PRIME MINISTER'S TASK GROUP ON ENERGY EFFICIENCY

ISSUES PAPER

Contents

Prime Minister's Task Group on Energy Efficiency

The Government has established a Task Group on Energy Efficiency to report to the Prime Minister by mid-2010 on options to deliver a step change improvement in Australia's energy efficiency by 2020.

The Terms of Reference for the Task Group are included at Attachment A.

The Task Group will draw on ideas and opinions from people and organisations with an interest in energy efficiency, as well as local and international research and sources. This paper sets out some key issues on which we would value comments and views. It is not intended to be exhaustive — please raise any matter you see as relevant to the Task Group. The paper is intended to catalyse public discussion and does not imply any particular view by the Task Group or its individual members. Respondents should also not feel obliged to comment on all the matters raised in this paper.

Process for making a submission

There is no specified format for submissions. Your submission can range from a brief commentary on a particular aspect of current arrangements to more substantial assessment of a range of issues. You may choose to answer any or all of the boxed questions set out at the end of each section. Where possible, please provide data and evidence to support your submission.

The Task Group would prefer to receive submissions by email. For accessibility reasons, please submit in a Word or RTF format. An **additional** PDF version may also be submitted. You may lodge your submission in hard copy by post if you prefer.

Closing date for submissions: Monday 3 May 2010

Email: energyefficiency@climatechange.gov.au

Address written submissions to:

Secretariat to the Task Group on Energy Efficiency
c/- Department of Climate Change and Energy Efficiency
GPO Box 854
Canberra ACT 2600 Australia

For enquiries please contact the Secretariat on energyefficiency@climatechange.gov.au or on ph (02) 6159 7383.

All information **(including name and address details)** contained in submissions will be made available to the public on the Department of Climate Change and Energy Efficiency website unless you indicate that you would like all or part of your submission to remain in confidence. Automatically generated confidentiality statements in emails do not suffice for this purpose. If you would like part of your submission to remain in confidence, please provide this information **marked** as such in a separate document. Legal requirements, such as those imposed by the *Freedom of Information Act 1982*, may affect the confidentiality of your submission.

Why is energy efficiency important?

Energy efficiency is important for a wide range of reasons. As well as lowering the cost of tackling climate change, energy efficiency has a range of potential co-benefits. Energy efficiency allows Australia to continue strong economic growth in the face of increasing energy costs; increases our energy security; and reduces the chance of peak energy demand causing problems for energy users. Energy efficiency improvements can reduce local air pollution; lower energy bills for households and businesses; and improve output for Australian businesses and amenity for Australian households. Energy efficiency measures and cost-effective distributed generation (such as solar roof panels, wind turbines, co-generation and tri-generation) can help delay the need for new electricity infrastructure investment.

Energy is a key input to nearly all of the things we do in our everyday life – it powers industry and business, as well as our households and most modes of transport. Australia's continued growth and prosperity will be dependent, in part, on how efficiently and wisely we use our energy resources.

Just as energy drives our economy, so too will climate change have impacts across all sectors of the economy. The combination of growing demand for energy and Australia's response to climate change will transform the way Australians think about and use energy.

Much of Australia's energy comes from fossil fuels such as coal and oil, which produce the greenhouse gas emissions that contribute to climate change (and to local air pollution). Australia's substantial fossil fuel resources of coal and gas (including coal seam gas), along with Australia's growing renewable energy market, are capable of meeting both domestic demand and increased export demand over the coming decade. However, petroleum supplies are limited and Australia is increasingly reliant on imports for transport fuels. Australia's energy use is growing, and total demand for energy is projected to continue to increase with growth in Australia's economy and population, growing by more than 25 per cent over the next decade. This growth will require substantial investment to maintain and update Australia's electricity infrastructure (with more than $42 billion of investment either approved or proposed over the next five years). This investment is already having an impact on electricity prices and will continue to do so. Increasing world demand will also push up the prices of petrol, coal and gas - in a world thirsty for resources, our world competitiveness may be influenced by how energy efficient we are.

The Government is committed to a comprehensive response to climate change: reducing emissions, adapting to unavoidable climate change, and being part of the international response. The Prime Minister has identified energy efficiency as a key plank in the Government's suite of policies to reduce emissions and place Australia on the path to a low carbon economy. Removing barriers that stop us taking up energy efficient technology or behaving in a way that reduces energy use can deliver more cost effective opportunities to reduce emissions, thereby reducing the cost of meeting our 2020 emissions reduction target. Cost effective energy efficiency improvements can also lift the productivity of Australian businesses which in turn can contribute to Australia's competitiveness and national wellbeing. This will also help position the Australian economy and workers to take up opportunities in a changing global economy that will increasingly require lower carbon goods and services.

Improvements in energy efficiency today will mean energy bills don't need to go up by as much as energy prices, and will help position businesses and households to meet these challenges in the future.

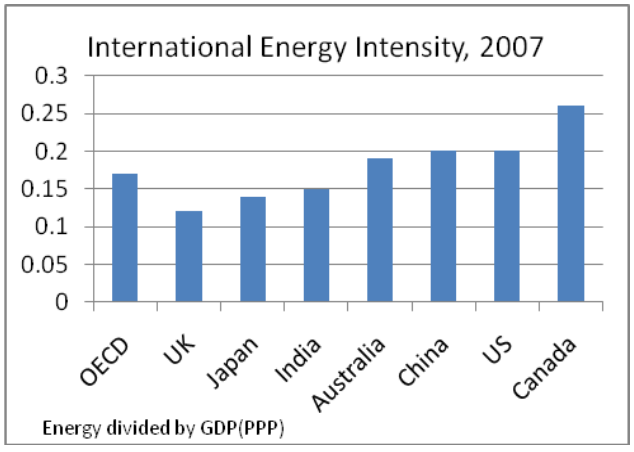
The term energy efficiency is commonly used, yet it is difficult to precisely define. It is a generic term which can mean different things to different people – thermodynamic efficiency to an engineer, technical efficiency or economic efficiency to an economist, and energy conservation to an environmentalist. Improvement in energy efficiency can be achieved either by using less energy to achieve the same level of outcomes or improving the level of outcomes from the same amount of energy.

This Task Group is identifying options for delivering a step change improvement in Australia's energy efficiency by 2020 and placing Australia at the forefront of OECD energy efficiency improvement.

Questions for Consideration

- *What do you see as the key goal(s) of energy efficiency? What is the simplest way of measuring progress against these key goal(s)?*
- *How could these key goal(s) be better communicated to all sectors of Australian society?*

Australia's Energy Efficiency and Intensity



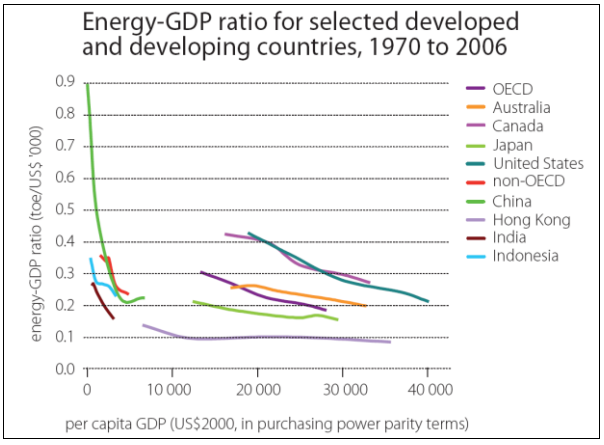
Source: *IEA Key World Energy Statistics, 2009*

Australia's total energy intensity (energy consumption per unit of outcome) is high by OECD standards. The International Energy Agency (IEA) notes that this is largely due to Australia's relatively inexpensive energy prices, long transport distances and energy intensive industrial structure.

