. In Illawarra, BlueScope Steel has invested \$80 million to explore the construction of a cogeneration plant at its Port Kembla Steelworks. If introduced, the plant would be fuelled from by-product steelmaking gases, avoiding the release of up to 1 million tonnes of greenhouse gas emissions per year. This is a significant abatement (of up to 10 percent) and a significant inroad into reducing NSW's CO₂ emissions as Port Kembla Steelworks accounts for 7 percent of NSW's total CO₂ emissions. Furthermore, surplus electricity capacity produced by the cogeneration facility would be fed into the grid.

The proposed cogeneration infrastructure is critical for the region's participation in the green economy given the centrality of steel production in the growth of renewable energy and sustainable construction industries. However, the proposed plant, which requires a further \$1 billion in investment, is currently on hold as a result of the GFC and uncertainty surrounding the introduction of an ETS. Unions are seeking discussions between government, the steel industry and regional stakeholders in order to reach an agreement on

addressing and removing the outstanding barriers to the construction of the cogeneration facility.

State-based Responses – Tasmania Case Study

Tasmania has introduced legislation to reduce the state's greenhouse gas emissions to at least 60 percent below 1990s levels by 2050. To determine how best achieve the goal, the Tasmanian Climate Change Office commissioned research and modelling by MMA. The research – *Tasmanian Wedges Projects* - identifies cogeneration is an important component to a package of energy efficiency measures with modelling showing that the largest abatement opportunities in the stationary energy sector include the adoption of low emission cogeneration.

A switch to biomass and natural gas, and the use of the fuel in cogeneration facilities, has the potential to increase abatement in 2050 to around 1.8 MT CO_{2e} when biomass is used as the fuel and 1.4 MT CO_{2e} when natural gas is the fuel.¹⁹ This is 40 percent and 33 percent respectively of reference case emissions in 2050.

Energy efficiency options like cogeneration are also recommended because the 'technologies are established and the [market] barriers to uptake are clear and relatively easy to address.'²⁰ These include assistance with access to capital, funding of research and development and education of various commercial and industry bodies. A more significant barrier in Tasmania is the lack of infrastructure. The lack of a market signal at the federal level, which is required for certainty of investment, will make this more difficult to achieve.

2c. Feed-in Tariff

The surplus energy produced by renewable energy and facilities like cogeneration can be fed back into the electricity grid. The introduction of a feed-in tariff provides a financial return for companies that decide to introduce energy efficient and renewable energy-based electricity generators onsite *as well as* a means to encourage the adoption of renewable energy

¹⁹ MMA, 'Tasmanian Greenhouse Gas Emission Reduction Project – Understanding the Potential for Reducing Tasmania's Greenhouse Gas Emissions', *Report to Tasmanian Climate Change Office, Department of Premier and Cabinet*, 30 November 2009.

²⁰ *Ibid.*

sources (as it provides long-term predictability and a return on renewable energy over a long period of time).²¹

In 2009, 45 countries and 18 states/provinces/territories had introduced feed-in tariffs. Germany's feed-in tariff laws are a success story with the introduction of legislation leading to a significant increase in the renewable energy market. Between 2000 and 2005, the quantity of electricity fed into the grid from eligible sources has more than doubled.

In Australia, a number of states have introduced feed-in schemes but Australia does not currently have a national program. Although not an energy efficiency measure, a feed-in tariff is an important measure within the renewable energy sector that is also important for the adoption of energy efficiency measures.

2d. Recycling

In Australia, recycling is one of the few sectors of the economy with real opportunities to grow as there is a readily available source of materials and activity by diverting existing 'low value' economic activity (i.e. land-filling) towards the value added process of recycling.

Recycled glass can also be used for a range of products. Glass is 100 percent recyclable. It does not wear and can be recycled over and over again without any reduction in quality. Therefore, glass has no place in landfill. Crushed glass is being recycled on many construction projects as a 100 percent substitute for natural aggregates or in an aggregate blend, including as sand replacement in premix concrete.

Aluminium is also 100 per cent recyclable. At present, Australia has an aluminium can recycling rate of around 70 percent, with 2.46 billion cans recycled annually.²² If Australia achieved Switzerland's rate of 91 percent, we would recycle an additional one billion cans; or 15,000 tonnes per year. This initiative only reduces emissions by around 1 percent but it is

²¹ For more information see International Energy Agency, *Deploying Renewables: Principles for Effective Policies*, Paris: IEA, 2008.

²² Planet Ark, 'Prospecting the Future of Recycling', *A Discussion Report by Planet Ark*, 2007.

an important starting point, and could be extended beyond cans to other sources of aluminium scrap.²³

In plastics, there are a range of wood plastic composite products from household, commercial and industrial post consumer waste. There are also new innovations in the use of recycled polyethylene terephthalate (PET). These innovations include different ways to process the fabric, to use the fabric, or blend the fabric with other materials. Some of the fabrics that are leading the industry in these innovations include Billabong's Eco-Supreme Suede.

In basic industry, recycling secondary materials can produce substantial energy savings in comparison to producing products from scratch. Producing aluminium from aluminium scrap can reduce energy use by 95 percent, plastics by 80 percent, paper by 64 percent and steel by 74 percent. In regards to steel and paper, this reduces air pollution by 86 and 74 percent respectively (and water pollution by 35 percent when producing paper from recycled stock not virgin pulp).²⁴

In the steel industry, the recovery rate of steel for recycling is at record levels; and when measured in tonnes is the most recycled material in the world. In Australia, around 2.7 million tonnes are recycled annually; a substantial percentage of the total 8 million tonnes produced annually. In addition, by-product which was once regarded as waste in the steel-making process is now identified as valuable. For example, about 80 percent of Australia's 1.6 million tonnes of blast furnace slag is now used as cement substitute in concrete making. 60 percent of the one million tonnes of steelmaking slag is now used as road base to replace quarried material.

Importantly, each step of the recycling value chain that can be undertaken in Australia represents significant growth opportunities for the Australian economy. For this to be achieved, the industry needs support in building the required infrastructure, strengthening end use markets and capturing as much of the economic activity domestically, as practically possible. **The Australian Council of Recyclers reports that the investment in infrastructure –**

²³ D. Hetherington, *The Full-Cost Economics of Climate Change – Aluminium: A Case Study, A Research report by Per Capita for AWU*, July 2008.

²⁴ United Nations Environment Program, *Green Jobs: Towards decent work in a sustainable, low-carbon world*.

through accelerated depreciation and/or a government Green Bonds facility – would enable the industry to increase recycling by nearly 2 million tonnes per annum; stimulating some \$10 billion per annum in direct and indirect economic growth over the next five years and increasing overall employment by approximately 6 000 people.

Support for best practice recycling across Australian industries, like in steel, aluminium, plastics, glass and paper is an important and effective measure in improving energy efficiency.

2e. Energy Efficiency in Transport Manufacturing

There is considerable debate about how much policy makers can rely on the rising cost of energy (with or without a carbon price) by itself to achieve greater fuel efficiency in the transport sector, which in Australia's case, accounts for nearly 40 percent of Australia's final energy use.

This is particularly the case given that voluntary fuel efficiency standards and the rising cost of petrol have not led to the improvements in energy efficiency that was expected. While there is some evidence of a shift to smaller, more fuel efficient vehicles, this has tended to be offset by increased demand for higher emission and less fuel efficient SUVs.²⁵

There are some encouraging signs that Australian vehicle manufacturers are seeking to improve the fuel efficiency and reduce emissions from Australian made vehicles. For example the current model Toyota Camry has fuel consumption of 12 litres per 100 km travelled in urban traffic with CO₂ emissions of 210 g/km. The new Camry hybrid only uses 6.9 litres of petrol per 100 km travelled in urban traffic and has CO₂ emissions of 142 g/km.

However more than 80 percent of Australian vehicles are imported, and as noted in the Bracks Review, much more demanding emission and fuel efficiency regimes are being introduced in Japan, the European Union and more recently in the United States. As a result, there are increasing calls in Australia about the need to do something more to increase fuel efficiency and reduce vehicle emissions rather than simply hope that higher petrol prices will solve the problem in the long run

²⁵ For a good summary of these issues see Chapter 8 of the S. Bracks, *Review of Australia's Automotive Industry – Final Report*, Canberra: Commonwealth of Australia, 2008.

The introduction of what are increasingly mandatory fuel efficiency and emission standards in overseas jurisdictions for transport vehicles is also being accompanied by a carrot and stick approach to 'encourage' consumers to buy more fuel efficient and lower emission vehicles. This approach rewards purchases of more fuel efficient and lower emission vehicles with lower taxes on vehicle purchase and lower annual registrations costs over the life of the vehicle.

It is in this context that it is important to note that as of March 2010, 17 of the 27 members of the European Union committed to levy CO₂ related taxes on passenger cars and 15 governments provide tax incentives for electric vehicles.²⁶ If the standard practice in Europe was adopted in Australia, it would require purchasers of new motor vehicles to pay more for a high emission/low fuel efficiency vehicle and annual vehicle registration fees would be lower or higher depending on emissions and fuel efficiency.

The ACTU is aware that considerable debate (between the report prepared for COAG, the action agenda it proposes and the views of the car manufacturers and car importers) exists on the way forward for tackling transport sector emissions in general and vehicle fuel efficiency and emission standards in particular. For its part the ACTU will be communicating the following proposition to affiliates in general and AMWU and The Federation of Vehicle Unions (FVIU) in particular.

Recommendations

The ACTU believes that the Prime Ministers Energy Efficiency Task Group should consider options for introducing a new strategy to tackle fuel efficiency and CO₂ emissions in Australia's transport industry. One component of this plan should be lower emissions and better fuel efficiency standards in the vehicle industry.

