



Submission by
Environment Business Australia

to the
Productivity Commission

regarding the
Draft Report on Energy Efficiency

Fiona Wain
Chief Executive Officer
Environment Business Australia
National Press Club
8/16 National Circuit
Barton
ACT 2600

Tel: 02 620 1333
Email: eba@environmentbusiness.com.au
www.environmentbusiness.com.au



Key recommendations

The key recommendations which Environment Business Australia (EBA) offers the Productivity Commission in relation to the Energy Efficiency draft report are:

- Energy efficiency will play a key role in the bridge to a new energy trajectory - it offers a low cost entry point for the supply, demand, and transition sectors in Australia to increase their future competitiveness in a carbon-constrained global marketplace.
- A portfolio of energy approaches will be required to meet future demand and to decarbonise because of climate change, energy efficiency is a critically important part of the mix.
- Energy efficiency is an important tool in reducing negative externalities. Internalisation of externalities and full cost recovery pricing are fundamental prerequisites for long-term economic stability and competitiveness.
- The short-termism that is controlling decision making in both public and private sectors must be overcome and nowhere is this more important than in relation to climate change and energy policy.
- Regulation is a way to build a 'next competitive edge' and to increase positive GDP. Regulation is needed for investment certainty. Regulation can also provide stimuli to business who require long-term certainty regarding a pathway to decrease greenhouse gas (GHG) emissions.
- It is important to recognise that the era of abundant and cheap energy is over, and that consumers, investors and the general market are demanding safe and clean energy. This is an issue of equity and geo-politics as much as economics and environmentalism.

Introduction

Environment Business Australia (EBA) is a not-for-profit membership funded organisation and is the peak body for the environment and sustainability industry which is a rapidly growing \$17 billion sector of the Australian economy.

EBA's mission is to develop the full commercial potential of this industry in domestic and export markets.

While EBA represents its members' interests, policy recommendations put forward by EBA are at all times designed to benefit the national interest.

"Increasing the uptake of commercial energy efficiency opportunities could increase GDP by \$975 million a year and significantly reduce greenhouse gas emissions. Energy efficiency is, and will remain, a central element of a cost-effective greenhouse abatement strategy, delivering about 40 per cent of expected energy sector abatement in 2010."

Energy White Paper - Securing Australia's Energy Future, 2004

"By improving the energy efficiency of residential appliances, IEA member countries could reduce CO2 emissions by an additional 322 million tonnes (Mt) per year by 2010. This would

be equivalent to taking over 100 million cars off IEA roads and would achieve up to 30% of IEA members' Kyoto targets. These savings can be achieved at negative cost to society, since the extra costs are more than offset by savings in running costs over the life of the appliance." *International Energy Agency, 2003*

"A far-reaching energy policy is needed to position Australia for current and future investment choices and long-term competitiveness. While the current White Paper fails the environment industry it does not even provide certainty for more traditional sectors of industry. This is because it does not reflect changing global markets, environmental security imperatives, or the scientifically demonstrated need for 60% cuts in CO₂ emissions by 2050 and 80% by the end of the century. The subtle but significant shifts in geo-politics and economic dynamics mean we need new tools to play with and innovation in technology must now be matched by innovation in thinking and in institutions."

Environment Business Australia, submission to the Energy White Paper, 2004

"... there is sufficient empirical evidence that a measurable outcome of severe environmental regulation was, contra-intuitively, a positive economic effect on a corporate's future economic performance through the stimulation of innovations that enhanced, rather than detracted from, returns."

Mays Report, Department of Environment and Heritage, 2003

Executive Summary

Climate change and energy choices are likely to require some fundamental restructuring of the Australian economy over the next decade. Energy efficiency is a key basic step in achieving necessary change at low cost and at least detrimental impact to the economy. The fact that some simple steps have not been taken up by the private and public sectors to date is because of the '*short-termism*' approach which is ruling day-to-day decision making and the low cost of energy supply which provides limited short-term incentive for change. These issues are investigated more fully later in the paper.

EBA is concerned that the Energy Efficiency paper prepared by the Productivity Commission will add to this short-term approach and create confusion in the minds of policy makers and in the marketplace. The reason for this concern is that the Commission's excellent paper on National Competition Policy Reforms clearly articulated the need for externalities to be internalised in order for Australian firms to maintain and develop their competitiveness, yet the terms of reference for the Energy Efficiency paper, while not overtly excluding externalities, give direction that is focused on "cost effectiveness for individual producers and consumers".

As the purview of the Productivity Commission is the broader economy we suggest that the terms of reference should not have been interpreted so narrowly. We find it a serious flaw of this paper that the extensive impacts of externalities, the issues of public good, and the national competitiveness-building opportunities to be gained from energy efficiency were not the highlights of the study.

We seriously recommend that the final paper focus more on the rapid changes occurring in the international marketplace's demand for the decoupling of carbon intensity from production. These changes will have major impacts on Australia's energy consumption, the market for our goods and services, and our national economy.

We suggest in the strongest possible terms that while to date "externalities have not been build into pricing of energy in Australia" this is not a sound basis for continuing to spend GDP on problem creation, which consolidated revenue then has to mitigate, offset, or cope with.

The investment, employment, taxation and export gains achieved from current energy use activity can be maintained, and potentially enhanced, by changing to more efficient energy strategies. Failure to change may result in economic, environmental commodity, and eco-system services losses, as well as in lost investment opportunities. The security aspects of energy supply need to be investigated more fully especially in relation to oil where our self-sufficiency is plummeting.

EBA considers that the Energy Efficiency Report should reflect on the latent liability exposure, and the increased difficulty in changing tack as time advances and competitor countries steal market advantage from us. There is a major defect in the paper in that it does not address the comparison of economic benefit of change versus the economics of continuing status quo activities and approaches - which are based largely on the assumption that we will always have access to abundant and cheap energy.

The historical disregard for the economic, environmental and social impacts of negative externalities has artificially deflated the cash price of goods and services - indeed, in some cases (such as dryland salinity for example) it has rewarded degradation rather than real wealth creation¹. This has occurred because the price of averting problems has seemed high compared with continuing status quo activities, but if we continue to defer action to some more preferential date in the future - one that doesn't interfere with short-term financial returns or electoral cycles - we will destroy our potential to develop a new energy trajectory or to plan and achieve energy and economic savings.

The role of energy efficiency

Energy efficiency has a vitally important role to play in re-defining the national energy trajectory. Basically, energy efficiency provides low-cost "low hanging fruit" that can help to maintain retail energy-spend levels even while full cost price recovery is introduced.

The second and perhaps more important role of energy efficiency is that it offers a way to reduce greenhouse gas (GHG) emissions speedily and at relatively low cost.

Energy efficiency can deliver significant economic as well as environmental benefits and this has not been addressed sufficiently in the report. Many business practitioners welcome energy efficiency initiatives and see them as complementary to good business practice - the missing link at present is encouragement through regulation for companies to stretch their management horizons beyond immediate return, and for analysts to understand that longer-term decision making will develop more robust companies.