Australia's Energy Efficiency and Intensity

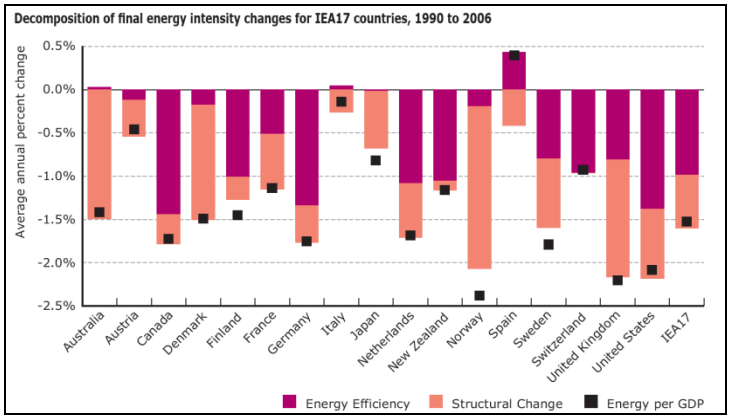
Australia's energy intensity has been decreasing over the last few decades at broadly the same rate as other developed countries (*IEA Scoreboard 2009: 35 Key Energy Trends over 35 Years*).

Importantly, declines in energy intensity around the world have occurred at the same time as strong growth in GDP per capita, indicating that improvements in energy efficiency do not need to come at the expense of economic growth.



Source: ABARE *End use energy intensity in the Australian economy*, 2009

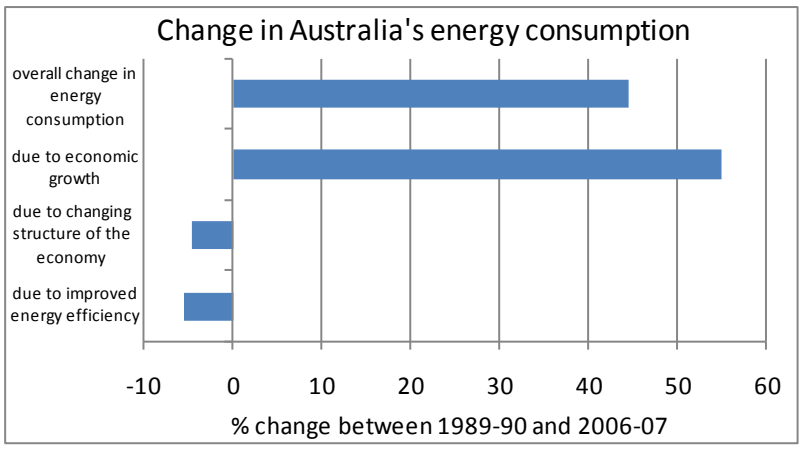
Declines in Australia's energy intensity in recent decades represent a combination of changed energy efficiency and an economy-wide structural movement away from energy-intensive manufacturing and towards lower energy use service provision.



Source: *Implementing Energy Efficiency Policies, 2009*

IEA calculations indicate that most of the energy intensity improvement in Australia came from structural change - that is moving from more energy intensive activity to less energy intensive activity. This is in contrast to most IEA countries where energy intensity improvement came from both energy efficiency improvement and structural change.

Recent calculations by ABARE suggest that energy efficiency decreased Australia's energy consumption by six per cent between 1989-90 and 2006-07, while structural change contributed another five per cent reduction.



Source: ABARE *End use energy intensity in the Australian economy, 2009*

Scope of the Task Group

Achieving a step change in energy efficiency

This Task Group is looking for ways to achieve a step-change improvement in Australia's energy efficiency by 2020, and to place Australia at the forefront of OECD energy efficiency improvement. The Task Group will identify energy efficiency opportunities that could make a significant contribution to the emissions reduction challenge beyond current measures, and recommend ways to implement these opportunities.

Internationally, most countries' energy intensity (that is, the amount of energy required per unit of economic output) has declined over recent decades. This has coincided with strong economic growth in most countries around the world. Australia's energy intensity is high by OECD standards but has also reduced over the last few decades driven primarily by an economy-wide movement away from manufacturing and towards service provision together with some sector-specific energy efficiency improvements. However, Australia's performance varies by sector and reflects a range of factors, including government policies, the structure of the economy, and the price of energy. (Further detail on Australia's current, historical and projected energy use and emissions levels is included at Attachment C.)

The Government has committed to reduce Australia's carbon pollution to 25 per cent below 2000 levels by 2020 if the world agrees to a global deal to stabilise levels of greenhouse gases in the atmosphere at 450 parts per million (ppm) CO2 equivalent or lower. If the world is unable to reach agreement on a 450ppm target, Australia will still reduce its emissions by between 5 and 15 per cent below 2000 levels by 2020. Meeting our 2020 emissions reductions targets will be challenging. Australia's 'abatement challenge' is 144 Mt CO_2-e below 'business as usual' in 2020 under the -5 per cent target (a 22 per cent reduction), while under the -25 per cent target option the abatement challenge is 255 Mt CO_2-e below business as usual (a 38 per cent reduction).

A significant proportion of this reduction is expected to come from energy efficiency improvements. The International Energy Agency estimates that over half of the global energy related emissions reduction required to meet a 450ppm target would be expected to come from energy efficiency.

Expected energy price increases over the next decade will help to drive energy efficiency improvements across the economy. Where there are market failures or barriers to take-up of energy efficiency improvements, then removing these barriers will reduce the impact of price rises and result in more cost effective emissions abatement.

Australian governments have already been active in seeking to reduce the level of greenhouse gas emissions produced in Australia, and to promote an increased level of energy efficiency in Australia - and there are a number of existing policies and programs in place at all levels of government. The Australian Government has already announced over $5 billion in support for energy efficiency measures. Current measures are expected to deliver more than 38 million tonnes of abatement in 2020. Existing energy efficiency programs include regulatory reform, provision of better information on energy efficiency, capacity building, research and development, price signals, and financial incentives.

In considering opportunities to achieve a step change in energy efficiency, the Task Group will also consider the co-benefits of energy efficiency improvements, including reductions in non-greenhouse gas air pollution, health benefits, improved energy security, reduced energy costs for households, and infrastructure savings.

The Task Group will consider and advise upon implementation arrangements for individual measures, including different options for encouraging and driving new energy efficiency improvements. The Task Group will identify and address potential risks associated with the development and implementation of individual measures.

A large body of work has already been undertaken around energy efficiency (Attachment D lists some relevant references). The Task Group will draw upon this work, the submissions received in response to this Issues Paper, and the consultation process.