²⁶ Note: In 2009 motor vehicle taxes in the EU raised \$A560 billion. See Green Car Congress 22 April 2010 "Growing Number of EU Countries Levying CO₂ taxes on Cars and Incentivising plug ins" Furthermore, in Europe there are additional incentives for electric and or hybrid vehicles including approaches such as: exempting electric vehicles from fuel consumption taxes and/or monthly vehicle tax (Austria); purchasing of electric vehicles attracts a personal income tax reduction of 30% of the purchase price (with a maximum of 9,000 euros (Belgium)); exemption from fuel taxes (Czech Republic); exemption from annual registration tax for the first five years after purchase and at a lower rate thereafter (Germany); exemption from registration tax (Greece); exemption from registration tax for all vehicles with emissions less than 100 g/Km.(UK)

While noting the recommendations from the ATC/EPHC Vehicle Efficiency Working Group the ACTU believes those recommendations, amongst other things, ignore a vital first step in the process. First steps involve:

- Ensuring that Australia's automotive and component industry has recovered sufficiently from the global financial crisis; that Australia's auto and component industry has the opportunity to engage effectively through the Automotive Industry Innovation Council with the Government on the environmental implications of the forthcoming Automotive Australia 2020 Vision Report; and that the roadmap to 2020 and beyond is based on a partnership between the AutoCRC, the ANU, the CSIRO, the University of Cambridge, the Australian and Victorian governments and the Australia auto and component industry.
- Recognising that the roadmap could well lead the Commonwealth and the industry to renegotiate the parameters of the Green Car Innovation Fund, including front end loading funding and investment projects that would make a real shift to the manufacturing in Australia of lower emission and more fuel efficient vehicles

The ACTU therefore requests that in the discussions over the next several months between all the parties associated with the Roadmap and those examining options for new fuel efficiency standards give consideration to:

- The recommendations of ATC/EPHC Vehicle Fuel Efficiency Working Group, particularly in relation to increasing the supply and demand of low emission vehicles.
- What opportunities the Roadmap suggests for Australian vehicle and component manufacturing industry to accelerate the movement towards the manufacturing of low emission vehicles and the timetable for this to occur
- How changes to the Green Car Innovation Fund could help accelerate the manufacturing of substantially lower emission vehicles in Australia over the 2010-2020 decade and beyond.

After action on the initiatives above has taken place the ACTU believes the Prime Ministers Energy Efficiency Task Group should consider the best options (including a firm timetable) for

introducing better fuel efficiency standards in Australia and the supporting measures required to increase both the supply and demand of more fuel efficient vehicles, including educating consumers.

2f. Getting the framework Right for Boosting R&D in Energy Efficiency

One of the great challenges of climate change policy is to induce firms to change their behaviour including by making substantial new investments in more energy efficient means of producing and consuming goods and services. This requires, for example, firms to purchase new and more energy efficient plant and equipment. More often than not such investments have to occur before the existing appliances or plants and equipment have reached the end of their effective life.

Accordingly the first, and in many respects most important initiative for a successful energy efficiency regime to induce changes in firm behaviour is to put a price on carbon and put in place a comprehensive and consistent set of demanding national standards for energy efficiency. Where appropriate this needs to be accompanied by incentives for firms to scrap their more energy inefficient capital stock (refrigerators, cars, plant and equipment, etc.) before it reaches the end of its effective life and replace it with more energy efficient means of producing and consuming goods and services.

Closely aligned to this is the need in Australia to incentivise the national innovation system to respond to higher more demanding standards for energy efficiency (and the carbon price once introduced) with new investments in R&D and commercialisation. These investments in innovation help provide the technological breakthroughs required to produce a new generation of more energy efficient goods and services at a reasonable price.

However, such investments are particularly high risk for early movers. As a result market failure in terms of underinvestment in clean-tech innovation is a fact of life most nations must address. This position is reflected in Ross Garnaut's 2008 report on Climate Change:

Basic research and development of low-emissions technologies is an international public good, requiring high levels of expenditure by developed countries. Australia should make a proportionate

contribution alongside other developed countries in its areas of national interest and comparative research advantage. This would require a large increase in Australian commitments to research, development and commercialisation of low-emissions technologies, to more than \$3 billion per annum by 2013. A new research council should be charged with elevating, coordinating and targeting Australia's effort in low-emissions research. There are externalities associated with private investment in commercialising new, low-emissions technologies.

To achieve an effective commercialisation effort on a sufficiently early time scale, an Australian system of matching funding should be available automatically where there are externalities associated with private enterprise investment in low-emissions innovation. Research in adaptation technologies is required. Existing arrangements are well placed to meet immediate priorities.²⁷

A start, but only a start, has been made in addressing the challenge.

First, in May 2009 the Rudd Government announced its clean energy initiative. This involves support for industrial-scale carbon capture and storage projects under the Carbon Capture and Storage Flagship Program, funding for solar technologies to help position Australia as a world leader in this energy technology in the future, and the establishment of Renewables Australia to support leading-edge technology research and bring it to market.

Second, Renewables Australia, already, renamed the Australian Centre for Renewable Energy (ACRE) has been established by legislation and a board is soon to be appointed. Its program has been expanded and will now include the: Renewable Energy Demonstration Program, Second Generation Biofuels Research and Development Program, Geothermal Drilling Program, Advanced Electricity Storage Technologies Program, Wind Energy Forecasting Capability Program, Renewable Energy Equity Fund, and funding for new initiatives including the formerly proposed Clean Energy Program. All the funding for the clean energy initiative and ACRE are over a number of years.

²⁷ See Chapter 18 in R. Garnaut, *The Garnaut Climate Change Review: Final Report*, Melbourne: Cambridge University Press, 2008.

Not all of the above investments are directed specifically at energy efficiency. It will be important to ensure that policy makers understand what proportion of these incentives accrues to investments in energy efficiency and with what outcomes. It may well be the case that the Board established to administer ACRE targets a specific component of the renewable energy demonstration program for more energy efficient buildings and specific breakthroughs in more energy efficient plants and equipment. Or given scarce resources the ACRE board and the Commercialisation Australia Board could reach agreement on an appropriate division of labour over cleantech and non cleantech investments, particularly those at the proof of concept and early commercialisation stage.

In addition, the vast majority of firms who invest in R&D will not be producers of cleantech technologies. They will be firms that have their own commercial goals that require investment in R&D, and, in some cases this R&D will help the firm to become more energy efficient.

It is therefore vital that in this era of climate change, Australia's principle R&D tax concession – that close to 8,000 firms are registered for – provides clear, consistent and appropriate incentives to encourage R&D investment.

The Government has announced that it will introduce through legislation greater R&D incentives (through a system of tax credits), with its objective being to have the new legislation in place by July 2010. The scheme is likely to provide the equivalent of support costing \$1.4 billion in its first year of operation

Recommendations

A good deal of controversy has been generated by the draft legislation to introduce the new system. From the perspective of unions it is imperative that the new legislation accomplishes two objectives that are both vital to the challenge of encouraging greater energy efficiency.

First, the objects clause of the legislation should provide a clear signal of the goal of encouraging international competitiveness. The references to spillovers and additionality should be removed. The objectives clause should also state clearly that R&D focused on encouraging more energy efficient products and processes should be considered eligible

expenditure, and in the 21st century be regarded as a key component of achieving international competitiveness.

In addition to the general R&D criteria, government needs to articulate how it sees the shift to a low-carbon economy by driving new R&D and there needs to be a clear and coherent national strategy that comprehensively outlines how the government will support R&D driven by climate change mitigation. The strategy should outline government support for energy efficiency research, development and deployment support for energy efficiency R&D technologies that are the first of their kind (to reduce barriers to large and high risk investments), and energy efficient infrastructure. It should also consider the role of government policies and programs in supporting new technologies move from the R&D stage to the commercialisation phase. This strategy is particularly pertinent given IEA research that indicates ongoing R&D priorities are ill-suited to the age of climate change mitigation.²⁸

Secondly, the existing definitions of eligible R&D activities should be retained as should the existing relationship between core and supporting R&D. Under current arrangements, ‘core R&D’ is eligible for the tax deduction if evidence can be shown that the R&D satisfies either a test of being innovative, or a test of high levels of technical risk. Similarly supporting R&D is eligible if it can be demonstrated that it is directly related to the core R&D.

Those tests are well understood by firms, administrators, regulators, and appeal bodies including the courts. They are also consistent with the way eligible R&D is operationalised for tax concession treatment in other OECD countries.

Unions, therefore, advocate that the status quo be retained. If there are any inappropriate claims or abuses of the system they should be managed through rigorous auditing process and specific mechanisms that only apply to the small number of firms that may pursue inappropriate claims. To do otherwise and impose new across-the-board demanding tests to ‘weed out’ such claims penalises the 8,000 registered firms with new and cumbersome R&D

²⁸ Data on the member states of the International Energy Agency indicates ongoing R&D priorities are ill-suited to the age of climate change mitigation. In particular, the level of support for fossil fuels is still generous for an industry that is best characterised as highly mature. For example, between 1974 and 2006, energy efficiency and renewable energy received, on average, a combined \$2 billion per year in R&D support. This is compared to \$1.5 billion and \$6.7 billion for fossil fuels and nuclear fission/fusion respectively. See United Nations Environment Program, *Green Jobs: Towards decent work in a sustainable, low-carbon world*.

definitions, excessive and unnecessary compliance requirements and a tightening of eligible R&D that is counterproductive.

2g. Encouraging Investment

Many businesses are reluctant to invest in energy efficiency technology and processes due to the perceived long payback period. This was demonstrated in a review of a review of a US Department of Energy program that provided detailed energy audits and energy efficiency investment analysis for businesses. The program also provided information on the costs and energy savings from the introduction of energy efficiency technology, processes and equipment.