As noted by Jonathan Jutsen in his submission to the Commission "The overwhelming drivers in the global economy towards higher world energy prices, potential carbon constraints, lower self-sufficiency in oil in Australia, and potential supply security issues, and improved standards of corporate reporting all point to a rapidly increasing need in the future for services and products to assist companies to improve energy efficiency and control GHG emissions."

¹ Frank Dixon, Managing Director, Innovest, 2003

Why is energy efficiency so important to combating climate change?

Climate change experts stress that passing an average global rise in planetary temperature of 2 degrees Centigrade is dangerous. Avoiding this kind of rise (when 0.7 degrees C has already occurred and 0.5 degrees C is locked into the system because of the 80 year life of carbon in the atmosphere), requires cuts of greenhouse gas emissions in the order of 60% by 2050 and 80% by the end of the century. This is a task of monumental proportions and one that will require every technology and approach available to us. In light of these findings and the increasing call for the necessary significant cuts in greenhouse gas emissions by scientists, politicians (including Australia's Chief Scientist, and the Federal Minister for the Environment), environmentalists, and many business people, it is necessary to re-evaluate the important role that energy efficiency has to play in the mix of solutions.

As noted earlier in this submission, the International Energy Agency (IEA) estimates that energy efficient appliances could achieve around 30% of necessary GHG emissions reduction in many developed countries. Adding insulation and double-glazing in countries which have cold winters and/or hot summers would significantly increase this positive effect.

It is interesting to note that in a recent study by Princeton University it was demonstrated how a wedges approach to energy supply could deliver requisite GHG cuts while coping with the anticipated global demand for energy. Of the seven wedges that would be necessary, three available wedges come from energy efficiency - electricity efficiency, heat efficiency and transportation fuel efficiency.

Changing markets, valuation systems, and prices

Markets, power bases, and commodity prices will change considerably over the next decade and Australia needs to be flexible enough to consider its own needs, and the contributions it can make to global equity through innovative technologies and eco-infrastructure projects.

Failure to achieve the targeted cuts in GHG emissions may lead to asset atrophy of the commodities that underpin our economic, lifestyle and health prosperity. The Productivity Commission's research into eco-system services highlighted how important it is to value and protect these commodities which have traditionally been taken for granted rather than valued economically.

It is worth reflecting on the rising value of carbon offsets and the rising price of carbon credits. The EU Emissions Trading Scheme (EU ETS) recorded a price of 18 Euros a tonne recently and indications are that the price will continue to rise until it has reached the point where investments in energy infrastructure reflect best-use of energy efficiency and clean energy sources. Although Australia is not able to participate in the EU ETS we are not immune from its impacts. In other words the market is beginning to shape a carbon-constrained future and decisions made now will either position Australia ahead of the curve, or see us lose market share for export of goods and services and incoming investment.

The choice: full cost recovery pricing - or inefficient markets continue

Full cost pricing is necessary to change damaging practices that have been built up over decades where the environment has been seen as an acceptable recipient for waste and pollution.

The lack of pricing of negative externalities has led to general inefficiency and worse, to a system of planning for social and economic infrastructure that is based on an assumption that Australia will always have cheap, clean, secure, and abundant energy - and that 'someone' will always be available to pick up the tab caused by collateral damage.

Without full cost recovery pricing the marketplace does not receive adequate intelligence and signals about the need to invest in clean and efficient energy technology and infrastructure. Therefore our economy has effectively invested in creating a 'Catch 22' situation where our ability to ignore externalities has relied on the compliance of markets - and markets have been unable to argue with the approach because they have not been receiving timely and meaningful intelligence about the atrophy of assets (either by pollution, run-down and general degradation, or paradoxically, their under-use in some cases).

The market is therefore severely distorted, because of this lack of updated intelligence that the market can evaluate. For example, a lack of data on externalities prejudices against new era technologies and this means that the price of some traditional goods and services continues to be artificially deflated where there is an unrecognised negative externality. It is worth repeating that we are in effect rewarding degradation rather than real wealth creation and the protection of our basic capital². Yet, logically it is less expensive to avoid damage now than to repair compounded damage in the future.

Energy efficiency or clean/renewable energy may appear, superficially³, to be more expensive than traditional ways of combusting fossil fuels because the full collateral damage costs of fossil fuels remain hidden; in comparison, the high R&D, early stage development and market penetration costs of new energy sources are included in the price to consumer. The playing field is not level because comparison of the full costs of all energy sources is not occurring. This is not only distorting markets, it is distorting policy making as well.

Infrastructure decisions

Even without climate change there is an imperative to develop cleaner and more efficient energy sources. Major infrastructure investment decisions made now will be with us for the next 30 to 40 years, and once money is invested into one form of energy plant or system it will not be re-allocated until the amortisation cycle is completed.

As Australia faces an energy infrastructure dilemma - particularly in relation to peak demand - energy efficiency provides an opportunity to delay the need for new generating infrastructure while maintaining supply to industry and consumers.

Light handed treatment versus regulation

There are some very serious issues with the approach of light-handed regulation recommended by the Productivity Commission, not least of which is the lack of clarity and certainty provided to the market and to individual companies.

The other critically important aspect is that voluntary action will not provide the radical overhaul of energy performance that is needed. It is virtually impossible (paradoxically this is especially true in light of CLERP 9 and Sarbanes Oxley) to convince a board of directors of the benefits of voluntary measures, not required by law, which demands spend now, although the returns may not be seen fully in the life of that board.

² Frank Dixon, Innovest

³ ExterneE Study

Regulation is a tool that companies can use effectively to build their next competitive edge as noted in the Mays Report. EBA continues to press for harmonisation of regulations and guidelines across the three levels of government and different States and Territories, but our organisation also believes that far-sighted regulation can achieve standards that will not be achieved through voluntary steps no matter how well-intentioned these might be at the outset.

Cost effectiveness and short-termism

EBA questions the use of the term 'cost effective' in the report finding that it appears to apply only to supporting continuance of status quo activities and the endemic short-termism that is currently controlling market decisions. Our recommendation is that the issue of cost effectiveness should be revisited to investigate the broad cross-sectoral impacts of energy inefficiency and its role in hampering the development of a more competitive and environmentally sustainable energy trajectory. This is an institutional barrier of significance which is creating an exponential growth curve of cost for future generations.

Technology fixes - but not on its own - government intervention is required

EBA represents organisations who both supply and demand innovation and the resulting technology, infrastructure and operating systems. Greater energy efficiency options and market reward systems would be a great asset to the majority of our member companies for their activities in the domestic market. Full scale demonstration plants then offer greater export development potential.

EBA suggests in the strongest possible terms that technology can be deployed to solve many of the environmental and efficiency challenges relating to energy. But technology faces many barriers and there are significant market failures. Our recommendation therefore is that there should be a much more powerful 'enabling framework' to pull innovation through to full commercialisation and we look to Government to provide this framework.