Questions for Consideration

- *What do you consider a step change in energy efficiency to be?*
- *Where do you see the greatest potential for a step change improvement in energy efficiency in Australia over the next decade? What can be done to unlock this step change potential?*
- *What needs to be done to ensure step change keeps us at the forefront of OECD energy efficiency improvements?*
- *What non-greenhouse co-benefits could be delivered through a step change in energy efficiency in Australia?*
- *Which existing measures could be part of delivering step change? What role would they play? Consider Commonwealth, State and Territory, and local measures. Please comment on the relative efficiency of implementation options where applicable.*

Interaction with the National Strategy for Energy Efficiency

In July 2009 the Council of Australian Governments (COAG) agreed to a *National Strategy on Energy Efficiency* as part of the *National Partnership Agreement on Energy Efficiency*[1]. Through the National Strategy, the Commonwealth, States and Territories committed to a nationally consistent and coordinated approach to energy efficiency. This includes the implementation of a range of measures to assist in delivering cost-effective energy efficiency gains across the economy.

The National Strategy encompasses a range of sectors where significant energy efficiency measures exist: commercial buildings, residential buildings, electricity markets, appliances and equipment, industry and business, government, transport, skills and training, innovation, and advice and education. All of these sectors are in scope for the work of this Task Group.

This Task Group will direct its efforts to building on the *National Strategy for Energy Efficiency*, and will not duplicate it.

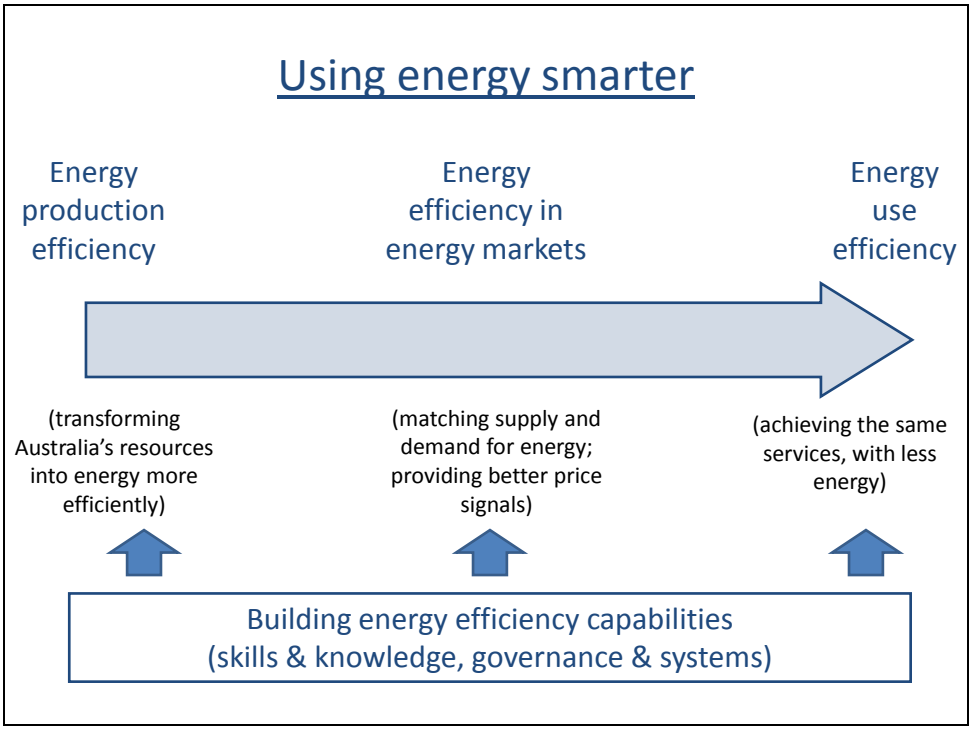
[1] The full *National Strategy on Energy Efficiency* can be found at: http://www.federalfinancialrelations.gov.au/content/national_partnership_agreements/environment/energy_efficiency/energy_efficiency.pdf

Maximising the opportunities for energy efficiency improvement

The Task Group will recommend cost effective measures and mechanisms that have the potential to deliver a step change in energy efficiency. The Task Group's scope encompasses all sectors of the economy including (but not limited to) manufacturing and mining, energy, transport, government, residential, commercial, agriculture, services and construction. Measures and mechanisms to drive a step change may vary between different sectors.

In scope are possible opportunities for measures to improve efficiency across the energy lifecycle – from energy production, including the operation of the energy market, through to all types of energy use. There may also be synergies between these different areas which can yield energy efficiency improvements.

Energy efficiency opportunities across the energy lifecycle



The energy efficiency lifecycle can apply across the different types of energy consumed in Australia, not just electricity. Fuel and the transport market are an important part of the Task Group's scope.

It is also crucial that Australia builds the underlying capabilities that will be needed to drive and accelerate energy efficiency improvements over the next decade (including skills, knowledge and governance). These capabilities will be important to achieving a step change in energy efficiency and to achieving reductions in national and international emissions.

Principles for considering energy efficiency options

Complementarity principles

The Task Group's terms of reference at Attachment A assume that there will be an explicit carbon price within the Australian economy.

The Council of Australian Governments (COAG) has agreed a set of principles, at Attachment B. which guide whether or not a measure will be complementary to an explicit carbon price. Measures should adhere to the principles of efficiency, effectiveness, equity and administrative simplicity and should be kept under review.

Measures should generally be implemented by the level of government that is best able to deliver the measure (having regard to which level of government has legal or constitutional responsibility for delivery, the regulatory and compliance costs, and the coordination of delivery across jurisdictions).

These principles will assist governments to define and implement a coherent suite of greenhouse and energy policies, rather than 'picking winners' and implementing a series of ad hoc unconnected (or duplicative) programs which inevitably result in reduced effectiveness and higher cost to the economy.

Targeting known barriers

The Task Group has been asked to target known barriers to energy efficiency improvements, including (but not limited to):

- information asymmetries: not having the right information to make an energy efficient choice
- split incentives: where one party pays the energy bills, but has little or no influence over appliances, equipment or building management
- access to capital: finding the funds to invest in the research, design and deployment of energy efficiency improvements given capital constraints, and that the benefit of such investment can be shared by competitors and the community.
- technology risks: uncertainty about performance of energy efficiency equipment
- regulatory barriers: laws and regulations that prevent people from making the most energy efficient choice, including those that arise due to Australia's federal system of government
- energy pricing: the price paid by energy consumers for the generation and delivery of energy
- behavioural barriers: decision making and cultural factors that influence choices about energy efficiency by individuals and organisations.

Cost effective energy efficiency

A clear understanding of the economy-wide costs and benefits of different energy efficiency measures is important. Achieving a step change in energy efficiency will require energy efficiency improvements that deliver substantial cost effective emissions reductions.

Energy efficiency improvements will need to be cost effective on an economy-wide basis so that they can contribute to delivering the 2020 emissions reduction target at the lowest possible cost to the economy. Assessments of cost effectiveness will also take account of both cost-effectiveness to individuals and to governments.

Boosting productivity

Measures to improve energy efficiency should support and reinforce the Government's goal of increasing the productivity and competitiveness of the Australian economy, and improving the standard of living of all Australians.