Evaluators contacted the participating companies six months later to map energy efficiency measures that were invested in. The evaluation found that all investments with shorter paybacks were accepted; investments with longer payback periods were not adopted. The average acceptable payback period was 15 months, consistent with the average period internal rate of return. The evaluation emphasised that although the businesses in the study had access to expertise and information, they were no more likely to invest in energy efficiency measures than companies that did not participate in the program.

It has since been confirmed in Australia by the results of the Government's *First Opportunities* study which detailed energy information reported to government by 199 corporations that play a major role in Australia's economy.²⁹ They directly employ hundreds of thousands of Australians in regions and communities across the country. They also support the employment of many other Australians by providing goods and services vital to the operations of other businesses. At the same time, they supply our trading partners with valuable goods and services while simultaneously contributing to Australia's national income and the standard of living of all Australians.

The energy efficiency opportunities described by the corporations were many and varied. Importantly, the study found that corporations favour projects that have financial paybacks of less than two years when choosing to implement energy savings opportunities. Just over 60

²⁹ Department of Resources, Energy and Tourism, *First Opportunities: A Look at Results from 2006-08 for the energy efficiency opportunities program*, Canberra: Commonwealth of Australia, 2010.

percent of all energy savings identified were in the less than two year payback category; and among the projects already completed around 80 percent were in this payback group.

Most of the energy savings identified through the assessments were concentrated among a small number of entities from a handful of industries. Generally the large energy-using industries identified large energy savings, particularly metals manufacturing and mining. The sub-sector with the highest level of energy savings was ferrous metals and alumina production, with the most savings identified by aluminium producers. Oil and gas extraction, air transport and petroleum refining also identified large savings opportunities. Together these accounted for nearly 58 percent of all energy savings identified in the program.

The energy-related emissions associated with the corporations' energy use accounted for about 30 percent of total Australian greenhouse gas emissions and 44 percent of Australian energy-related emissions.

This research shows that traditional payback analysis is not necessarily an appropriate analytical tool when considering investment in energy efficiency measures as it focuses on the short term (in part to mitigate risk). As a result, the longer life time and operational cost savings are not included in the analysis. In addition, payback analysis does not take into consideration other uncertainties like future energy prices.

A longer-range financial view is required when considering energy efficiency investments and the decision-making process needs to recognize that energy efficiency investments are different; they are more akin to financial market investments than traditional capital investments. To achieve this and so that opportunities are identified and progressively implemented, future investment and purchasing programs will need to build in energy efficiency considerations and adopt improved energy measurement systems.

3. ENERGY EFFICIENCY IN ENERGY MARKETS

3a. Necessary Regulation

Regulatory measures, in tandem with government policies, are an important in providing a sound environment for investment in energy efficiency by providing a level of certainty and confidence. However, regulation must be proportionate, simple and sufficiently flexible to not distort incentives and/or produce unintended outcomes. Therefore, it is essential that an impact assessment of any new regulation be comprehensively examined. With regards to existing regulation, reviews needed to be undertaken in some circumstances to ensure regulation is not favouring inefficient energy practices.

3b. The role of Energy Efficiency in Protecting Equity

Over the longer term, modelling suggests that energy affordability is expected to improve, with the rise in energy prices from the introduction of an emissions trading scheme more than offset by increases in income, for the majority of households.³⁰ However, in the short- to medium-term, low income households are likely to experience rising energy prices. This requires a targeted policy response in the short term given that low income households produce almost 40 percent less carbon annually than high income households yet spend a larger proportion of their weekly income on energy.³¹ **Therefore unions support the government's commitment to direct financial support for low income households.**

In parallel, an effective and essential policy response is support for improvements in energy efficiency. The CSIRO, ANU and Climate Institute all identify energy efficiency measures as having a significant role in offsetting the financial impact of rising energy prices as a result of the ETS. Analysis suggests 'that even relatively modest improvements in energy efficiency are likely to outweigh the adverse affordability of high carbon prices and associated increases in

³⁰ S. Hatfield-Dodds et al., *Growing the Green Collar Economy: Skills and Labour Challenges in Reducing our Greenhouse Emissions and National Environmental Footprint*, Canberra: CSIRO, June 2008; S. Hatfield-Dodds & R. Dennis, 'Energy Affordability, Living Standards and Emissions Trading: Assessing the social impacts of achieving deep cuts in Australian greenhouse emissions', *Report to the Climate Institute*, June 2008.

³¹ Brotherhood of St Laurence, 'Equity in response to climate change: an issue of critical importance', *Brotherhood Comment*, November 2007, 8.

energy prices.’³² Therefore, any energy efficiency strategy should bear in mind the importance of ensuring equity and the role of energy efficiency efforts in building ‘long-term national resilience’³³ to price increases.

³² S. Hatfield-Dodds & R. Dennis, ‘Energy Affordability, Living Standards and Emissions Trading: Assessing the social impacts of achieving deep cuts in Australian greenhouse emissions’, 17.

³³ Ibid.

4. ENERGY USE EFFICIENCY

4a. New 'Green' Buildings

Buildings are one of the world's largest users of raw materials during construction, generate immense quantities of waste and pollution and use a considerable amount of water. When viewed in their entirety, buildings are the single largest contributors to greenhouse gas emissions. This is unsurprising given that buildings are one the largest users of energy, consuming more electricity than any other sector worldwide.³⁴ Building stock in Australia also produces a larger proportion of greenhouse gas emissions than its share of energy used due to the use of greenhouse gas intensive energy; electricity produced primarily by coal fired generation.

In Australia, commercial and residential buildings account for at least 23 percent of Australia's greenhouse gases emissions each year.³⁵ Commercial buildings have significantly higher emissions per building than residential buildings; with the commercial sector's energy use increasing by 86 percent between 1990 and 2006. Commercial offices in particular are responsible for an estimated 27 percent of the emissions of the commercial sector, with the commercial sector's energy use more generally increasing by 86 percent between 1990 and 2006.³⁶

In 2007, the Intergovernmental Panel on Climate Change (IPCC) identified buildings as holding the single largest potential of any sector to reduce greenhouse gases by improving

³⁴ United Nations Environment Program, *Green Jobs: Towards decent work in a sustainable, low-carbon world*, 80. Buildings are responsible for about 40 percent of global primary energy use, greenhouse gas emissions, and waste management; 32 percent of the world's resources in construction; and the consumption of about 12% of global water. See, ACTU and ACF, *Green Gold Rush: How ambitious environmental policy can make Australia a leader in the global race for Green Jobs*, 30.

³⁵ Centre for International Economics, *Capitalising on the Building Sector's Potential to Lessen the Cost of a Broad Based GHG Emissions Cut*, Canberra, September 2007, 3. The figure of 23 percent is based on a final demand accounting framework reflecting direct and (estimated) indirect emissions for electricity consumption.

³⁶ Australian Greenhouse Office, *Australian Commercial Building Sector Greenhouse Gas Emissions 1990–2010*, Canberra: Commonwealth of Australia, 1999, 6. Centre for International Economics, *Capitalising on the Building Sector's Potential to Lessen the Cost of a Broad Based GHG Emissions Cut*, 12; Department of the Environment, Water, Heritage and the Arts, 'Commercial Buildings in Australia', <http://www.environment.gov.au/sustainability/energyefficiency/buildings/commercial/index.html> (accessed 3 May 2010), 11 December 2009.

their energy efficiency.³⁷ It is argued that this can be achieved by 2030, by avoiding approximately 30 percent of the greenhouse gas emissions projected to be emitted from buildings. Economic analysis also estimates that the building sector has the lowest average cost of abatement, with reductions able to occur at a negative cost.³⁸

Work has already begun with buildings registered with green building councils consuming up to 85 percent less energy, 60 percent less potable water and sending 69 percent less waste to landfill. In Australia, the number of buildings in the Green Star program – one of the internationally recognised energy efficiency standards for buildings – has risen from 50 in 2006 to 680 in 2008. The Green Star program is also encouraging responsible product use by developing improved standards. For example, in contrast to the PVC credit used over the past six years – which encouraged the minimisation of all PVC use in green buildings – the new credit encourages the development and use of best practice PVC material in Australia. It will do so by rewarding best practice PVC products within the Green Star rating system the most effective way to encourage responsible production.³⁹ It is very important to note that these energy efficiency improvements can be achieved with net economic benefits and using existing technology.

Recommendations

Energy Standards for New Buildings

The UNEP Assessment Policy of Instruments for reducing Greenhouse Gas Emissions from Buildings concluded that ‘regulatory and control instruments such as building codes were...the most effective and cost-effective’ policy instrument available to government to

³⁷ The IPCC identified a capacity to reduce projected emissions by 29 percent by 2020. IPCC cited in United Nations Environment Program, *Green Jobs: Towards decent work in a sustainable, low-carbon world*, 80.

³⁸ The Australia Sustainable Built Environment Council reports that ‘for each tonne of CO₂-e abated by the building sector, the economy could save an average of \$116 through increased energy efficiency in residential buildings; an average of \$147 per tonne in commercial buildings; and an average of \$129 per tonne overall. See Australian Sustainable Built Environmental Council, *The Second Plank – Building a low carbon economy with energy efficient buildings*. See also McKinsey & Company, *An Australian Cost Curve for Greenhouse Gas Reduction*, Melbourne and Sydney, 2008. It states that the building sector has the lowest average cost of abatement. They estimated that the building sector could reduce 60 Mt of CO₂e per annum by 2030 at a negative cost of \$130 per tonne (economic average cost basis).

³⁹ Green Building Council of Australia, ‘New credit encourages best practice PVC production in Australia’, *Media Release*, 19 April 2010.

reduce greenhouse gas emissions from the built environment.⁴⁰ To be effective, however, building codes need to be regularly updated, keeping pace with technology upgrades.