If the role of business is to provide innovation and to create wealth generation opportunities, then Government must assist by providing an enabling framework that removes impediments and barriers and fast-tracks the changes that are needed. This is about nation-building transition and only Government can carry the risk over the transition period. No-where is this intervention more important than in relation to climate change and energy policy. The tools at Governments⁴ disposal - such as taxation, regulation, procurement and investment, education, economic instruments - need to be strengthened and used to remove institutional blockages such as apathy, timidity, contradictory legislation, and the short-termism referred to earlier that controls the country's risk and reward system.

Only the intervention of Government will facilitate a national road map that features 'slip roads' allowing us to weave in new technologies - and to weave out those which cannot compete in a new 'clean and green marketplace'.

Energy efficiency in the Australian context

"Australia must achieve the right level of energy efficiency for its own context" this statement could mislead people into believing that Australia's energy footprint is disregarded by other

⁴ In this context Federal and State/Territory Governments

sectors and by other countries. This would be far from the truth. The markets we supply, and the investment we attract, is heavily influenced by international economic, security, and environmental objectives.

Australia's wealth of energy options from renewables, to coal and gas, to nuclear should not be squandered so freely, energy efficiency can help us to make the most of them and to help other countries who are less well endowed with energy choices to grow their economies with a lighter carbon footprint.

We note that the Commission has attached importance to seasonal weather patterns and we believe that this is a correct approach. However, while manufacturing and energy intensive countries in the Northern Hemisphere have more severe winters that require heating for comfort, health and productivity, Australia suffers from the opposite extreme - long hot, dry summers where air-conditioning is needed for comfort, health and productivity. Indeed it is noted that in June 2004 the Ministerial Council on Energy predicted that there would be a 60% increase in the use of air-conditioners by 2012 (from 2002).

Energy retrofits for the commercial and household sectors

Ensuring that the household and commercial sectors are retrofitted with energy efficient appliances and technologies, insulation and double glazing⁵ could provide a rapid way to reduce Australian emissions of GHGs⁶. Individually, households and small enterprises may find it difficult to finance a retrofit, but a national financing package could provide a win-win solution either through a mortgage extension system or a lease-financing scheme. Banks, insurance companies, and energy retailers, as well as the companies providing the technologies and installations, would likely want to be involved. The costs of the energy retrofit would be repaid with the energy bill over a period that would reflect an equivalent amount saved on the energy bill. There should be no cost of such a programme to taxpayers and the program would generate significant employment opportunities in manufacture and installation.

Transport

Globally, transportation is responsible for 20 per cent of GHG emissions and this is another area where energy efficiency action would have far-reaching results. Hybrid lightweight fuel-efficient cars are already making headway in the market. To fast-track this, Governments could mandate benchmarks (such as kilometres per litre) for fleet procurement or leasing (all levels of Government and businesses over a certain size) this would create a market of such scale that the unit cost of these cars for the general consumer market could be sharply reduced while a substantial second-hand market of energy efficient vehicles would also be created.

High quality employment opportunities are clearly visible should Australia choose to invest in the manufacture and uptake of fuel-efficient vehicles.

Other areas where a government enabling framework could assist the transportation sector to become more energy efficient include:

- A national hot-line showcasing lightweight, fuel-efficient cars (constantly up-dated with new benchmarks) backed up by tax incentives for purchase of fuel-efficient vehicles for companies and consumers

⁵ Lighting, heating, cooling, refrigeration and cooking has Australians currently using energy at 10.3 thousand kilowatt hours of electricity per person

⁶ Several programs are under way to ensure that new built environment is energy efficient

- Follow the successful lead of the City of London which applies a five pound per day congestion charge for drivers entering the City (the result is that the air is cleaner, health problems due to air pollution are reduced, gridlock is reduced and productivity increased)
- Adapt the congestion charge to focus on vehicles with high fuel consumption in city centres. For example, the City of Paris is discussing banning 4-wheel drives outright in the City centre. An Australianised program need not affect Australia's rural and regional community who require rugged all terrain vehicles
- Regulate that drivers of 4-wheel drive vehicles be required to have heavy goods vehicle licences

National energy efficiency target

It is surprising that the Productivity Commission has drawn the conclusion that "a sufficient case has not been made for the imposition of a national energy efficiency target and tradeable obligations. There would be many practical difficulties in defining and administering the scheme and complying with the obligations placed on regulated entities."

EBA puts forward the alternative proposition - that Australian energy efficiency innovation could be used to great advantage to provide Australian goods and services with a new competitive edge (and this both industry-wide and from an individual company perspective).

With Austrade's objective of doubling Australian exports, it will become increasingly important to meet the soft as well as the hard demands from our customers overseas. Energy standards may take another 3 to 4 years to be written into expectations but they are already a focus of intense debate in the WTO context.

What is changing the international marketplace and with it Australia's trading and investment attraction opportunities?

It should be sufficient to look at the:

- Changing investment patterns from groups such as the Carbon Disclosure Project whose US\$20 trillion of funds under management are seeking investment opportunities which do not carry potential liability in a carbon constrained world
- The export opportunities on Australia's doorstep as the Asian region grapples with the issue of energy availability and cost

Energy efficiency has far more to do with opportunity development than it does with placing strains on business. Energy efficiency is a powerful tool that should be seen as an integral part of a portfolio approach to combat climate change.

Consumer and producer sovereignty

The concept of consumer and producer sovereignty should hold no sway whatsoever when that sovereignty is creating negative externalities that degrade public good. EBA recommends that the Productivity Commission undertake an investigation of the extent to which "sovereignty" is based on implicit yet covert subsidies, which to date have been freely provided by the environment and funded by the taxpayer.

The dysfunctionality of the entire economy that is being created by the consumer seeking lower prices, and business demanding status quo continuance, while ignoring that their alter

ego - the taxpayer - is having to fund an ever-increasing burden through consolidated revenue to clean up, mitigate, or offset collateral damage is truly frightening in an age of "enlightenment" and freely available information. That the consumer and the taxpayer are also members of the community who have to cope with the irrevocable down-grading of their lifestyle through externality impacts such as climate change, dryland salinity, drought, disease migration, reduced agricultural productivity and potential mass migration and the security risks this could pose - makes a complete mockery of the concept of consumer and productivity sovereignty. It is little more than stock-piling of debt for future generations to deal with.

Privately cost-effective

The term "privately cost-effective" is open to criticism as it fuels the "short-termism" which undermines public good because currently there is no mechanism by which a short-term approach can acknowledge longer-term impacts - even when these are likely to have seriously negative outcomes.

The net public benefits that could be generated by improved environmental performance would have private benefits and EBA suggests that it is this synergy which should be focused on. We therefore recommend that the Energy Efficiency report be revised to *include and focus on* "an examination of the measures that generate net public benefits despite not being privately cost effective".

Minimum Energy Performance Standards (MEPS)

The statement that "MEPS deny consumers choice and add to costs" is one that we find to be unsubstantiated, and frankly naive to the extent that it substantially undermines the entire paper. If there is concern that consumers should have the right of choice to a less efficient (i.e. more costly over life-cycle analysis) but cheaper appliance, then there is the option for governments to provide overt and beneficial subsidies to counter-balance the covert and pervasive subsidies provided by a marketplace that does not recognise negative externalities. On the issue of air-conditioners there is anecdotal evidence that Australia is a dumping-ground for inefficient air-conditioners that would not pass efficiency standards in some other countries.