Equity considerations

The Government's vision of a socially inclusive society is one in which all Australians have the resources, opportunities and capabilities they need to learn, work, engage and have a voice. Energy efficiency measures need to be implemented in a fair and equitable way, so that no groups are excluded or unfairly burdened. In Australia, those on lower incomes generally spend a greater proportion of their household budget on energy bills. They may also find it difficult to fund energy efficiency improvements in their homes. Effective and equitable policies are needed to manage energy efficiency issues for low income households and for other groups in society who might find energy efficiency actions difficult to undertake or access.

Geographic considerations

The demand for energy across the Australian community varies from place to place. Energy use in inner urban areas is different from energy requirements in remote areas. Energy reliability is also a consideration, particularly in remote regions. Some energy intensive industries are regionally concentrated – their ongoing operations have implications for local communities. Appropriate energy efficiency strategies and policies may vary by region.

Peak demand issues

The demand for energy across the Australian community varies widely across the time of day and season of the year. Rising demand for energy in peak periods (such as increasing air conditioning use during the hottest parts of days in summer) is currently driving significant investment in grid and generation infrastructure. Energy efficiency measures may be able to reduce peak demand, with resultant cost savings, improved energy security and enhanced efficiency in the use of infrastructure.

Questions for Consideration

- *What do you believe are the key barriers to uptake of energy efficiency improvements?*
- *What would be the most efficient and effective way(s) of overcoming these barriers?*
- *What groups in society might find energy efficiency actions difficult to undertake or access? How can energy efficiency policies target these groups?*
- *How can energy efficiency measures be implemented in a way that takes into account the different energy needs of urban/regional and remote Australia?*
- *How do time-of-day and time-of-year changes in demand influence energy efficiency in Australia?*

Energy Production Efficiency

Energy production efficiency is about increasing the amount of useful energy that can be transformed from a given amount of natural energy resources, such as coal, oil, gas, the sun, geothermal, and wind.

Energy production efficiency captures a range of opportunities including:

- more efficient mining, processing and transport of Australia's energy sources
- greater efficiency of a range of different energy generation technologies (including distributed generation, co-generation and tri-generation)
- improvements in energy storage and utilisation of intermittent energy sources.

Within Australia, there is already a wide range of processes underway to improve our energy production, and drive innovation. Ideally, Australia's energy market should encourage companies to make use of more innovative and efficient technology as it becomes commercially viable, undercutting and displacing less efficient technology. Location suitability will continue to be important in extracting the maximum energy efficiency from Australia's energy sources.

This Task Group is seeking input on what further energy efficiency improvements can be achieved from improving existing drivers or from new measures.

Questions for Consideration

- *What activities (Commonwealth and State) are currently working to improve energy production efficiency in Australia?*
- *Is there any way to make these activities work better?*
- *What changes could be made within the R&D and energy production sectors to improve the development of new options?*
- *How could Government better engage on energy production efficiency?*

Energy Efficiency in Energy Markets

Energy markets have a strong influence on the efficient production, delivery and use of energy. The market price of energy and information available to energy end-users about market prices influence decisions on purchase and use of equipment.

Australian energy markets have undergone a number of reforms in recent decades. There has been a move towards nationally linked competitive electricity and gas markets with high levels of private investment, where generation, distribution and delivery of energy are handled by different players.

Domestic energy markets are also affected to some extent by traded energy resource prices in dynamic global energy markets and cost of factors of production. This can have implications for Australian retail energy and transport fuel prices.

In electricity and gas markets, the sector and governments have worked together to build more resilient and reliable markets, and to identify and remove some of the barriers to options that reduce demand for energy (including distributed generation and some forms of energy efficiency).

A significant expansion in Australia's energy infrastructure – particularly electricity generation and transmission – will be required in the next two decades if Australia is to meet its growing and changing demand for energy (with more than $42 billion of investment either approved or proposed over the next five years). Energy efficiency measures can help delay the need for new electricity infrastructure investment, and so improve Australia's energy security[1].

Energy efficiency and distributed generation may play a role in increasing the security, stability and cost-effectiveness of energy markets. Distributed or embedded generation can result in lower transmission line losses because the generator is located close to the load. Distributed generators are also capable of higher overall energy efficiency if using co-generation or tri-generation, because waste heat can be used for heating and cooling. Distributed generation can help delay the need for new electricity infrastructure investment.

The *National Strategy on Energy Efficiency* includes measures to reduce impediments to the uptake of energy efficiency within the electricity markets. Under the National Strategy, governments are currently reviewing and developing actions to harness electricity markets to better enable the uptake of economic and cost-effective distributed generation and demand side initiatives, while maintaining reliability of supply for consumers and industry.

This Task Group is seeking input on how Australia's energy markets can play a role in achieving a step change in energy efficiency.

Questions for Consideration

- *What activities (Commonwealth and State) are currently working to encourage energy efficient energy markets (including electricity and gas) and subsequent efficient end-use of energy?*
- *What practical and cost-effective things could make these activities work better?*
- *Noting current arrangements for energy market participants (generators, networks, retailers and consumers) what improvements could be made to support a step change in energy efficiency?*
- *What improvements could be made to national electricity market operations and network incentives?*
  - *Are the current governance mechanisms adequate to allow for such a step change?*
- *Are there any significant structural or other barriers to improved energy efficiency within Australian energy markets (including but not limited to current features of design, regulation or operation)?*
- *Are there barriers to the deployment of distributed generation where it is cost effective, and would greater deployment of distributed generation improve energy efficiency outcomes?*
- *How could information access and flow within Australian energy markets be improved?*

[1] Energy security requires an adequate, reliable and affordable supply of energy to support the functioning of the economy and social development.

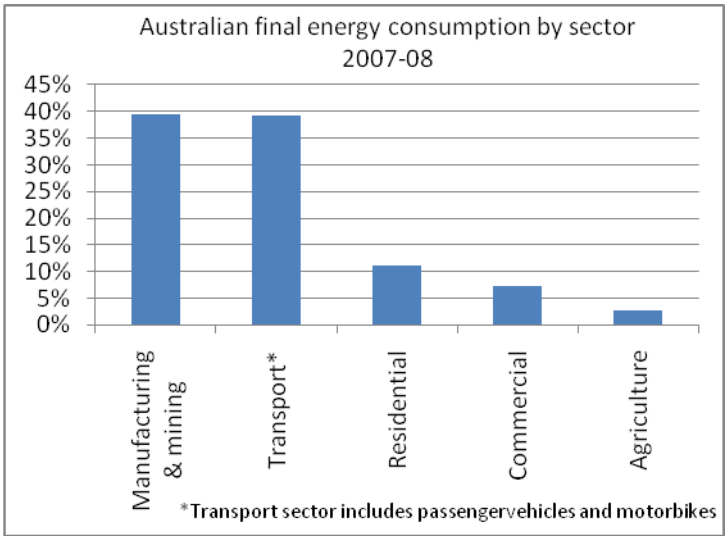
Energy Use Efficiency

Improved energy use efficiency enables people to use less energy to achieve the same outcomes. This might mean achieving the same level of production with lower energy use; getting from A to B with less fuel; or maintaining comfortable room temperature while using less energy.