Unions welcome the decision for mandatory reporting of up-to-date energy efficiency information by commercial building owners as a result of the 2010 revised Building Code of Australia. **However, current Building Code of Australia minimum standards (based on a 3 to 3.5 stars NABERS rating) for office buildings are inadequate; especially given the fact that new buildings will remain part of the existing building stock until at least 2050. Forward-looking and energy efficiency focused building code revisions would require new buildings to meet at least 5-star NABERS (or the Green Star equivalent) requirements now.** Such measures are simple and generally well-understood and as such provide a robust means of directing greater investment into energy efficient measures and practices. This would significantly improve the energy efficiency of new building stock and eliminate the need to retrofit them in the short- to medium-term upon revisions of the building code to more environmentally stringent standards.

Support for an energy efficiency rating system (NABERS and/or Green Star) by the government also provides clear and unambiguous signals for the market to work within. For example, tenants of commercial properties are already demanding higher energy efficiency ratings. A favourable environment – provided by government leadership with little input – will support greater market demand; creating value far beyond direct energy payback.

Building Code requirements should also require post-occupancy evaluation of the energy efficiency of commercial buildings. This is because buildings, when operating, may not necessarily meet the energy savings that were targeted during the design phase. However, without an assessment of a building's energy savings (or lack there of) the feedback loop to the design professionals is broken.

Mandatory Disclosure

The Building Energy Efficiency Disclosure Bill 2010 is an important step in reducing information asymmetries. Without mandatory disclosure, potential buyers and tenants are unable to compare the energy efficiency of buildings and factor energy prices into their

⁴⁰ United Nations Environment Program, *Assessment Policy of Instruments for reducing Greenhouse Gas emissions from Buildings*, Paris: UNEP, 2007.

decision before buying/leasing. The introduction of the legislation is an important step after much delay. However, the initiative can be improved, with the Energy Efficiency Council proposing four changes.⁴¹ First, the initiative should apply to governments as well as the private sector. Second, governments should commit to 'public display certificates' in their own buildings; continue to reduce the information asymmetry, raise awareness of the importance of building energy efficiency and create demand. This has been European Union policy since 2002. Third, while the first iteration of the legislation only applies to buildings over 2 000m², the government should commit to undertaking a detailed regulatory impact assessment of phasing-in disclosure to all building areas over 1 000m². Fourth, government should support building owners undertaking a NABERS or Green Star assessment to help them improve the energy efficiency of their buildings.

Green Building Materials

The construction of green buildings requires green building materials. At present, however, many materials cannot be locally sourced. The sourcing of green materials from overseas and the resulting carbon footprint from transport is inconsistent with 'green' objectives. As new construction and retrofitting increases and the demand for these materials grows, this issue will become increasingly significant. Therefore, **consideration needs to be given to the role of industry policy in supporting local production of green materials so that demand is met locally.**

For a number of building materials such as steel, however, the story is quite positive. Steel's lightness, strength and durability make it a material of choice for construction and many other applications. These qualities improve the environmental performance of buildings, structures, automobiles and many other applications. A number of examples of applications to buildings are outlined in a recent joint submission by the AMWU-AWU Manufacturing Alliance.⁴²

Adopting steel as the construction medium allows great freedom to designers and architects to produce an individuality which can stay fresh and modern. Along with the capacity of steel

⁴¹ Energy Efficiency Council, *Submission to the Senate Standing Committee on Environment, Communications and the Arts*, April 2010.

⁴² See examples of steel building applications in AMWU-AWU Manufacturing Alliance, 'Working in green Jobs: Transforming tomorrow', *Australian steel Report to the International Metalworkers' Federation*, 2009.

buildings to accommodate change and modification, the useful life of steel constructions is prolonged and saves energy and waste over that life.

Measuring systems in the past have often concentrated on the material content of buildings and have used simple 'embodied energy' content per unit of weight to determine the best environmental performers. This can be misleading. A tonne of steel has high embodied energy content but because of its strength, a little goes a long way and it can do the job of several tonnes of other materials or could extend the life of a building in certain designs.

While many materials have one life in the building and then become costly demolition waste, steel can have many lives and so retains a high value either as components for reuse or as recyclable scrap. Throughout the life of a building, steel's capacity to accommodate radical modification with minimum fuss, dust and waste is a strong environmental plus.⁴³

A discipline of smart design is emerging in deconstruction. Steel is the ideal material for this concept since many steel components like structural beams can be reused especially if the initial design retains the original identity and certification. Steel that is not reused can be recycled. Steel retains its value in both instances.

Education

The introduction of more progressive building requirements needs to be paralleled by an education campaign targeting investors, developers, building owners and managers, and tenants. The education campaign should outline the benefits of green buildings including:

- Capital cost savings
- Lower operating costs – Sustainability Victoria reports that most businesses will save 10 to 25 percent of their annual energy costs by improving their building's energy efficiency
- Greater tenant attraction and reduced vacancy periods – According to the 2008 BCI Australian Green Building Market Report, client demand is one of the primary drivers. By building/retrofitting now, owners are also future-proofing their building stock

⁴³ Ibid.

- Higher return, reduced operating costs, lease premiums, future proofed assets and increased property value
- A compressed design and building schedule as a result of an integrated team approach (as required under the Green Star rating system)
- Reduced liability and risk
- Competitive advantage
- Enhanced marketability and publicity opportunities
- A healthier place to work, improving productivity⁴⁴

This is an integral aspect of the process because the perceived cost of green buildings remains a major barrier despite the benefits of improving the energy efficiency of buildings. This challenge is well-known to the World Business Council for Sustainable Development who found that despite increased knowledge of green buildings within the sector, the additional cost of building green was estimated by key decision-makers as 17 percent. In fact, the actual amount is closer to 5 percent.⁴⁵ More recent anecdotal evidence in Australia, however, suggests a shift (albeit gradual) from ‘a perception of green buildings as an expensive ideal, to an expectation that the majority of projects should at least be minimally environmentally sensitive’. This is paralleled by a pragmatic sentiment that ‘anything built today that is not green will age prematurely’.⁴⁶

Financial Assistance

Although the Australian research indicates that the information barrier is slowly being broken down, the outlook of benefiting from improved energy efficiency in buildings (through reduced energy bills) is medium- to long-term. Thus, despite preliminary research indicating that investment in green buildings provides a return of \$2 for every \$1 invested,⁴⁷ green building policy needs to enable the building sector to overcome the financial barrier (i.e. the up-front cost of investing in green buildings) in order to change its practices. **Financial assistance mechanisms (for example grants, subsidies or rebates) should be introduced to**

⁴⁴ Green Building Council, ‘A Year in Green Building – Green Building Evolution 2010’, *Annual Report, 2010*.

⁴⁵ World Business Council for Sustainable Development cited in UNEP, Report Green Jobs, United Nations Environment Program, *Green Jobs: Towards decent work in a sustainable, low-carbon world*, 86.

⁴⁶ Green Building Council, ‘A Year in Green Building – Green Building Evolution 2010’.

⁴⁷ Department of the Environment, Water, Heritage and the Arts, ‘Commercial Buildings in Australia’.

encourage the uptake of energy efficiency technology (beyond minimum standards) by offsetting the required upfront, direct capital expenditure.⁴⁸ This is a common policy response across the OECD. Such funding should only be limited to 'green' investment opportunities with a proven ability to improve energy efficiency and should provide for savings that cannot be met through more cost effective measures such as minimum standards. Furthermore, to support demonstration of new innovation, the criteria should include a scale of the energy savings that will be delivered.

4b. 'Greening' Existing Building Stock

The IPCC states that existing building stock has the greatest potential within the building sector for reducing greenhouse gas emissions.⁴⁹ In Australia, significant advances have been made in green design, construction and energy efficient technologies in recent years, thanks largely to the efforts of industry stakeholders such as the Green Building Council of Australia. However a greater focus needs to be on the 97-98 percent of commercial floor space that is existing building stock. A strategic approach to greening existing commercial buildings must involve retrofitting.

However, barriers and impediments to the investment in 'green' retrofitting persist. Barriers include lack of information, information asymmetries, bounded rationality and split incentives. Split incentives, in particular, is a hurdle that needs to be overcome. It sees owners responsible for investing in green retrofitting while tenants benefiting financially from the reduced costs of energy efficiency measures. This creates a disincentive for owners to invest in energy efficiency measures.

Thus far, governments at the state/territory and federal level have allocated considerable resources to the provision of information through education campaigns, helping to fill information gaps. Less attention has been paid to the issue of split incentives, bounded rationality and the energy efficiency investment gap. This is unsurprising given that these challenges will require a more costly response through the provision of financial incentives to invest. However, such measures are integral to improving energy efficiency, with ASBEC

⁴⁸ An effective package of incentives for accelerating the return on investment could include accelerated depreciation.

⁴⁹ United Nations Environment Program, *Assessment Policy of Instruments for reducing Greenhouse Gas emissions from Buildings*.

economic modelling showing that energy efficiency measures in the building sector have the potential to abate nearly 2 billion tonnes of CO_{2-e} from 2010 to 2049-50. Interestingly, the proposed CPRS would abate less than one fifth of this amount.

Commercial building owners will only upgrade their buildings if it makes economic sense to do so. And while there are low cost abatement options to improve the energy efficiency of the building sector, achievement of substantial efficiencies will generally involve a substantive financial outlay because major measures require modification to the fabric of buildings (including windows, lighting systems, air conditioning and heating systems, and the thermal envelope). Therefore, green retrofitting of this type is unlikely to be undertaken due to the long payback period on investment, with modelling showing that the return on investments to range between 11 and 22 years (and between 15 to 22 years if upgrading from a two-star to a four-star energy rating).