Energy consumption because of usage rates can be influenced by education to some degree, but realistic full-cost recovery pricing will be more efficient - this is not over-riding consumer sovereignty it is simply efficient use of the marketplace to motivate action that has environmental, economic, consumer, taxpayer and community benefits.

Regarding MEPS, there is documented evidence that in many cases - such as for refrigerators - regulation has actually resulted in a drop in manufacturing costs which can then be passed on to consumers through lower prices and increased efficiency. Indeed, removing the variety of 'rail gauges' levels the playing field and this can realistically reduce the number of different regulations which industry struggles with at present due to the lack of harmonisation of Federal and State laws.

Minimum standards and appropriate certification and labelling are tools to be used by companies to build their reputation and competitive position, EBA disagrees strongly with the representation of these tools as "blunt instruments" they can be significant drivers of innovation; again, we reference the Mays Report.

Research and development funds

Both renewable energy and energy efficiency face the same hardship in accessing market funding especially at the R&D, demonstration and early commercialisation stages. The failure of the market to understand the significance of new developments is compounded by the risk averse nature of both government and private sector funding where analysts and decision makers have a level of comfort with tried and tested technologies and, in the energy sector, very specifically coal, oil and gas. Until such time as externalities are included in pricing the market is distorted away from investments in clean energy. Draft finding 8.4 is therefore unrealistic in today's market.

EBA strongly supports re-directed or hypothecated levies, and, as advised during the Government-Industry Dialogue on Climate Change, levies and taxes would be better used if recycled to assist the areas where R&D or accelerated depreciation are most urgently needed.

Other submissions to the Productivity Commission regarding energy efficiency

EBA notes the submissions made by the Business Council for Sustainable Energy, the Green Building Council and Energetics, among others, who have clearly demonstrated the types of energy efficiency that have short, medium and long-term paybacks of benefit to the national economy. EBA supports the technical aspects of their submissions and we have not sought to repeat this information to the Commission.

However, we do seek to emphasise the point that while companies, consumers or government bodies do not *deliberately* waste energy - until such time as there is a value driven system to recover direct and indirect costs, there is little incentive to practice resource efficiency.

Conclusion

There is little pragmatic benefit to be gained from deferring the National Framework for Energy Efficiency; industry and the market need swift and determined action that will set Australian business on a more competitive track, and that includes making energy use as efficient as possible as speedily as possible. Unfortunately, the current recommendations of the paper do little to alleviate the uncertainty in energy and climate change policy which undermines investment.

Externalities cannot be excluded from an analysis of the benefits of energy efficiency or indeed the much-needed re-scoping of the national energy plan. EBA's strongest recommendation is therefore that the Energy Efficiency paper be re-written to reflect updated commodity valuations, the impacts of energy use across all key economic sectors, and the need to build a platform for Australian companies to develop their next competitive edge in markets that are increasingly demanding that goods and services be produced with clean and green energy which does not contribute to climate change.

Government intervention is not simply about addressing market failures, it is necessary to completely turn around our energy usage patterns, to reduce greenhouse gas emissions, and to position Australia in a new competitive global marketplace.

Fiona Wain
CEO, Environment Business Australia
Tel 02 6270 1333

Appendix I

EBA submission to the Energy Taskforce regarding the National Energy White Paper 7 August 2004 (while some of the data in this appendix is out of date the general policy recommendations are more relevant)



***Clean energy and renewable energy sources must be the key
to our vision for the future***

EBA interim submission on the Energy White Paper to Prime Minister and Members of Cabinet; the CoAG Energy Review Secretariat; and the Senate Inquiry into the Energy White Paper
7 August 2004

Climate change is one of the biggest security threats that humans have faced and there is no precedent in history for us to draw from. Our cherished way of life is under attack.

Australia's national energy policy should create a vision of the future that we want. From there we must create a strategic pathway that will enable Australia and Australian companies to provide leadership in a world seeking a framework of solutions to climate change threats.

Our current legacy to future generations is an exponential growth curve of cost and this must be changed - we can no longer bill our current way of life to our children and grandchildren.

Environment Business Australia is increasingly concerned at the polarisation of approaches to action on climate change. The issues that are at stake are too fundamentally important to be treated in this way and the challenge requires a coalition approach where all parties, states, and sectors of the economy are engaged positively in the transition we must have.

There will be some losers and there will be some increased costs. But equally there will be new business and employment opportunities if we decide now to build a competitive future that is based on the next wave of industrial evolution. Australia's future prosperity and competitiveness depends on seizing the opportunities for change presented by the industrial revolution that is under way.

EBA therefore recommends urgent amendments to the Energy White Paper in order to bring it into line with community expectations of the Government's role in developing a safe, secure, economically sound and competitive future that is underpinned by a healthy environment.

EBA has drawn on advice from a wide range of stakeholders in developing a suite of recommendations which are outlined in this paper.

"The stone age didn't come to an end because of a shortage of stones and the oil age will end long before the world runs out of oil." Sheikh Zaki Yamani, Saudi Oil Minister (1962-1986)

Key recommendations

The Energy White Paper should be revised to provide a vision of the Australia we want in 50 years' time and a strategic pathway to achieve this vision. A flexible, outcomes-based framework of economic, legislative, fiscal, procurement & investment, and technology mechanisms to transition must be developed.

A coalition approach is urgently needed to address the security risks of climate change.

Australia should take a leadership role in the new industrial revolution and should commit to deep cuts of 60% in carbon emissions by 2050 and 80% by the end of the century.

A national externalities study relating to energy impacts and their true costs to the national economy should be undertaken in order to provide market intelligence and effective price signals to restructure the energy economy.

The Federal Government should immediately take the lead on developing and implementing an emissions trading scheme which would be Kyoto compliant allowing Australian companies to participate in the EU trading scheme.

The Federal Government should increase the Mandated Renewable Energy Target (MRET) to 10% by 2010 and 20% by 2020 and extend the cut off date until such time as the market is demonstrating equal opportunity for renewable energy.

Recognise that Australian companies must compete in a new carbon-constrained marketplace and that transitional support is needed.

Transfer of a portion of defence spending to help avoid climate change induced environmental disasters creating regional 'hot spots' such as water shortages, pollution, and decreases in agricultural productivity.

Every possible assistance should be given to developing countries, especially where their growth trajectory will be energy intensive.

Government should ensure a broad portfolio approach to support of innovation and should recognise that while geo-sequestration of CO₂ may have an important role to play, there are significant cost, waste disposal and security issues associated with geo-sequestration of compressed CO₂ from coal-fired power plants.

Repeal of the proposed excise relief.

Ratification of the Kyoto Protocol to bring Australia into line with the 124 countries who benefit from support mechanisms.

Recognise the potential impacts of climate change on important sectors such as tourism and agriculture and include this data in the economic analysis of national interest.