Energy use efficiency encompasses not only the energy used in operating a machine, or appliance or building; it also encompasses the 'embodied energy' consumed in making that product (from the mining and processing of natural resources to manufacturing, transport and product delivery). A life cycle approach to energy efficiency also incorporates the energy required to dispose of that product. Such an approach is critical to ensure that more energy is not used in producing a top-of-the-range 'energy efficient' product than can be saved over the effective lifetime of using that product.

At an Australia-wide level, energy use efficiency allows for continuing economic growth, and continuing improvement in the wellbeing of the Australian population, while decreasing energy use and energy production[2]. As previously noted, energy efficiency measures may also have co-benefits such as reductions in local pollution, health benefits, and reduced energy costs for households.

Final energy use by sector



Source: ABARE *Australian energy projections to 2029–30,* 2010

Some sectors of the economy have significantly higher final energy consumption than others. These sectors may have more potential to contribute to an economy-wide step change in energy efficiency. However because of their higher energy dependence, some of these sectors may already have taken significant action to minimise energy use.

This Task Group is interested in potential energy use efficiency measures across all sectors of the economy, from large business to SMEs to households; including (but not limited to) manufacturing and mining, energy, transport, government, residential, commercial, agriculture, services and construction.

[2] Because there are energy losses in the transmission of energy, if end-users reduce their demand by one megawatt hour, then the production of energy will reduce by more than this.

Household energy use efficiency

Over the last decade there has been some progress in energy efficiency in households, with improvements in building codes and in minimum standards for many major appliances. However, at the same time energy use per household has increased, as greater wealth and cheaper appliances have increased the uptake of a wide range of new energy-consuming products.

Households account for some 11 per cent of Australia's final energy use (not including energy use associated with passenger motor vehicles and motorbikes). This Task Group is looking for ways in which households can contribute to a step change in energy efficiency.

Industrial and large energy users

Just 220 companies are responsible for over 40 per cent of Australia's final energy use. Several large industrial users have dedicated effort to identifying and implementing energy efficiency opportunities - some substantial cost-effective savings have been identified and implemented through the Energy Efficiency Opportunities program.

There may also be further opportunities that can be uncovered, and even small savings in this sector remain relatively very large as a proportion of total energy use. The Task Group will be reviewing available data and engaging the companies concerned to seek to discuss their progress on energy efficiency and consider whether further measures might assist.

Commercial building energy use efficiency

Commercial buildings make a large contribution to Australia's greenhouse emissions. Governments have recently announced increases to energy efficiency standards for new buildings and the introduction of mandatory disclosure for commercial buildings, as part of the *National Strategy on Energy Efficiency*. However, there is still substantial potential to reduce emissions by further improving new buildings and by retrofitting the stock of existing commercial buildings.

Government energy use efficiency

Governments are important end users of energy in the community. Improving the energy efficiency of Australian, State and local Governments' operations will contribute to reducing Australia's total energy consumption (and help to meet its greenhouse abatement goals). Government action will also, importantly, demonstrate leadership and encourage wider community acceptance of measures to increase energy efficiency.

The *National Strategy on Energy Efficiency* includes a range of measures to improve the energy efficiency of government operations, including through improved energy efficiency of government buildings and government travel. This Task Group will look for further opportunities where government leadership on energy efficiency might be demonstrated.

Transport energy use efficiency

The transport sector accounts for around 39 per cent of Australia's final energy use (including energy used by passenger motor vehicles and motorbikes). Australia is increasingly reliant on imports to supply our demand for transport fuels.

The scope for energy efficiency improvements in transport is very broad – improvements can potentially come from making existing technologies more efficient, switching to more efficient

modes of transport, and (over the longer term) improving the liveability of our cities in ways which reduce the need for travel. The range of co-benefits from improving the energy efficiency of the transport sector are also substantial and include the potential for significant cost savings from more fuel efficient cars; reduced local air pollution; and more enjoyable urban areas.

More than three quarters of transport emissions come from road transport. Within road transport, there may be substantial potential to improve energy efficiency at relatively low cost. The International Energy Agency estimates that for the world as a whole, the fuel consumption of new light duty vehicles could by halved by 2030 at low cost to consumers.

Questions for Consideration

- *What energy use efficiency measures (Commonwealth, State and local) are currently working in your sector?*
- *What practical changes could make these measures work better?*
- *What further cost-effective measures could be used to deliver a step change improvement in energy efficiency in your sector?*
- *What metrics might usefully be applied in assessing measures for improving energy efficiency in your sector? How might competing proposals be assessed?*
- *Where do you see the greatest potential for a step change improvement in transport energy efficiency in Australia over the next decade and over the longer term?*

Embedding Behavioural Change

Energy efficiency is intrinsic to a range of decisions that people and firms make every day – from remembering to turn off appliances or what kind of television to buy, to decisions about how to travel to work, or where to holiday, through to major investment decisions about infrastructure.

People are often wary of changing the way they've always done things – be it using new technologies, developing new or different habits, or changing their way of thinking. This is particularly true if available choices are broad and complex, and the information available is varied, inconsistent and difficult to access.

A greater focus on energy use over the next decade is expected to drive behavioural change across all sectors of the economy. Price signals play an important part in driving behaviour, however, electricity and gas bills account for only around three per cent of the average Australian household's expenses; and some 95 per cent of Australia's output comes from firms that spend less than three percent of their costs on energy. For these householders and firms, price alone may not drive behaviour to seek out improvements in energy efficiency.

However, prioritising energy efficiency in daily decisions will be a key part of achieving a step change in energy efficiency. Australians will need to embed thinking about, and acting on, energy across all aspects of their lives – their transport options, their lifestyle decisions, their workplace, and how they make business decisions.

The consumption choices that individuals and businesses make today will, to some extent, 'lock in' their energy consumption over the next decade. If a household or business buys a car with poor fuel-efficiency in 2010, then that car will stay on Australia's roads well into the coming decade. If a company invests in energy efficient plant or equipment today then that will decrease their energy bill over the life of the equipment.

Questions for Consideration

- *What can be done in Australia to develop a culture around energy efficiency improvement?*
- *What barriers exist to behaviour change at home, in transport, and at work? What could trigger or motivate change?*
- *What more can be done to make energy efficiency opportunities simple and accessible across all areas of people's lives?*
- *Is current information about improving energy efficiency relevant, personalised and available? How could this be improved?*

Building Capability

Skills and knowledge

The transition to a low-carbon future will demand knowledge and skills that may not be sufficiently available in Australia at present. These might be in research and development, technology deployment, energy markets, or energy efficiency implementation within businesses and households. The *National Strategy on Energy Efficiency* committed to develop a National Energy Efficiency Skills Initiative to help fill this gap.

Questions for Consideration

- *What workforce shortages and skills gaps (current and emerging) do you see in Australia in relation to energy efficiency?*
- *What measures would most effectively address these shortages and gaps?*

Governance

Governance refers to institutional arrangements for developing, driving and monitoring energy efficiency policy and programs. Commonwealth, State and Territory governments will play a key part in this, but governance also extends to other institutions that help drive energy efficiency.

Effective governance of energy efficiency is essential to achieving a step change in energy efficiency, and requires engagement, collaboration and coordination between all stakeholders.

Effective governance and ongoing advances in energy efficiency will also require a strong base of evidence and information that can be used to monitor, evaluate and improve initiatives across the economy.