Recommendation

Accelerated Depreciation or an Equivalent Measure

The introduction of policy providing for accelerated depreciation or an equivalent measure (for example White Certificate or Cap and Trade schemes) for green retrofitting of existing building stock (to meet a specified standard) are an effective response to the timing gap issue. Accelerated depreciation, for example, would shorten the payback period by enabling owners/investors to defer tax payments (in exchange for implementing energy efficiency measures earlier). The cost of tax deferral would be incurred by government. However, it is important to note that the benefit of improved energy efficiency (reduced greenhouse gas emissions) is at a relatively low cost, estimated as approximately \$11 per tonne of CO_{2-e}.⁵⁰ This would be offset over the longer-term by increases in revenue.

Such a policy would only apply to substantial refurbishments that 'green' commercial buildings and would include a required standard of performance and quality of inputs in order to qualify. As a result, it would raise the overall energy efficiency of existing stock by focusing on particular energy efficient fittings, fixtures and fabrics that meet a specific standard. This would make a significant contribution to meeting overall energy efficiency

⁵⁰ CIE cited in Australian Sustainable Built Environmental Council, *The Second Plank – Building a low carbon economy with energy efficient buildings*.

goals given that the majority of total building stock is not new (new buildings consist of only 2 to 3 percent of all buildings) and older buildings are generally energy inefficient. It would also make the most of the routine/regular investment in property alterations and additions, with approximately two percent of building stock substantially refurbished each year. This reflects the significant proportion of total building stock that exists, with new buildings only consisting of 2 to 3 percent of all buildings. In this regard, the ASBEC suggests that green depreciation would only need to influence and bring forward (over that which is already projected to occur in the normal refurbishment cycle) a relatively small proportion of refurbishment investment to make a significant reduction in energy demand and greenhouse gas emissions.⁵¹

Critiques of accelerated depreciation focus on how the policy response undermines the economy-wide carbon price signal resulting from an ETS. In the absence of an ETS, however, accelerated depreciation or an equivalent measure is a viable policy response. It is also a policy response that can be implemented without delay as much of the infrastructure and technology required is currently available.

Accelerated depreciation or an equivalent measure also encourages commercial building owners and investors to investigate green investment options. This would result in owners/investors learning about available opportunities and enable decision-makers to make informed decisions. Government-funding for specific measures also guides decision-makers to specific investment opportunities, reducing the information required by decision-makers to make informed decisions. Overall, this helps overcome the investment barriers resulting from bounded rationality and/or information gaps. It also weakens the split incentive barrier resulting from the rental market.

4c. Building Management

A strategic approach to greening existing commercial buildings must also involve energy efficient building use. In particular, the use of stationary energy is central to reducing greenhouse gas emissions in the commercial building sector. Therefore, energy efficiency initiatives in the building sector need to be dual focused: promote the construction and retrofitting of more energy efficient buildings *and* identify abatement opportunities with regards to the operational energy use of buildings and the associated change behaviours of

⁵¹ Australian Sustainable Built Environmental Council, *The Second Plank – Building a low carbon economy with energy efficient buildings*.

tenants. This includes, for example, efficient building energy management systems, behaviours around air conditioning and heating usage, reducing appliance standby losses, lighting use, etc.

Cleaners, security guards, and other property service workers have a key role to play in ensuring that both green buildings and other commercial buildings meet the required levels of energy efficient performance.

At present, cleaning is generally a night time activity. Increased cleaning during daylight hours could reduce energy usage, and also shift it away from peak electricity use times. Cleaners are enthusiastic about energy efficient work practices, as long as they are given enough time to do the job properly and safely. Security guards can also ensure that a building's lighting and heating/cooling systems are switched off at night. **These property services workers need to be given the proper time, equipment and training to ensure these sustainability measures work.**

LHMU member Mary Shallard, for example, cleans a commercial building that has recently been retrofitted to achieve a 4 star energy rating. Mary's work changed a great deal during this process. Mary cleans an increased number and variety of waste and recycling bins; she understands the new lighting system; and she uses microfiber cloths (which save on chemicals and water but require increased elbow grease). Mary is happy with the new system and has even become a green building advocate in her community – because she has been given sufficient time and training to do her job, and was involved in the change process. She says, 'the thing I liked the best was that as a cleaner I was involved in meetings with the tenants, the building manager and the recycling company when the new system of waste management was coming in. It's great to be cleaning in a building where the building owner, management, tenants and cleaners are working together to do our bit for the environment.'

4d. Energy Efficient Hotels

Australian hotels are heavy users of both energy and water. While there has been increased development of eco-tourism facilities, much of Australia's hotel assets have not been built with energy efficiency in mind. Furthermore, the hotel industry currently has an eclectic blend

of various kinds of 'green' accreditation standards – some are rigorous, others are no more than 'greenwash'.

Recommendations

Communities, workers and guests all want a simple and transparent accreditation process that demonstrates the energy use and environmental sustainability of a hotel's operations. Work on an ethical and environmentally credible rating system for Australia's hotels and resorts has begun.⁵² In addition, the proposed mandatory disclosure requirements for commercial properties over 2000m² (are a step in the right direction for the commercial sector) could also be applied to the hotel industry in order to address market failure caused by lack of transparency. The Australian Government should support both these process in the interests of transparency and driving change in the sector.

Therefore we recommend that the Australian Government:

- Expand the Commonwealth Green Building Fund to support energy efficient retrofitting of hotels
- Develop a mandatory disclosure regime that applies to energy use in hotels
- Develop a federal program providing rebates for gains in NABERS and/or Green Star ratings in hotels⁵³
- Consider an accelerated depreciation rate for hotels that are retrofitted to meet high environmental standards
- Develop comprehensive energy and environmental training modules for staff and management, as part of the hospitality training initiative. These should be managed by government training authorities in partnership with industry and union representatives
- Work with hotels and other stakeholders including unions to develop a comprehensive sustainability rating scheme that includes worker participation in both consultation and design
- Require information to be provided to tourism consumers on the energy efficiency achieved by industry operators

⁵² See First Star, <http://thefirststar.com.au> (accessed 3 May 2010).

⁵³ The Victorian ResourceSmart Commercial Buildings Program offers a guide in this area. A range of benefits could result from involving LHMU members in the management of such a program.

4e. Sustainability in public sector health facilities

Hospitals are complex, energy-intensive buildings. They run 24 hours a day and have extra commitments compared to other types of commercial buildings in regards to the energy they require to run air filtration and circulation systems, heating and cooling, lighting and clinical equipment. They also use large volumes of water for cooling, clinical services and cleaning and consume large quantities of goods including linen, medical supplies, food, chemicals, computers and vehicles, consequently generating huge volumes of waste.

As a result, hospitals use about 2.5 times more energy than other similar sized commercial buildings. In NSW, public hospitals account for 53 percent of total NSW Government building energy usage.⁵⁴ The Sydney West Area Health Service (SWAHS), comprising thirteen hospitals of various sizes, consumes the same amount of energy and water used to power a city with a population of around 22,000 people. The combined costs to the SWAHS for water and power during 2007-08 were \$11.3 million and created 125,000 tonnes of carbon dioxide. Energy and water costs are predicted to rise from between 12 and 35 percent.⁵⁵

The World Health Organisation has outlined seven elements of a climate friendly hospital:

1. *Energy efficiency* – Reduce hospital energy consumption and costs through efficiency and conservation measures.
2. *Green building design* – Build hospitals that are responsive to local climate conditions and optimized for reduced energy and resource demands.
3. *Alternative energy generation* – Produce and/or consume clean, renewable energy onsite to ensure reliable and resilient operation.
4. *Transportation* – Use alternative fuels for hospital vehicle fleets; encourage walking and cycling to the facility; promote staff, patient and community use of public transport; site health-care buildings to minimize the need for staff and patient transportation.
5. *Food* – Provide sustainably grown local food for staff and patients.
6. *Waste* – Reduce, re-use, recycle, compost; employ alternatives to waste incineration.
7. *Water* – Conserve water; avoid bottled water when safe alternatives exist

⁵⁴ D. Pencheon et al. 'Health sector leadership in mitigating climate change: experience from the UK and NSW', *NSW Public Health Bulletin*, Vol 20, No.11-12 (Nov-Dec 2009), 175.

⁵⁵ *Ibid.*

Improving the energy efficiency and reducing the carbon footprint of Australian hospitals without compromising their ability to fulfill their function, presents unique challenges. A combination of retrofitting existing public hospital buildings so that they are more energy efficient and incorporating energy efficiency into the design of new buildings is required. In regards to new public hospitals, the use of environmentally sustainable design principles needs to be the norm. For retrofitting and new construction to be successful, it will require substantial financial investment by government, innovative design and complex problem-solving by building designers and engineers, and commitment from policy makers, managers, staff at all levels and users of health services to work together.

An example approach is the whole of system model adopted by National Health Service in the UK. It includes a Carbon Reduction Strategy for England, and the work is lead by the NHS Sustainable Development Unit.⁵⁶ While Australia does not have such a well developed national approach, there are innovations taking place.

Cogeneration improves energy efficiency while cutting greenhouse gas emissions, and can be incorporated into both retrofits and new building designs. Cogeneration utilises the heat created from generating electricity that would otherwise go into the atmosphere, and captures it for heating the building and other purposes. Such projects are tailored to the needs of the individual site.

In Victoria, where public hospitals account for 60 percent of overall state government energy use, the government established the Victorian Government Sustainable Energy Targets (GSET) program in 2001. Through this, the Department of Human Services undertook the Victorian Hospital Cogeneration Project (VHCP). The project has enabled six public hospitals to generate their own power on site using natural gas.⁵⁷ Similarly, in NSW the Sydney West Area Health Service has undertaken co-generation projects. Three of its hospitals now generate 40-50 percent of their electricity onsite using cogeneration fired by natural gas. This has resulted in a 15 percent reduction in electricity consumption across the SWAHS.

⁵⁶ D. Pencheon et al. 'Health sector leadership in mitigating climate change: experience from the UK and NSW', 173.