Focus the national energy plan on tomorrow's, not yesterday's, global marketplace

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Background

EBA position

EBA applauded the creation of a National Energy Secretariat and the stated goal of developing a national energy plan which would be comprehensive and long-term and which would guide the production and use of energy in Australia well into the 21st century.

As the peak association for the environment and sustainability industry - a rapidly growing \$17 billion sector of the economy - EBA supplied information to the Energy Task Force on climate change, renewable energy, energy efficiency, market mechanisms, externalities, emissions trading, and the Mandated Renewable Energy Target (MRET)⁷, during the development of the Energy White Paper.

The advice put forward by EBA has at all times been intended to benefit the national interest. We based our advice on the need to combat climate change while competing commercially with countries who are aggressively adopting fuel-switching, energy efficiency, and renewable energy.

In spite of this extensive advice, our analysis of the Energy White Paper leads us to believe that Government is more favourably disposed towards providing the majority of available funding towards maintaining coal as the predominant energy source rather than creating a level playing field for all energy sources.

Australian leadership

In the lead up to the Energy White Paper there were many who posed the question "Why should Australia, which contributes approximately 1.2% of global emissions, take a leadership role in cutting release of greenhouse gases (GHG) to the atmosphere?" Some also suggested that action in Australia to curb carbon emissions has the potential to harm our national economy. Our answers to these points are detailed later in this paper but in summary we put forward the following arguments for deep cuts in GHG emissions:

- Firstly, because this country stands to be more heavily and negatively impacted by climate change than any other developed nation
- Secondly, because action and success in this energy intensive country would demonstrate how to assist developing countries reduce their carbon footprint. The potential export market in China, India and the Asian region should be reason enough to embrace a systemic overhaul of energy supply.
- And thirdly, because if Australia wants to be a leader in the coming industrial evolution we had better get moving, otherwise we leave future competitive advantage to others.

Climate change risk

Climate change is recognised as one of the biggest security risks facing the planet and this was outlined early this year in a report prepared for the US Pentagon. This report highlighted some of the significant environmental and security risks to Australia.

Some commentators have tried to divert attention away from the significance of climate change by suggesting that sun activity is responsible for rising temperatures. However, it is critically important to be aware that **throughout every ice age for last 800,000 years carbon dioxide levels were about 200 parts per million (ppm), and throughout every warm period for the last 800,000 years they were about 260 ppm. Because of our use of fossil**

⁷ Website address is provided for this background material for ease of reference at the end of the document⁷.

fuels we have broken that ice age/warm period cycle. We are currently at around 379 ppm – and rising - and moving into the first hot period for 800,000 years.⁸

The unprecedented pace of change to our climate bears no relation to what has happened before. While it is now inevitable that we have to adapt to some climate change, we must do everything possible to avoid the cataclysmic change that could occur over a 10 to 20 year time frame.

Quite simply, change of this speed and magnitude would mean that many eco-systems would be unable to cope. Then the planet's natural services to mankind and biodiversity could break down completely. **That is the only cost in the whole debate that Australians and the rest of the planet cannot afford.**

Rising temperatures (0.7 degrees centigrade in Australia to date), more severe weather patterns, rising sea levels, more frequent and severe droughts, bush fires, disease migration, and increasing soil erosion and sterilisation, and waterway degradation can all be attributed, at least in part, to climate change. Soil moisture levels in Australia are at their lowest recorded levels and the long term effects of this on our thin, nutrient and mineral poor soils, and therefore our ability to maintain agricultural productivity levels are unknown.

Scientists have serious concerns that if atmospheric concentrations of carbon continue to rise then planetary systems, such as deep ocean currents, may be thrown off kilter. The ramifications of this happening within a decade are very serious and would likely be irreversible.⁹

In Australia Kakadu is under threat from rising sea levels. Australian citizens are at risk from rising sea levels as well as the islanders on Tuvalu and other low-lying islands - how ironic and cruel it would be for Mabo to be washed off land so hard fought for.

Australian tourism which is critical to regional employment and economies stands to lose its most important icon – what will be the cost to Queensland if the Great Barrier Reef dies because of climate change? Obviously, it is not only Queensland that will suffer from reduced numbers of tourists visiting the country.

The global insurance industry has publicly stated that the skyrocketing damages bills of the last few years, caused by extreme weather events – wind, storms, floods, droughts and fires – is clear evidence of climate change.

Recommendation: Recognise the potential impacts of climate change on important sectors such as tourism and agriculture and include this data in the economic analysis of national interest.

Executive Summary

There is a new industrial evolution occurring at the international level. This is pushed and pulled by capital markets, consumer choice, and the insurance and re-insurance sector. For example, the rapidly growing Carbon Disclosure Project which represents 95 institutional investors with over US\$10 trillion of funds under management is spear-heading a global campaign to educate company boards, analysts and the stock market about the carbon-

⁸ Professor Sir David King, Chief Scientist of the United Kingdom

⁹ Melting glaciers initially causing flooding and then droughts to areas such as Bangladesh; wetlands and bogs acidifying and releasing vast quantities of CO₂; methane hydrates captured in deep oceans being forcibly released by changing ocean currents or tsunamis; permafrost release of stored CO₂; high mountains being de-stabilised due to lower temperatures.

constrained future we face and the choices which they as investors are already making (they select to invest in companies decoupling their activities from carbon emissions, and their investment selection criteria will become stricter as rapid developments in energy efficiency and renewable energy technologies enable increasingly lower carbon footprints).

EBA has always supported the premise of a national energy policy. We also support the Prime Minister's words at the launch of the Energy White Paper when he said that the choice for the future of Australian energy was "between low and high emissions outcomes – not between renewables and other energy sources." This was a sensible statement, but the Energy White Paper has not delivered on it.

Our industry is very deeply disappointed with the current national energy policy, as outlined in the Energy White Paper, finding it to be lacking in vision, milestones, or the strategies necessary to develop a competitive energy future for the nation.

Markets, power bases, and commodity prices will change considerably over the next decade and Australia needs to be flexible enough to consider its own needs, and the contributions it can make to global equity through innovative technologies and eco-infrastructure projects.

A far-reaching energy policy is needed to position Australia for current and future investment choices and long term competitiveness. While the current White Paper fails the environment industry it does not even provide certainty for traditional industry. This is because it does not reflect changing global markets, environmental security imperatives, or the scientifically demonstrated need for 60% cuts in CO2 emissions by 2050 and 80% by the end of the century. The subtle but significant shifts in geo-politics and economic dynamics mean we need new tools to play with and innovation in technology must now be matched by innovation in thinking and in institutions.

Recommendation: Australia should commit to deep cuts of 60% in carbon emissions by 2050 and 80% by the end of the century.

Climate change and energy choices are likely to require some fundamental restructuring of the Australian economy over the next decade. **We believe that industry is capable of restructuring but needs clear targets** and a broad framework of fiscal, market mechanism, procurement and investment, technology and infrastructure incentives to galvanise action. This framework must also focus more clearly on removing the real impediments to clean energy and to fast-tracking the development and commercialisation of renewable energy sources.