The Government is pursuing a deregulation agenda to reduce regulatory burden and ensure that where it is necessary to regulate, it is consistent with best practice. Energy efficiency measures should be administratively efficient, and not add unnecessarily to the overall regulatory burden.

Questions for Consideration

- *What do you see as the critical governance challenges and opportunities for improving energy efficiency in Australia?*
- *Which institutions should play a role in governance arrangements for energy efficiency? Are there international examples of good institutional arrangements that Australia could adopt?*
- *What information should be used to provide a stronger evidence base for future policy, monitoring and evaluation? What is the most effective way to collect and distribute this information?*

Investing in improved energy efficiency

Improving energy efficiency can require upfront investment. New investments in improved energy efficiency can be inhibited by a range of factors: capital may be scarce, or subject to competing investment priorities; returns on energy efficiency may not be well understood; obtaining external

finance and the services to deliver improvements may be difficult; existing systems may be entrenched, and staff or boards may resist changes.

High up-front cost of energy efficient improvements can be addressed in a variety of ways, including through high level leadership, better dissemination of information, or the provision of other support – although these all come at a cost and need to be assessed against other priorities.

Energy efficiency measures to be delivered by the Government will reflect the Government's fiscal position and priorities in coming years.

Other initiatives such as energy performance contracting, green leasing arrangements, and packaged energy efficiency services have been demonstrated as an effective way to deliver energy efficiency, but much of their potential remains unrealised in Australia. Innovative solutions and entrepreneurial approaches to implementing energy efficiency improvements will support delivery of a step change in energy efficiency.

Questions for Consideration

- *What are the cost-effective ways in which governments can facilitate new investment in energy efficiency?*
- *What can governments do to leverage greater understanding, viability and uptake of more innovative approaches to financing and implementing energy efficiency?*
- *What are some new or different business models that improve energy efficiency? How could governments foster these?*

Attachment A: Terms of Reference

1. The Prime Minister's Task Group on Energy Efficiency ('the Task Group') will report to the Minister for Climate Change, Water and Energy Efficiency and the Minister for Resources and Energy on options for introducing mechanisms to deliver a step-change improvement in Australia's energy efficiency by 2020 and place Australia at the forefront of OECD energy efficiency improvement.

2. Energy efficiency mechanisms recommended by the Task Group will:

   2.1. be economically and environmentally effective, and socially inclusive;

   2.2. complement the Carbon Pollution Reduction Scheme (CPRS) and the Renewable Energy Target (RET), in line with the Council of Australian Governments' Complementarity Principles (Attachment B);

   2.3. build on, complement, inform and improve the National Strategy for Energy Efficiency (NSEE), and not duplicate its efforts;

   2.4. be capable of delivering measureable and costed energy efficiency savings in the context of Australia's 2020 emissions reduction target and beyond;

   2.5. support the deployment of a broad spectrum of technologies;

   2.6. be capable of delivering energy efficiency improvements across all sectors, including commercial, industrial, government and residential, covering both stationary energy use and transport; and

   2.7. target known barriers to energy efficiency improvements, including (but not limited to):

      a) information asymmetries;

      b) split incentives;

      c) access to capital;

      d) technology risks;

      e) regulatory barriers;

      f) energy pricing; and

      g) behavioural.

3. The Task Group will also consider options for using energy efficiency mechanisms to promote embedded and distributed generation.

4. The Task Group will consider and advise upon implementation arrangements for individual measures.

5. In making its recommendations, the Task Group will examine:

   5.1. international energy efficiency programs, trends in energy efficiency policy, and recommendations of foreign and international organisations, such as the International Energy Agency;

   5.2. impacts and interactions between proposed mechanisms and:

      a) the CPRS;

      b) the RET;

c) the National Electricity Market, South West Interconnected System and other relevant energy markets; and

d) Commonwealth, state and territory energy efficiency policies and measures including existing NSEE measures;

5.3. the co-benefits of certain energy efficiency improvements, including reductions in non-greenhouse gas air pollution, health benefits, improved energy security, reduced energy costs for households, and infrastructure savings; and

5.4. the views and ideas of experts, and key stakeholders including representatives of the energy industry, end users, states, territories, industry, environment and community groups.

6. The Task Group will release an Issues Paper in March 2010 and make its final recommendations to the Minister for Climate Change, Water and Energy Efficiency and the Minister for Resources and Energy by midyear 2010.

Membership of the Task Group on Energy Efficiency

The Task Group itself comprises the Secretary of the Department of Climate Change and Energy Efficiency (Chair), along with Deputy Secretaries from the Department of the Prime Minister and Cabinet, the Treasury and the Department of Resources, Energy and Tourism.

The Task Group is supported and assisted by an Advisory Board, comprising representatives from the energy market bodies, industry, the Energy Retailers Association, the Climate Institute, the World Wildlife Fund, the Energy Efficiency Council, the Australian Council of Trade Unions, and the Australian Council of Social Service.

The Task Group Secretariat is headed by Howard Bamsey, Deputy Secretary from the Department of Climate Change and Energy Efficiency and consists of staff from the Department of Climate Change and Energy Efficiency, the Department of Resources, Energy and Tourism and the Treasury.

Attachment B:
Council of Australian Governments' Complementarity Principles

COAG Complementarity Principles

Complementary measures should be assessed against the following principles:

1. The measures are targeted at a market failure that is not expected to be adequately addressed by the Carbon Pollution Reduction Scheme or that impinges on its effectiveness in driving emissions reductions.

- *For example, research and development failures, common use infrastructure issues, information failures and excess market power.*

Complementary measures should adhere to the principles of efficiency, effectiveness, equity and administrative simplicity and be kept under review. They may include:

a) measures targeted at a market failure in a sector that is not covered by the Carbon Pollution Reduction Scheme.

b) measures for where the price signals provided by the Carbon Pollution Reduction Scheme are insufficient to overcome other market failures that prevent the take-up of otherwise cost-effective abatement measures.

c) measures targeted at sectors of the economy where price signals may not be as significant a driver of decision making (e.g. land use and planning).

d) some measures in (a) or (b) may only need to be transitional depending on expected changes in coverage or movements in the carbon price.

2. Complementary measures should be tightly targeted to the market failure identified in the above criteria that are amenable to government intervention. Where the measures are regulatory they should meet best-practice regulatory principles, including that the benefits of any government intervention should outweigh the costs.

3. Complementary measures may also be targeted to manage the impacts of the Carbon Pollution Reduction Scheme on particular sectors of the economy (for example to address equity or regional development concerns). Where this is the case, in line with regulatory best-practice, the non-abatement objective should be clearly identified and it should be established that the measure is the best method of attaining the objective.

4. Where measures meet the above criteria, they should generally be implemented by the level of government that is best able to deliver the measure. In determining this, consideration should be given to which level of government has responsibility as defined by the Constitution or convention/practice, the regulatory and compliance costs that will be imposed on the community, and how the delivery of the measure is best coordinated or managed across jurisdictions.