⁵⁷ Department of the Environment and Climate Change, *Government sustainable energy targets: progress report*, Melbourne: Government of Victoria, 2008.

The Green Building Council of Australia has established a specific system for health facilities called Green Star Healthcare (v. 1). This tool is designed to enable owners and operators of health care facilities to: minimise the environmental impact of their buildings; improve patient health outcomes and staff productivity; receive recognition for green leadership; and achieve real cost savings.

The Australian Council on Healthcare Standards sets public hospitals' accreditation standards through The EQUIP Guide,⁵⁸ to ensure the delivery of safe, high quality health care. Public hospitals must meet certain mandatory accreditation standards in order to obtain their funding. The current edition of the guide includes a standard for waste management but does not address other aspects of health care facilities' significant contribution to greenhouse gas emissions. The next edition, due out in January 2011, will address energy efficiency in health care facilities' to some extent. It will not include mandatory standards.

Nurses are in a strong position to participate in climate change initiatives. Nurses see the amount of waste generated each day and are in a position to observe how current practices and how practices can be improved. At the Austin hospital (in Victoria), nurses initiated and were largely responsible for implementing a trial waste segregation and recycling program in operating rooms. With the support of hospital management and other staff, the hospital employed a permanent conservation and waste management officer; the project was rolled out and is now fully implemented in sections of the hospital.⁵⁹

Recommendations

Given the urgency of the problem of climate change, the significant contribution that the health sector makes to greenhouse gas emissions, and the health sector's primary purpose to heal and promote health, it is **imperative that the health sector respond more vigorously to calls to improve energy efficiency and reduce greenhouse gas emissions. The response should include:**

⁵⁸ Australian Council on Healthcare Standards, *The EQUIP guide (4th ed)*, Sydney: ACHS, 2006.

⁵⁹ The International Council of Nurses (ICN) acknowledge nurses position in the health care workforce and calls for national nursing associations to: lobby for nurse involvement in environmental health committees and policy tables that focus on the safety and protection of health workers and the management and regulation of the health care environment. International Council of Nurses: *ICN position statement: Nurses, climate change and health*, Geneva: ICN, 2008.

- Adoption of WHO's Seven Elements of a Climate-Friendly Hospital as mandatory elements of environmentally sustainable health care facility design and retrofit
- Adoption of a national approach (similar to that implemented in the UK), to make our health care facilities environmentally sustainable now and for the future. A national approach should be consistent with the objectives of the newly established National Health and Hospitals Network intent to set national standards for health care
- Consideration of making energy efficiency measures (including the use of NABERS and/or Green Star measures) a mandatory requirement for hospital accreditation.⁶⁰

The money saved on energy costs can be diverted back into the core purpose of hospitals: providing high quality patient care and a safe environment for patients, staff, and visitors.

4f. Local, State and Federal Government Leadership on 'Green' Buildings

Governments in Australia occupy approximately one third of Australian office building stock. As major property owners and tenants, governments have an important role to play in driving change through activities in their own buildings. The state governments in Queensland, South Australia and Victoria have already set a minimum five star Green Star standard for all new government office accommodation. Other state and territory governments have introduced standards to a lesser degree and the Federal Government has introduced a minimum 4.5 star NABERS requirement for office areas over 2000m².

Governments at a local, state/territory and federal level need to provide leadership by achieving best practice green building standards because international experience demonstrates that government action is a critical prerequisite to private sector investment in energy efficiency.⁶¹ Consistency across levels of government across states/territories is recommended. The strategy should consist not only of energy targets for buildings but a holistic strategy that includes materials, water use, and building management. It should also

⁶⁰ See Australian Nursing Federation, *ANF policy statement: Health and the environment*, Melbourne: ANF, endorsed 1994, re-endorsed 2005 and 2008.

⁶¹ Energy Efficiency Council, *Submission to the Senate Standing Committee on Environment, Communications and the Arts*. It is also good economic policy, with the Energy Efficiency Council reporting that energy efficiency measures in Australian government buildings could result in \$130 million of savings each year.

include the use of a whole-of-lifecycle environmental cost accounting for all tenders including procurement of property services. **By providing leadership and consistency in this area, governments create strong incentives to the building sector (construction, retrofitting and maintenance) to produce and maintain environmentally sustainable building products and services.** For building maintenance the Green Building Fund should be extended to ensure individuals responsible for the operation and maintenance of government office buildings are adequately informed and skilled to improve energy efficiency and environmentally sustainable practices.

5. EMBEDDING BEHAVIOURAL CHANGE

5a. Job Creation and Employment Opportunities

The assumption that the shift to a low carbon economy will result in job losses does not hold true **if accompanied by transitional assistance measures**. In fact research by the CSIRO shows that a well managed transition would have little or no impact on national employment, with a marked increase in jobs projected over the next decade.⁶² This is a double dividend, with the shift to a low carbon economy producing both environmental and employment gains.⁶³ New research commissioned by the ACTU and the ACF highlights the benefit of acting strongly on climate change is high levels of job creation.

In the building sector, for example, the introduction of energy efficiency measures will lead to direct (on-site jobs for local workers), indirect (jobs mainly in the manufacturing sector stimulated by demand for green building components and energy efficient equipment) and induced jobs (jobs created as money that would have previously been spent on energy is re-allocated in the community) for Australian workers. Support for retrofitting will also directly increase employment because without a commitment to improve the energy efficiency of buildings, the work would not exist. In regards to direct jobs, it is projected that more than 250,000 green collar jobs will be created by 2025. These jobs are also expected to be of a higher skill (and higher salary) because energy efficiency goods and equipment often require more skilled labour.

Recent research into six market sectors (renewable energy, energy efficiency, sustainable water systems, biomaterials, green buildings, waste and recycling) found an additional 500,000 jobs can be created by 2030 above a business-as-usual baseline.⁶⁴ For the job creation to be achieved, however, a strong domestic market, supported by strong suite of climate change policies is required.

⁶² S. Hatfield-Dodds et al., *Growing the Green Collar Economy: Skills and Labour Challenges in Reducing our Greenhouse Emissions and National Environmental Footprint*.

⁶³ United Nations Environment Program, *Green Jobs: Towards decent work in a sustainable, low-carbon world*.

⁶⁴ ACTU and ACF, *Green Gold Rush: How ambitious environmental policy can make Australia a leader in the global race for Green Jobs*.

The transition to a low carbon economy is also important for regional employment. In the *Green Jobs Illawarra Action Plan* it was estimated that investment in a cogeneration power plant at the Port Kembla Steelworks would abate up to one million tonnes of greenhouse gas emissions every year *and* create an estimated 2,000 jobs over a three year construction period. Cogeneration in the sugar industry is another major source of local employment and regional economic activity.⁶⁵

Recommendations

Best Practice Producers

Australia needs to maintain its status as a best practice producer of iron and steel, aluminium, cement, plastics, glass and paper among other energy intensive industries and not lose these industries to other countries. Furthermore, if our oil and gas resources are going to be extracted or energy products produced we want to continue to ensure that they are extracted, refined and generated in Australia.

This will require assistance for emissions-intensive, trade-exposed (EITE) industries – accounting for 65 per cent of our exports, and half a trillion dollars of avoided imports a year – in the transition to a global low carbon market; or risk losing these industries to overseas. When policy settings are balanced and fair, Australia's EITE sector is automatically part of the climate change solution by applying best practice know-how aimed at reducing emissions and costs.

A sensible transition to carbon trading will see traditional industries becoming sustainable and growing stronger over the long term. The world will use more aluminium, steel, cement, coal, gas, timber and paper, plastics and chemicals – not less – and more transport. **The jobs at the core of these industries should be seen as part of a real green jobs solution for Australia's economy.**

⁶⁵ Green Jobs Illawarra Project Steering Committee, 'Green Jobs Illawarra Action Plan', *A Report to the Honourable Nathan Rees Premier of NSW, Macquarie, 2009.*

Equity in Transition

The labour market has experienced structural changes before. The transition to a low-carbon economy, like previous transitions, will have implications for workplaces across the Australian economy. A commitment to a 'just transition' to a green economy will focus on investing in green jobs, 'greening' current jobs and protecting existing jobs. This is in recognition that every job in every enterprise is of the most vital importance and every effort must be made to maintain the living standards of our workers and their families. For some existing jobs this will require upskilling or reskilling as individual firms and entire industries move towards a low carbon economy.⁶⁶ An ongoing commitment to support Australians who had difficulty finding employment in the 'old' economy is also needed to ensure opportunities in the new economy are open to all. In collaboration, governments, businesses and unions are well-placed and experienced in ensuring the transition is equitable.

Commitment by businesses to employ and upskill staff in green technologies requires a clear signal of market demand for green goods and services. Without a clear signal, the feedback loop will remain broken and job opportunities will not be made available. There is an important role for the ETS in setting the direction. **In the absence of an ETS, a clear, comprehensive and long-term energy efficiency strategy (in conjunction with the RET) is integral to providing a signal to the green market, creating new markets and business opportunities, and pressure to change existing purchasing/consumption habits.**

5b. Green Skills Training

Meeting the demands of a large-scale rollout of energy efficiency initiatives and achieving a successful transition to a low-carbon economy will require:

A massive mobilisation of skills and training...both to equip new workers and to enable appropriate changes in practices by the three million workers already employed in these sectors influencing our environmental footprint.⁶⁷

⁶⁶ Department of Education, *National Green Skills Agreement*, Canberra: Commonwealth of Australia, 2009.

⁶⁷ S. Hatfield-Dodds et al., *Growing the Green Collar Economy: Skills and Labour Challenges in Reducing our Greenhouse Emissions and National Environmental Footprint*.