The Energy White Paper must be brought into line with community expectations of the government's role in developing a safe, secure, economically sound and competitive future.

Recommendation. The Energy White Paper should be revised to include a vision and a strategic pathway to achieve a national energy plan which would position Australia to provide leadership and to be competitive in emerging markets responding to the new industrial revolution.

While Australia has vast reserves of coal, important gas and uranium stocks, and there are potentially undiscovered oil deposits of significance, these fuels are unlikely to meet changing market criteria for low carbon fuels over the longer term of 30-50 years. Therefore it is not logical to commit this country to supplying the world with coal for the next 200 years when demand for coal will be replaced by demand for cleaner sources of energy. The question that Australia must address immediately is whether we want to be long-term energy suppliers or whether we are prepared to be phased out of the game by 2020.

A great deal of attention is paid to mitigation (through geo-sequestration of CO₂ from coal-fired power plants) in the Energy White Paper but we do not believe that this should be the focus of the energy policy. The suite of renewable energy technologies are safe, secure, and pose little or no environmental or health risks. In addition, operational research and greater uptake guarantee that costs of renewable energy will reduce significantly over the coming decade - the same cannot be said of coal.

There are only two ways to guarantee a clean energy future. Firstly, reducing energy wasted by increasing energy efficiency. Secondly, removing carbon emissions and this is achieved by switching to clean fuels. With good policy and planning the sources of energy will be different but the uses to which energy is put need not change radically.¹⁰

Australia is the windiest country in the world and has an abundance of solar power; its cities are largely coastal and could take advantage of wave and tidal power; and there is the potential for deep hot rock geo-thermal energy to supply vast amounts of continuous and safe energy.

And, in spite of the difficulties inherent in setting up a hydrogen infrastructure, hydrogen and fuel cells catalysed by renewable energy are showing strong promise from 2015 onwards.

The Energy White Paper does not take into account the full costs of energy production and energy use. Shifting to a cleaner energy future may be less expensive than the real cost of continuing to rely so heavily on coal to meet Australia's future energy needs.¹¹ The impact of externalities is addressed later in this submission.

International law focusing on latent liabilities will become stronger and with 20% of global GDP affected by climate change¹² there are significant risks to companies and governments. The AXA Group have said "climate change is more important than interest rates or foreign exchange risk."

Transforming existing infrastructure will be difficult between now and 2030 because of the need to update and replace existing infrastructure and this is exactly the reason why industry must be provided with clear long term targets, milestones for action, and a framework that will support them through transition. From 2030 to 2050 technology surges and greater market support for sustainable production and consumption will facilitate next generation infrastructure. The percentage of built infrastructure that can be changed is low on a per annum basis¹³ and it is most important that strategic price signals are introduced to allow for an immediate start to incremental and least cost change.

The argument that existing stocks and infrastructure should be allowed to run their course and then Australia will seek new technologies from overseas is short-sighted and is not in the national interest.

Recommendation: make better use of price signals to help restructure the economy.

The initial Energy White Paper does not address the need for emissions trading to catalyse innovation and the commercialisation of new benchmarks. **Market mechanisms that encourage the deployment of major institutional, corporate and government funds to ease this transition** are hugely important and we find the lack of acknowledgement of this issue to be a perplexing and fundamental failing of the Energy White Paper.

¹⁰ A Clean Energy Future for Australia, by Energy Strategies Ltd

¹¹ A Clean Energy Future for Australia, by Energy Strategies Ltd

¹² Matthew Kiernan, MD, Innovest, representing the Carbon Disclosure Project

¹³ Sustainable London Commission suggests 1% per annum change

Recommendation: the Government immediately develops an emissions trading scheme which would be Kyoto compliant allowing Australian companies to participate in the EU trading scheme

The initial white paper also fails to capitalise on the successful Mandated Renewable Energy Target (MRET). EBA has emphasised the need for a target of 10% by 2010 and 20% by 2020. Experience from other countries that have developed successful renewable energy industries shows that early stimulation is required to enable the industry to quickly become cost competitive with gas and coal-fired generation. An increased and extended MRET would continue to be a market-based mechanism with the capacity to level the playing field and provide equitable access to Australia's energy market.

Recommendation: Increase the MRET to 10% by 2010 and to 20% by 2020 and extend the cut off date until such time as the market is demonstrating equal opportunity for renewable energy.

Notwithstanding the criticisms of the Energy White Paper in this submission, EBA believes that a revision of the text based on underlying principles of market equity, security and economic competitiveness, could provide a way forward that gives clear incentives to investors, and certainty to energy suppliers and energy users. EBA puts forward in this paper recommendations that could be part of a such a broad framework to position Australia as a long-term supplier of energy and of energy intensive goods and services. The Australian environment and sustainability industry, as well as many other sectors of business, are ready to respond to the huge challenges ahead¹⁴.

Recommendation: Government to prepare long-term targets and a framework for transition

Key criticisms of the Energy White Paper

EBA's biggest criticism of the Energy White Paper is the lack of recognition that the international marketplace is rapidly changing its energy demand to give preference to decoupling carbon intensity from production.

This means that our current economic prudence of operating on a zero-deficit basis may be stifling future opportunity and spend would be well employed to fast-track retirement of outdated plant and the development of low emission infrastructure for stationary energy and manufacturing processes. The capital cost of major infrastructure is often lower than the operating cost that will be incurred over 25-40 years without early investment we are deferring to the future decisions that need to be made and implemented now. These aspects are not sufficiently explored in the Energy White Paper.

The Energy White Paper has included many repetitious references which at one point or another could be used to demonstrate that the energy policy has taken the environment industry's concerns into consideration. However, careful analysis of this paper reveals that it firmly endorses a coal and geo-sequestration future as the basis for Australia's energy policy.

EBA advises that this is a short-term approach that is not in the national interest as CO₂ sequestration from coal burning has not been proven either feasible, safe, or even realistic on

¹⁴ Excerpt from the Prime Minister's address to the National Press Club, 1 August 2001

"The technological and scientific advances being made would have been unimaginable even a decade ago and increasingly profitable businesses and industries will be marked by their efficient use of scarce natural resources. Australia already has a dynamic and vibrant environmental industry sector, ready to provide solutions, not simply identify challenges. The success of this sector, over coming years, will have enormous implications for Australia, both in its local application and because of its export potential."

a cost basis. There are serious issues concerning the location of toxic waste sites, the long-term security of these sites, who carries the liability risk, and whether this liability risk is insurable.

Other key criticisms of the initial Energy White Paper are that:

- It does not address the significant markets that would be available to Australian companies through engaging in emissions trading (for example the EU trading scheme which comes into force in January 2005 will drive an annual marketplace exceeding a billion dollars per annum). Australian industry wants to have fair competitive access to this and other trading markets.
- It is retrogressive regarding the successful Mandated Renewable Energy Target (MRET)
- It does not relate to the fact that 124 of our trading partners and competitors are operating under the framework of the Kyoto Protocol. These countries are gaining experience and they have direct access to mechanisms to help their transition to a low carbon future
- It refers constantly to Australia meeting its 108% emissions target. Australia has increased *not* reduced its emissions. It is only because of reductions in land-clearing that the country can claim to fall within the guidelines of the Kyoto Protocol in the first commitment period.
- It commits Australia to a high emissions future as it does not address emissions *abatement* seriously.