Attachment C:
Australia's energy efficiency performance

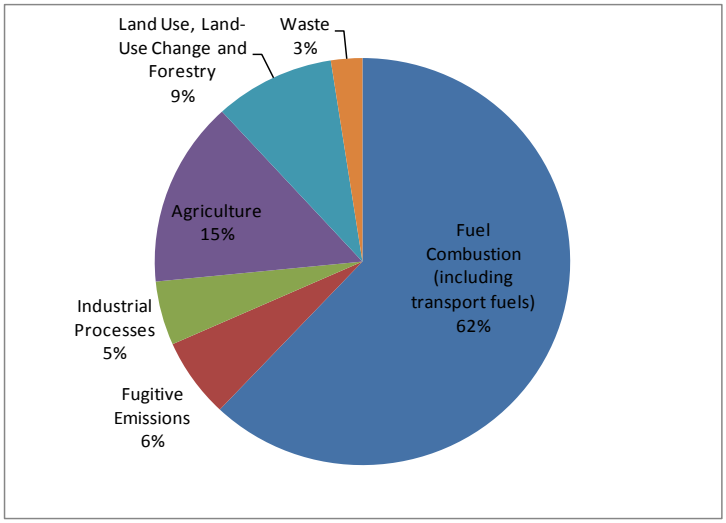
Current energy use and greenhouse emissions

In 2007, Australia's greenhouse emissions amounted to nearly 600 million tonnes of carbon dioxide equivalent.

Around two thirds of Australia's greenhouse emissions are a result of energy use (fuel combustion).

Agriculture, land use, land use change and forestry account for around another quarter of Australia's emissions.

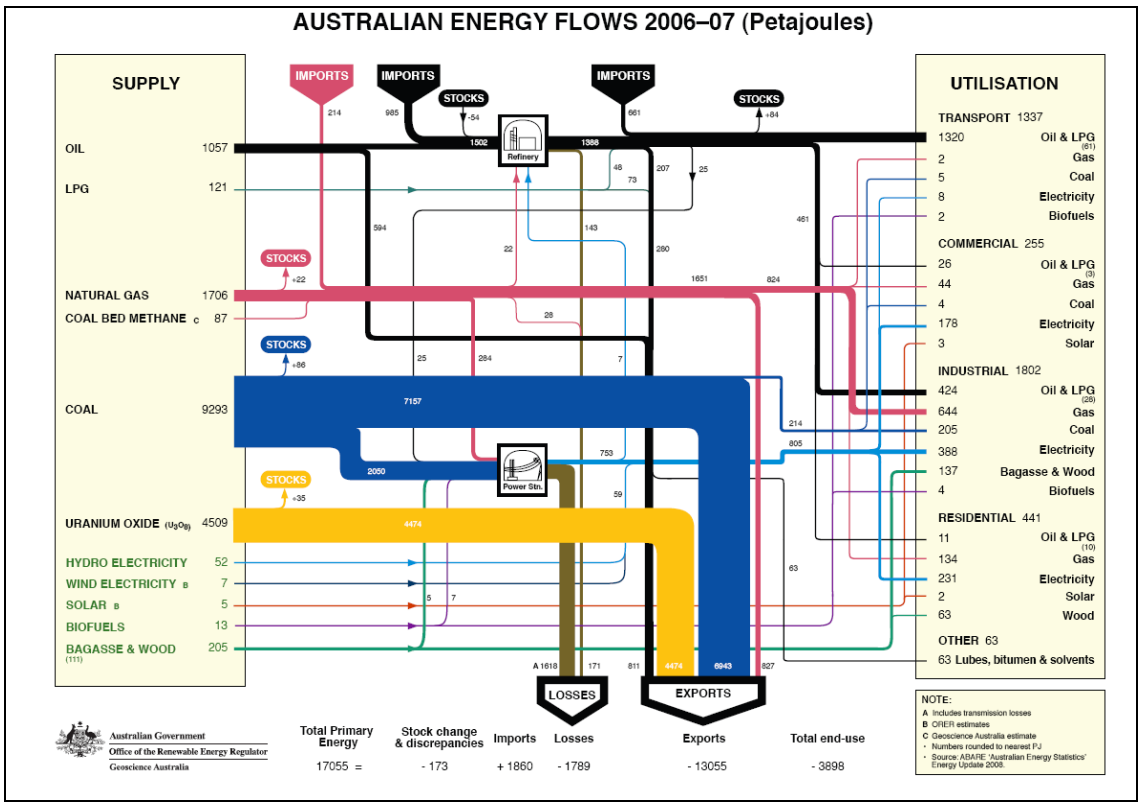
Source of Australia's greenhouse gas emissions, 2007



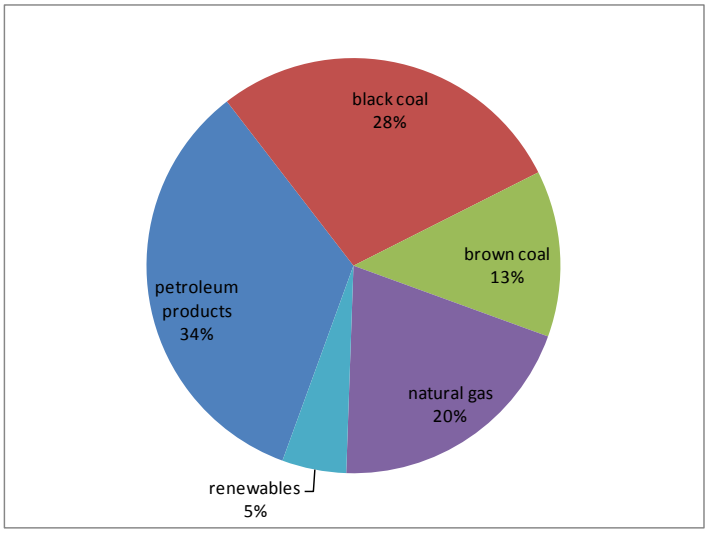
Source: *Australia's National Greenhouse Gas Inventory*, 2007

The diagram on Australian energy flows below, shows that much of the energy produced in Australia is subsequently exported. It also identifies that there are significant energy losses in the energy generation and transmission process. This Task Group is looking for energy efficiency savings in the production of energy, across the Australian energy market, and in final energy efficiency use.