The World Business Council for Sustainable Development, however, has emphasised that restructuring of the market will be constrained by skills shortages.⁶⁸ In Australia, the current response is inadequate to capitalise on the opportunities that the global green market presents and making the transition smooth. If not resolved the negative impact will be significant. For example, skills shortages will stall energy efficiency initiatives and consumers seeking to switch to more energy efficient alternatives. In particular, new green jobs in the renewable energy sector (like solar, wind, etc.) require current workers to learn new knowledge and new skills. Without a clear strategy to ensure the renewable energy sector has access to a skilled workforce, projects that have positive environmental outcomes may be stalled or the jobs will move offshore because Australia hasn't adequately prepared for growth in the renewable energy sector.

Recommendations

The new goal must be to build 'green' into every job. This has two elements: new tradespeople and professionals with green skills and retraining and upskilling for existing workers. Skills needed are not restricted to construction and manufacturing. It includes technical and trade skills, design and engineering, assessment and accreditation, reliable product and market knowledge, supply and post-sale support, supply chain management, building services, transport and logistics, etc.

Before this can begin, information on green skills and workforce capabilities needs to be dramatically improved and updated. This needs to be a priority that should see governments, business and unions work together to map the green job opportunities and associated skills. **Skills Australia is well placed to lead this national program to identify the green jobs, skills and knowledge needed for a low carbon economy, with strong input from the Industry Skills Councils.**

In parallel, the higher education and VET sectors need to restructure training curriculum and/or adopt new curriculum that provides new graduates with the knowledge and capacity required in a low carbon economy. For example, this is a key focus for the VET sector at present with the 11 Industry Skills Councils having reviewed all industry training packages to

⁶⁸ Ibid.

identify gaps in sustainability skills and competencies, with a view to having sustainability skills embedded in all training packages by December 2010. While environmental modules exist within some existing qualifications, there is a need to address gaps in the curriculum, increase the depth of training provided, and ensure that there are sufficient trainers to meet demand. While many courses are currently being reviewed and modified to include 'green' components and higher levels of sustainability skills in the mainstream content, this progress has been slow and uneven; and the present skills shortages are the consequence of decades of neglect of vocational training. This makes it more difficult and expensive to restructure training curriculum; but a necessary activity.

Successful examples include the work of Swinburne University of Technology in developing a strategic approach to implementing sustainability into vocational education and training and building. This is focused on building the capacity of the workforce that results in behavioural change towards more sustainable business systems, practices and thinking. Similarly, the 'Green Plumber' course in NSW provides plumbers with up-to-date information on best practice including practical installation technologies and water and energy saving appliances. In the VET sector, the *National Green Skills Agreement* is an important first step in developing the capacity of the VET sector to deliver the skills required nationally in a low carbon economy. **A more comprehensive effort across the higher education and VET sectors is needed to prepare the new generation of workers for the low carbon economy.**

Australian universities, TAFEs and VET sectors should also be encouraged to create 'green-collar partnerships' with business and unions to advance the workplace and industry skills, knowledge and innovations required for the transitions to a low-carbon economy.

However, green jobs will largely be undertaken by workers with traditional/brown jobs and training. For example, system and process level innovations (such as green plan equipment including carbon capture storage, pipelines, hybrid vehicle manufacturing, public transport services, irrigation infrastructure, etc.) will have a major part to play in the adjustment to a low-carbon economy. **This will require comprehensive workplace skills and training programs – that empower workers with the knowledge, skills and confidence to work in a low-carbon economy – to ensure no worker is left behind. For this to be achieved there must also be appropriate support, incentives and recognition for workers willing to upgrade their skills.**

In many sectors, low key changes in daily work practices and methods will be required. This also applies to the management level, where managers will need to adopt new perspectives and skills as well as managerial capacities in order to make best use of the green skills their employees have obtained. This will still require environmental awareness and green literacy which requires a commitment by business and employees to undertaken training and upskilling.

Unions support the Productivity Places Program as an initiative to upskill new and existing workers. Particular attention in the program should be given to the skills required in a low-carbon economy and the allocation of funds for training, skills and workplace programs needs to be boosted in order to meet the skills challenge. **By the end of 2010, at least 40,000 training opportunities in the Productivity Places Program should be allocated to the development of green skills in priority areas, including: building and construction, energy, agriculture, transport, and green finance, auditing and accounting**

5c. Local Industry Capabilities Assessment

Local industry and manufacturing has undergone sustained restructuring to maintain competitiveness, productivity and innovation. Building on this success is an ongoing challenge. In the steel industry, for example, longer term challenges include maximising value added opportunities, continuous innovation and management expertise in the transition to a low carbon economy. The establishment of a tripartite Steel Industry Innovation Council is a part of a new strategy designed to ensure the industry has the best possible access to public and private sector projects. It is a cooperative model which enables industry to share best practice and knowledge aimed to addressing ongoing challenges. **The model should be adopted across industries to enable the development of practical ideas for building an innovation culture that embraces everyone from producers to fabricators to end-users.**

More generally, government needs to regard energy as a driver for industry policy on a sustainable basis and as part of a clear strategy; rather than resulting in stop-start/boom-bust activity or industries cutting across one another.

New ministerial and departmental arrangements complemented by current reviews give Australia a good opportunity to take stock of a number of lessons learned in developing next steps in the clean energy strategy:

- Clean energy policies must be part of a sustainable industry policy framework
- Consultation with business and unions will overcome recent misalignment between policy objectives and outcomes
- With the GFC now receding and with new ministers and departmental arrangements, assisted by reviews being undertaken currently, there is scope to better align and consolidate industry policy with clean energy policies advantageous to Australian industry and workers.

5d. Procurement Policy

Procurement policy is ‘an important tool available to governments to push the economy in a greener direction while supporting local industry and jobs.’⁶⁹ Through the adoption of ‘green’ purchasing rules, governments ‘can exert a powerful influence on how products are designed, how efficiently they function, how long they last, and whether they are handled responsibly at the end of their useful life.’⁷⁰ In doing so, governments can support the establishment of green markets and drive technological innovation.

Recommendation

In recognition of this, unions strongly urge the Federal government – in conjunction with commitments to support greater local content in procurement (in areas such as infrastructure, government purchasing and defence)⁷¹ – demonstrate environmental leadership. This can be achieved by incorporating ‘green’ procurement commitments that require goods and services that demonstrate greater energy efficiency as well as improved recyclability (and/or high recycled content, reduced packaging), cleaner technologies and fuels, reduced levels of water consumption and emissions.

⁶⁹ United Nations Environment Program, *Green Jobs: Towards decent work in a sustainable, low-carbon world*.

⁷⁰ Ibid

⁷¹ Department of Finance and Deregulation, ‘Procurement’, <http://www.finance.gov.au/procurement> (accessed 3 March 2010), 28 April 2010.

The two objectives of maximising locally based production (and the resulting employment opportunities) and green goods and services are not inconsistent. Research indicates that the overwhelming majority of the estimated \$6 trillion global industry in low carbon and environmental goods and services will be taken up by traditional manufacturers. This holds true for Australian manufacturers who are keen to capitalise on the shift to a low-carbon and energy efficient economy. Due to the lack of a strong price signal, however, there is insufficient market demand to make green production economically viable. Government purchasing power can stimulate demand for green products and services and support the creation of economies of scale. It also has the capacity to support emerging environmental technologies thereby stimulating innovation and development for market. Once an economy of scale is achieved (and a strong price signal is established through an ETS), the cost of green goods and services will be reduced making them a more viable option more broadly; strengthening greener markets and industries.

Supporting local content opportunities is also integral to ensuring local supply chains can support proposed renewable energy infrastructure like wind farms, solar installations, geothermal facilities and carbon capture and storage facilities. In this regard, it is important to learn from past experiences, especially in solar energy technologies, which saw the production of solar energy technologies move offshore due to the lack of a reliable domestic market.

Government policy that requires successful tenders to use locally manufactured 'green' goods is good environment policy and good economic policy. As research shows, for every \$1 billion spent on goods manufactured in Australia, 17 000 full time equivalent jobs (4 000 direct and 13 000 indirect) are created and/or sustained. Furthermore, \$600.8 million extra in government revenue is raised and nearly \$1.8 billion value added.

Therefore, unions recommend governments at a local, state/territory and federal level should:

- Actively seek local content opportunities
- Focus on longer term objectives (i.e. 2020 to 2030) supporting clean energy and energy efficiency from now on (post-GFC) and consistency with industry policy

settings (the RET will continue to do a lot of the heavy lifting in the absence of the CPRS and carbon price)

- Not shy from setting conditions on new tenders, policies and roll outs favouring local expertise and content in order to better meet local requirements (Victoria's support for setting local content targets in infrastructure projects of *strategic significance* is a good example). Projects such as CCS installations and pipelines, gas fired combined cycle turbine generation, industrial scale wind farms, LNG gas networks, solar farms, geothermal facilities and national building refurbishment could all fall within the definition of essential strategic infrastructure projects of significance to a lower carbon future
- Build on positive trends such as providing scope to ensure maximum local content for local manufacturers in regards to the proposed changes to the Building Code of Australia

The Industry Capability Network⁷² is an effective tool available to governments and the private sector to find competitive and capable suppliers rather than importers. The government should recommit to utilising the network effectively in order to support local industry.

Commitment to green procurement is not only within the purview of governments. The private sector can also adopt green procurement policies. This is consistent with rising voluntary commitments to corporate social responsibility. In the building sector, on the other hand, the inclusion of environmental standards and energy efficiency requirements in the Build Code will require green procurement. Whether commitments are mandated or voluntary, the private sector should be encouraged to ensure maximum local content as well.

5e. Public Education

Critical to changing attitudes about climate change and adopting practices that are more energy efficient is education. This is clearly demonstrated by recent ACTU polling which showed that Australians are more likely to think that strong action on climate change will hurt the economy, make business less competitive and cost jobs. Respondents thought business would be less competitive due to higher costs (of production, for example) that would then be

⁷² Since 1984, the ICN has helped win \$9 billion for Australian industry.

passed on to consumers. Respondents thought jobs would be lost as a result of businesses seeking to cut costs due to higher costs and/or taxes on business, moving offshore, or being less competitive with overseas goods.