Obligation to lead

Australia is morally and economically obliged to show leadership in addressing climate change because we are an energy intensive country with a strong economy based on having the highest per capita GHG emissions. But, our leadership is more important because we are exceptionally well placed to assist developing countries in our region tackle poverty and grow their economies without following the carbon intensive pattern that has so polluted the globe.

Selfishly we have to respond because Australia stands to be impacted so severely by climate change – more than any other developed nation. There is an obligation to Australian citizens to do the utmost to provide for their future long-term security and well-being and climate change is a far bigger threat than terrorism.

Leadership on climate change is not altruism, it opens a window of opportunity for the next wave of industrial evolution. Australia stands to benefit from the support we can provide in financial, security, environmental integrity, agricultural productivity, and competitiveness terms, but, only if solutions are rolled out quickly enough to avert cataclysmic climate change.

Priorities and a framework to support change

The threats of climate change are too important for the current state of political and business polarisation to continue. Never has it been more important for a coalition of parties and Federal and State Governments to work together. A 'war council' approach is necessary

Addressing climate change provides new opportunities for energy security and a competitive energy future. However, if Australian companies are to be able to take advantage of the full scale of opportunity emissions abatement and the growth of next generation industries must be given equal weighting with short term economic considerations. Our future competitiveness will depend on the investment choices that are made now between low and high emission energy sources and the monetising of future action.

Therefore the creating and implementing of a transitional framework is of great urgency. We need to combine the strengths of Government leadership, the power of markets, and modern industrial solutions

The vision of the future will only be achieved if there is a blueprint for government, industry and community to work with. Industry is capable of change but needs clear targets and a multi-dimensional framework of fiscal, market mechanism, procurement and investment, technology and infrastructure incentives. A 50 year vision is therefore needed with a national target of 60% reductions in greenhouse gas emissions by 2050 and with clearly identified milestones at 2010, 2020, 2030, and 2040. Government leadership is fundamental.

To achieve the cuts called for fuel switching to cleaner energy technologies and aggressive energy conservation are key. But so are market mechanisms such as emissions trading. Capital markets can catalyse innovation in emissions reduction solutions while helping business develop new opportunities. Equally important are steps to address GHG cuts from the household, commercial and transportation sectors and some recommendations appear later in this paper.

EBA wishes to highlight that demand side management and energy efficiency gains are very important to achieving the necessary cuts in GHG emissions, but they will not be sufficient to deal with the rapid growth in demand for energy that the world is experiencing. To meet the projected global increase in demand for energy of 70% by 2030 new technologies and new infrastructure that provide clean energy are imperative.

From a commercial perspective, because of the small scope and scale of our domestic market Australia's emerging technologies need a 'first mover' advantage to access export markets. There are still opportunities for fossil fuels because energy switching will need to follow a steady transitional pathway. Australia can continue to supply traditional energy sources with emissions abatement technology while developing emissions free renewable energy alternatives. Australia is also well positioned to provide carbon credits that can be stapled to exports of coal, but only if we join the global framework, the current version of which is the Kyoto Protocol. The potential export markets in China, India and the broader Asian region should be sufficient reason to embrace a systematic overhaul of energy supply.

Recommendation: A coalition approach to urgently develop the framework that will galvanise transition.

EBA suggests that the transitional strategies should include:

1. Ways to monetise and weave new technologies into the marketplace and to phase out those that are outdated - a road-map for fuel switching to cleaner/clean energy sources. Capital expenditure intensive technologies and infrastructure should not be ruled out if operating costs and ancillary benefits over time reduce the overall cost
2. Beneficial technology fast-tracking, especially energy efficiency, emissions reductions and renewable energy. It is time to pick sectors that will deliver certain wins and to ameliorate the investment climate in Australia for technologies that have longer term commercialisation horizons as well as technologies from overseas that have benefits for Australia and the Region

3. Government procurement and investment funds being based on sustainability criteria and used to drive innovation. This approach would help the country to reduce negative externalities and the drain on consolidated revenue, while the market-creation aspects reduce costs of 'clean and green' goods and services for consumers. All tenders for government projects to be outcome rather than process focussed
4. Life-cycle assessment of energy intensive goods and services to ascertain options for maximum energy efficiency gains with eco-labelling as a commercial imperative to define and regularly update benchmarks
5. Transfer of a portion of defence spending to help avert climate change induced environmental disasters creating regional 'hot spots' due to water shortages, pollution, and decreased agricultural productivity
6. A national study to identify, cost, and internalise externalities relating to energy and energy source comparisons (negative impacts on the environment the cost of which are not evident in market pricing structures)
7. Facilitation of portfolio of market mechanisms to catalyse greater innovation, primarily carbon emissions trading, and the Mandated Renewable Energy Target (MRET)
8. A re-design of fiscal measures to reward or penalise based on outcomes, and to encourage commercialisation of innovation (for extending accelerated depreciation and making it easier for companies to upgrade technology and infrastructure plant; re-investment tax concessions)¹⁵. Government to use the budget surplus to invest in national interest projects where higher initial capital expenditure can reduce longer term operating costs
9. Legislation to be based on outcomes, rather than being prescriptive, and regulations harmonised across all States and Territories and strongly enforced. Legislation and standards to be regularly and rapidly updated to reflect new technology benchmarks and performance criteria
10. Incentives for full scale operational demonstration sites for a portfolio of new zero emissions technologies. To include further revision of the Financial Services Act to provide incentives for institutional and pension fund investment in 'national interest projects'. Increased incentives for all levels of private sector investment to drive new benchmarks (superannuation/pension funds, banks, institutional investors, shareholders)¹⁶
11. Match other countries support to emerging industries – Wales, Ireland, France, Germany, Netherlands and Canada as well as the USA are actively supplying market development and export market entry assistance to the companies. Emerging industries in these countries have a head start with bigger market scope and scale to start with.
12. Tackling 'low hanging fruit' - the relatively easy gains in emissions reductions; allowing greater time to address the more intractable sources of emissions

How to cut emissions by 50%

¹⁵ For example, in Singapore (new) companies with incomplete technologies can obtain tax relief for seven years, effectively encouraging companies to successfully commercialise and reinvest. Re-investment tax concessions have far greater impact than R&D tax rebates where companies can defray 30% of costs but have less incentive to be successful entrepreneurs and commercialisers of technology. Re-investment tax concessions were a core reason for the early success of Silicon Valley in California. In Israel there is a high level of intensive funding for new technologies for three years – sufficient time to refine technology at full scale demonstration, and then to commercialise.