Australian energy flows



Total energy consumption by fuel, 2006-07

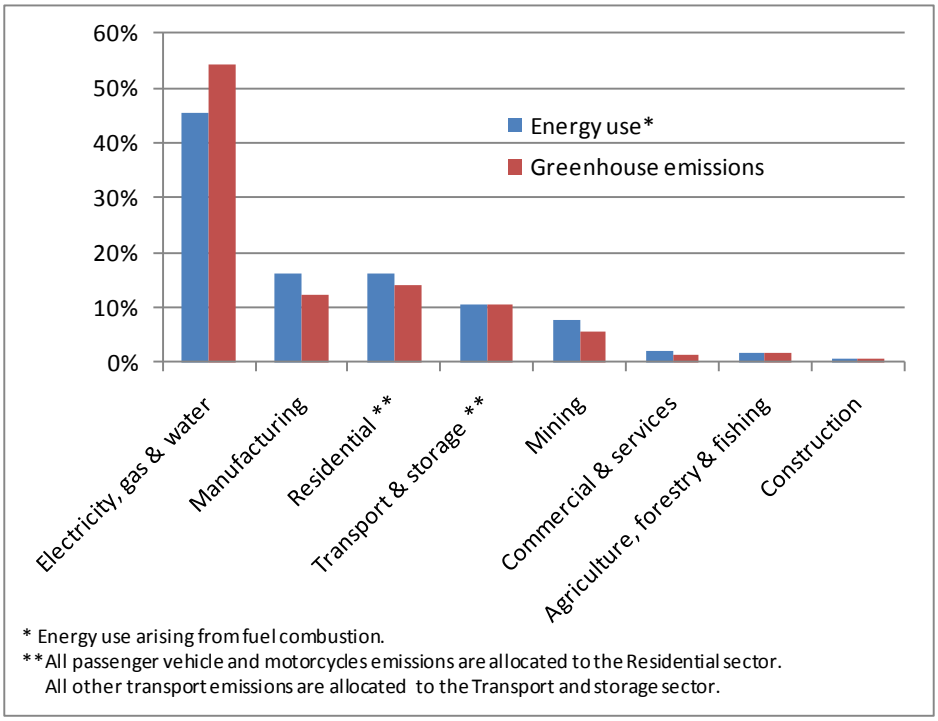


Of the energy consumed within Australia, some 40 per cent comes from burning black and brown coal. Around another third comes from petroleum products. 20 per cent comes from natural gas, and the remaining five per cent comes from renewables.

Source: ABARE, *Energy in Australia 2009*

Electricity generation accounts for by far the largest share of Australia's total energy consumption and associated greenhouse emissions. The electricity, gas and water sector accounted for 46 per cent of Australia's energy consumption in 2007, and 54 per cent of greenhouse emissions.

Total energy consumption and greenhouse emissions by sector, 2007



Source: *Australia's National Greenhouse Gas Inventory*, 2007

In contrast, manufacturing accounted for only 16 per cent of total energy consumption (12 per cent of greenhouse emissions), while all Australian households together accounted for another 16 per cent of energy consumption (14 per cent of greenhouse emissions).

The final energy use data included earlier in this Issues Paper allocates the energy associated with electricity, gas and water to the sector where those resources are finally used.

Historical trends in energy consumption and energy efficiency

Final energy consumption in the Australian economy grew 45 per cent between 1989-90 and 2006-07, driven largely by strong growth in the Australian economy. (ABARE, *End use energy intensity in the Australian economy*, 2009)

Australia's energy intensity (energy consumption divided by GDP) declined over that time - reflecting a range of factors, including government policies, the structure of the economy, and the price of energy. For the economy as a whole, energy intensity declined at an average rate of around 0.9 per cent a year over the period 1989-90 to 2006-07. These changes in total energy intensity have been driven by a combination of energy efficiency improvements and an economy-wide structural movement away from energy-intensive manufacturing and towards lower energy use service provision.

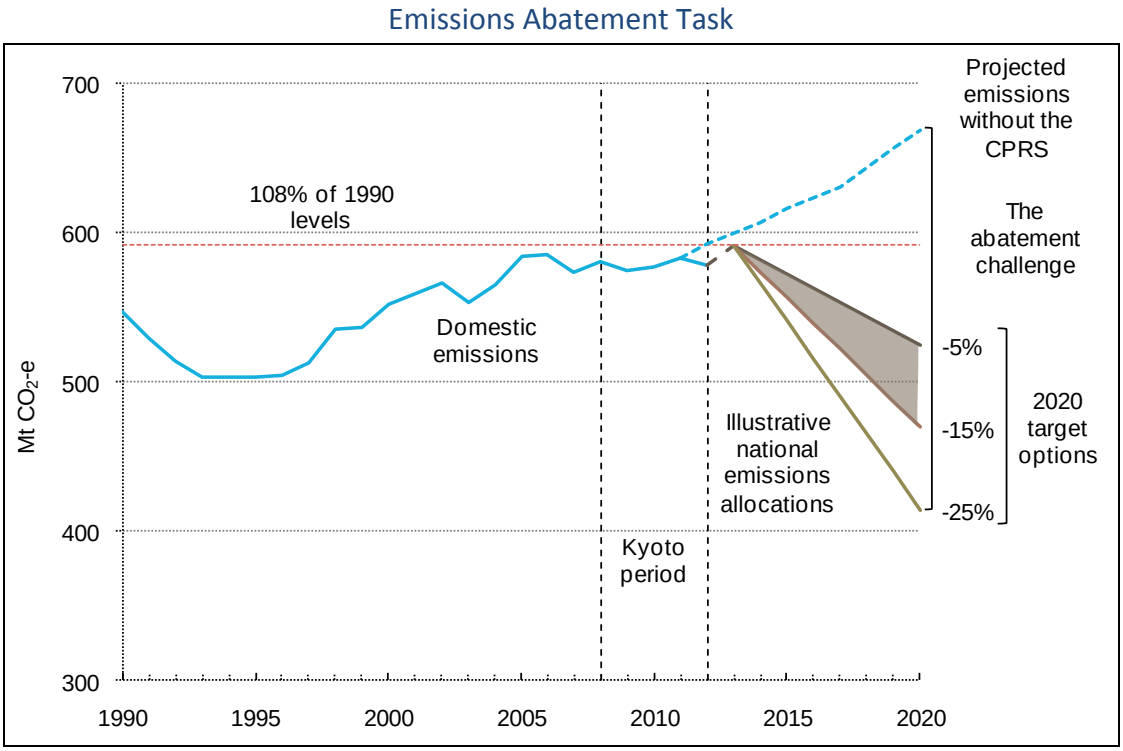
However, within Australia sector-by-sector performance on final energy intensity is varied. Energy intensity has declined over the last 17 years across the manufacturing, services, transport and residential sectors. With the strength in the resources and energy sectors, increases in energy-intensive activities in the mining sector (such as exploration of resources located in deeper deposits and increases in the production of liquefied natural gas) have contributed to an increase in energy intensity in this sector. In the agriculture sector, energy intensity rose sharply during periods of severe drought (1994-95, 2002-03 and 2006-07) when agricultural activity fell while energy consumption continued to grow.

ABARE estimates that pure energy efficiency improvements in Australia over the past 17 years (after stripping out the impact of structural change in the economy) have resulted in a reduction in energy use of 0.4 per cent a year.

Future challenges

The Government has committed to reduce Australia's carbon pollution to 25 per cent below 2000 levels by 2020 if the world agrees to a global deal to stabilise levels of greenhouse gases in the atmosphere at 450 parts per million (ppm) CO2 equivalent or lower. If the world is unable to reach agreement on a 450ppm target, Australia will still reduce its emissions by between 5 and 15 per cent below 2000 levels by 2020. Meeting our 2020 emissions reductions targets will be challenging. Australia's 'abatement challenge' is 144 Mt CO_2-e below 'business as usual' in 2020 under the -5 per cent target (a 22 per cent reduction), while under the -25 per cent target option the abatement challenge is 255 Mt CO_2-e below business as usual (a 38 per cent reduction).

A significant proportion of this reduction is expected to come from energy efficiency improvements. The International Energy Agency estimates that over half of the global energy related emissions reduction required to meet a 450ppm target would be expected to come from energy efficiency.



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Attachment D:
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