However, as this submission (and the majority of research shows), improvements in energy efficiency will benefit individuals and businesses. The role of public information and education campaigns is twofold. First, public information needs to dispel the myths; and inform individuals and businesses of the economic and environmental benefits of early and comprehensive action. Second, as stated in the National Strategy on Energy Efficiency, there is a need for access to 'clear, consistent and credible information' so that individuals and businesses that are eager to do more but are unsure where to start, have access to information that can inform their actions.

Public information campaigns are an effective tool for changing attitudes and practices. In Victoria, for example, the Black Balloons Campaign is a successful example. The campaign raised community awareness; with the State Government reporting that over 70 percent of Victorians are 'now more mindful of energy use than a year ago.'⁷³ The concept has now been adopted by Al Gore to drive community awareness in the US. **It is recommended the state governments work in collaboration and share successful messaging for a more sizeable impact. This should also extend to best practice in public education initiatives.**

In particular, working with businesses to improve energy usage is essential. In 2008, Energetics surveyed 2000 businesses and found that 85 percent 'have no or very limited energy management systems in place.' **With businesses continuing to consume large amounts of energy, the focus needs to be on business.** One program approach includes focusing on benchmarking the energy efficiency performance of businesses; including consumption, costs, energy intensity, emissions, and energy management practices. Complemented with advisory services, this approach helps to overcome the information barrier and supports businesses to adopt more energy efficient technology and practices.⁷⁴

⁷³ ResourceSmart, 'Building a sustainable future', http://www.resourcesmart.vic.gov.au/for_businesses_3469.html (accessed 3 May 2010), September 2008.

⁷⁴ See World Bank and ILO pilot program in Cambodia. ILO & IFC (in collaboration with GMAC), *Energy Performance in the Cambodia Garment Sector: A Benchmarking Survey*, November 2009.

While the state and federal governments already support and administer some initiatives, government and not-for-profits need to work collaboratively in order to proactively target businesses; and provide the education and support required so that businesses can make informed energy efficiency choices.

One of largest and wasteful use of energy – in households and businesses – is appliances with standby energy consumption. The work of state governments in producing national Minimum Energy Performance Standards for households appliances is encouraged. **The program, however, should be extended to appliances used by businesses as well.** Once completed, the MEPS program will provide consumers with the required information to make informed purchases and will help remove inefficient appliances from the market.

Initiatives and programs targeting poor energy use practices are also an important aspect of public education. Experience shows that participation rates can be negatively affected if participants lack information or are unfamiliar with the tools, services and opportunities available. Therefore, there is a need for more time and resources to explain, educate and hold face-to-face conversations with people and businesses; to enable them to feel comfortable with accessing programs and initiatives. Programs aimed at community education and behaviour change around energy efficiency must take into account the particular concerns, knowledge and experiences of people on low incomes. Furthermore, they must be carefully implemented to ensure that low income households are able to make use of them. To achieve a fair outcome for people on low incomes, we must ensure their participation in these schemes, and improve design and delivery methods.

6. SUMMARY OF RECOMMENDATIONS

Cogeneration

The Australian Government support cogeneration as a third flagship program. This will require the Australian government to be proactive in supporting investment, R&D and rectification of regulatory barriers.

Recycling

Governments at a state, territory and federal level should support best practice recycling across Australian industries, including steel, aluminium, plastics, glass and paper.

Energy Efficiency in Transport Manufacturing

The Prime Minister's Energy Efficiency Task Group should consider the best options (including a timetable) for introducing better fuel efficiency standards in Australia and the supporting measures required to increase both the supply and demand of more fuel efficient vehicles, including educating consumers.

Investment

The ACTU recommends new R&D legislation accomplishes two objectives. First, R&D policy should provide a clear signal of the goal of encouraging international competitiveness with energy efficiency regarded as a key component. In addition, to the general R&D criteria, government needs to articulate how it sees the shift to a low carbon economy by driving new R&D and there needs to be a clear and coherent national strategy that comprehensively outlines how the government will support R&D driven by climate change mitigation.

Second, the existing definitions of eligible R&D activities should be retained as should the existing relationship between core and supporting R&D.

Necessary Regulation

Energy efficiency regulation must be proportionate, simple and sufficiently flexible to not distort incentives and/or produce unintended outcomes.

Equity

Any energy efficiency strategy must bear in mind the importance of ensuring equity and the role of energy efficiency in building long-term national resilience to price increases.

Green Buildings

New building standards should include forward-looking energy efficiency standards. This would require new buildings to meet at least 5-star NABERS (and/or the Green Star equivalent) requirements.

Building code requirements should also require post-occupancy evaluation of the energy efficiency of commercial buildings.

Mandatory disclosure is an important step in reducing information asymmetries. To strengthen the legislation, the four key recommendations proposed by the Energy Efficiency Council should be adopted.

Consideration needs to be given to the role of industry policy in supporting local production of green materials so that demand is met locally.

The introduction of more progressive building requirements needs to be paralleled by an education campaign targeting investors, developers, building owners and managers, and tenants.

Financial assistance mechanisms should be introduced to encourage the uptake of energy efficiency technology (beyond minimum standards) by offsetting the required upfront, direct capital expenditure.

The ACTU recommends the introduction of policy providing for accelerated depreciation or an equivalent measure for green retrofitting of existing building stock as an effective response to the timing gap issue.

A strategic approach to greening existing commercial buildings must also involve energy efficiency building use. Property service workers need to be given the proper time, equipment and training to ensure these sustainability measures work.

A simple and transparent accreditation process that demonstrates the energy use and environmental sustainability of a hotel's operations should be adopted. Consistent with this, hotels should be supported in adopting energy efficiency measures.

It is imperative that the health sector respond more vigorously to improve the energy efficiency and greenhouse gas emissions of hospitals. A national approach that includes the adoption of WHO's Seven Elements of a Climate Friendly Hospital and a mandatory NABERS and/or Green Star rating should be adopted.

Governments at a local, state/territory and federal level need to provide leadership by achieving best practice green building standards.

Job Creation and Green Skills Training

Transitional assistance measures must be adopted to ensure the shift to a low carbon economy supports job creation.

Skills Australia in collaboration with Industry Skills Councils should lead a national process of identifying the green jobs, skills and knowledge needed for a low carbon economy.

A more comprehensive effort across the higher education and VET sectors is needed to prepare the new generation of workers for the low carbon economy. This should include 'green collar partnerships' with business and unions.

Comprehensive workplace skills and training programs must be implemented to empower workers with the knowledge, skills and confidence to work in a low carbon economy; and to ensure no worker is left behind.

By the end of 2010, at least 40,000 training opportunities in the Productivity Places Program should be allocated to the development of green skills in priority areas.

Local Industry Capabilities Assessment

Government needs to regard energy as a driver for industry policy on a sustainable basis and as part of a clear strategy.

Industry councils should be adopted across all industries to enable the development of practical ideas for building an innovation culture that embraces everyone from producers to fabricators to end-users.

Procurement Policy

The ACTU recommends that the Commonwealth Government – in conjunction with commitments to support greater local content in procurement – demonstrate environmental leadership by adopting ‘green’ procurement commitments.

Public Education

State and Federal governments, as well as the not-for-profit sector, should work in collaboration to share successful messaging and initiatives for a more sizeable public education impact. Businesses in particular need to be a focus.

APPENDIX ONE

Businesses will save \$700m by cutting emissions: report

ADAM MORTON

Sydney Morning Herald, 8 March 2010

CLAIMS that even small greenhouse gas targets will hurt big industry have been undermined by a government report that found basic efficiency improvements could cut national emissions and save businesses more than \$700 million.

An assessment of 199 large energy users found improving efficiency could stop at least 6.4 million tonnes of carbon dioxide from being emitted - a 1.1 per cent cut in the national carbon footprint each year.

The energy savings could run 1.4 million homes for a year and give the companies an extra \$736 million.

An industry group, the Energy Efficiency Council, said if the biggest companies improved efficiency by 15 per cent, national emissions would fall by nearly 5 per cent, saving billions in energy costs.

"Economic purists have been telling us that if there were \$100 notes lying around, industry would have already picked them up," the council chief executive, Rob Murray-Leach, said. "This report shows that companies have blind spots - sometimes you have to help them find the \$100 notes."

Though often overlooked in the policy debate, energy efficiency is widely understood to be the easiest and cheapest way to make quick emissions cuts.

The Paris-based International Energy Agency estimates that efficiency upgrades will be responsible for 65 per cent of global emissions cuts by 2020.

Mr Murray-Leach, a former adviser to the climate economist Ross Garnaut, said energy efficiency should be viewed in the same way as other business investments - you need to spend to generate a return.

"Some people say that tackling climate change is too expensive, we should wait to see what the world does first," he said.

"This report shows that there is a huge amount we could do right now to cut our emissions and grow our economy."

The government's *First Opportunities* report is the result of a program set up by the Howard government in 2006 that requires companies that use more than 0.5 petajoules of energy a year to find, but not necessarily implement, potential savings.

It said businesses had shown they were willing to implement the savings because of the commercial benefits.

It is an initial insight only: the report looks at 57 per cent of operations where energy savings may be possible.

The biggest savings were found to be possible in industries using large amounts of energy - metals, manufacturing and mining.

The Energy Minister, Martin Ferguson, said the report showed Australia's largest energy users had already made changes that would save them more than \$500 million a year.

It had found that existing commitments by businesses would cut annual carbon dioxide emissions by nearly 4 million tonnes.

"Given that companies are still assessing their energy use, further savings will be identified," the report says.



ACTU Submission
to the Prime Minister's Task Group on Energy Efficiency

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