¹⁶ A very successful scheme was undertaken by the French Government under Giscard d'Estaing – tax free (capital and investment return) investment for people investing in French companies for a minimum time. This program was created to address hidden and un-taxed money flows. The same principle could be adopted for individuals/companies investing in benchmark technologies and infrastructure

The Clean Energy Future for Australia study¹⁷ found that Australia can readily meet its energy needs from a range of commercially proven fuels and technologies. A scenario to cut emissions by 50% by 2040 includes:

- The energy generated from the combustion of natural gas can provide 30% (including cogeneration) of our electricity by 2040
- The energy released from biomass from agriculture and plantation forestry residues can provide 26% (excluding cogeneration) of our electricity by 2040
- The energy of wind captured by turbines can provide 20% of our electricity by 2040
- The energy of flowing water harnessed through hydroelectric facilities can provide 7% of our electricity by 2040
- The energy of the sun captured with photovoltaic and solar thermal systems can provide 5% of our electricity by 2040
- Energy generated by 15% cogeneration plants was largely driven by about 13% gas and 2% biomass.

Under this scenario coal (9%) and petroleum (1%) would continue to play a small role in electricity generation. Most requirement for heat could be met by natural gas, biomass and solar energy, with the use of coal restricted to metallurgical processes, while petroleum and natural gas would both be important for providing direct motive power particularly in agriculture and mining. The key to a clean energy future is to draw on a full range of technologies and to cut energy wastage.

Importantly, this scenario would allow time for amortisation of existing coal-fired plants.

Renewable energy sources that have yet to be proven up such as deep hot rock geothermal and nuclear fusion could conceivably reduce emissions by 80% or more by 2060. However we cannot afford to wait for these larger scale sources of clean energy to come on line, we must curb pollution now if we are to have any chance of combating climate change.

This is tomorrow's marketplace and is what Australia's national energy policy should be focusing on.

Recommendation: Focus the national energy plan on tomorrow's, not yesterday's global marketplace.

Externalities

"There is no business case for running down the planet." Author Paul Hawken.

Cleaner energy and more efficient production methods offer significant market competition as well as environmental benefits. Yet, in spite of the new technologies and expertise that are available, and the next wave of innovation that is under development, there is clear market failure.

The market is severely distorted, because there is a lack of updated intelligence that the market can evaluate. A lack of data on externalities prejudices against new era technologies and this means that the price of some traditional goods and services continues to be artificially deflated where there is an unrecognised negative externality.

¹⁷ Prepared by Energy Strategies, Canberra

In effect we are rewarding degradation rather than real wealth creation and the protection of our basic capital¹⁸. Yet, logically it is less expensive to avoid damage now than to repair compounded damage in the future.

Under the current scenario the costs of averting problems appear high compared with continuing status quo activities. Renewable energy appears significantly more expensive than fossil fuels because the full collateral damage costs of fossil fuels remain hidden; at the same time the high R&D, early stage development and market penetration costs of new energy sources are included in the cash price of renewables. The playing field is not level because comparison of the full costs of all energy sources is not occurring.

The International Energy Agency (IEA) estimates it would cost US\$16 trillion (AUD\$20 trillion) over the next 20 years to deliver clean energy around the world. This equals only 1% of world gross domestic product.

In comparison, a major EU funded research study (Externe project)¹ undertaken over the past 10 years has found that the cost of producing electricity from coal or oil would double and the cost of electricity production from gas would increase by 30% if external costs such as damage to the environment and to health were taken into account. It is estimated that these costs amount up to 1-2% of the EU's Gross Domestic Product (GDP), and, very significantly, this does not include the cost of global warming.

There are many examples of high external costs¹⁹ that are later to be borne by the broader community while a small commercial interest benefits from outsourcing the side effects of production and consumption activities which are unpriced in the market place. While we understand the desire to keep fuel and energy prices low, it is in the national interest that these 'externalities' be factored into economics by valuing, costing and pricing the environment and internalising environmental costs.

One of the most important roles of the national energy policy must be to move us away from the current short term approach to economics where costs have to be covered by society at large, since they are not included in the bills which electricity consumers pay. The disconnect between consumers and taxpayers must therefore be addressed as part of the Government's policy.

Recommendation: A national externalities study relating to energy and internalisation of the costs of external impacts by reflecting their true costs to the national economy and building a strong resilience into our future economy.

Energy price changes are inevitable

As an idea of how prices will change – if China continues its rapid growth (similar to the United States at the beginning of the 20th Century) its oil consumption demands would require 83% of total current oil output by 2015. Obviously other energy sources are going to be necessary to help meet new levels of demand, and to help developing countries with economic growth without pollution. We expect that energy prices will change significantly in the very near future – with or without action to address climate change.

¹⁸ Frank Dixon, Innovest

¹⁹ The proposed introduction of MTBE as a transportation fuel additive is a classic example of creating high external costs

Fundamental commodities, currently underpriced, will likely show significant increases in price, and countries not competitive in energy efficiency, clean energy and renewable energy sources are likely to be severely disadvantaged. Renewable energy sources are likely to be very cost competitive in the very near future.

Using the markets to galvanise change

Economic regulatory drivers that force internalisation of externalities are critical to a successful transition to a new energy era and trading is the best way that economies can take advantage of efficiency or abatement gains to assist in differential costing. For example, if making the built environment more energy efficient can conserve energy at little or no additional cost then these gains can offset the more difficult job of making air transport cleaner and greener. Another example would be aluminium and magnesium smelting which have considerable greenhouse gas footprints, however, the gains from lightweight metal vehicles using less fuel, and the ability of lightweight metals to be recycled, are positive offsets not currently sufficiently valued.

Mandated Renewable Energy Target (MRET)

The current status of the Mandated Renewable Energy Target (MRET) as outlined in the Energy White Paper is a major failing of the national energy plan.

EBA's previous recommendations to Government regarding the MRET have emphasised the need for a target of 10% by 2010 and 20% by 2020. EBA and other organisations have demonstrated that while this is an ambitious target it is achievable. Australian industry has traditionally responded well to stretch goals and this would be no exception.

The MRET should also be open-ended with no cut off date until fair market competition has been achieved. It is of fundamental concern to this industry that there is a current cut off date of 2020. Major energy projects require an amortisation period of at least 15 years, therefore the current cap on MRET means that no new renewable energy projects are likely to be developed after 2007.

MRET is a powerful tool which has already proven successful in bringing renewable energies to the market. EBA believes that this is one of the most important tools available to Government and we highlight that this market mechanism can work well alongside emissions trading.

The MRET Review Report and the Energy White Paper have systematically failed to recognise the ability of the renewable energy industry to achieve a significantly higher target and the strategic importance of the industry being able to deliver deep cuts in Australia's greenhouse gas emissions. The White Paper also fails to understand the significant economic and social benefits of renewable energy industry in providing jobs and added farming income to the rural and regional communities of Australia.

To counter the argument that "Australia cannot afford an expanded MRET" we point to the 30% per annum growth in wind and solar energy and that the costs of these energies has been falling by 5% per annum. Many nations, including China, have adopted aggressive measures to accelerate the uptake of renewable energies. Australia can be a supplier of technologies and expertise but only if we demonstrate growth in our own market. Anecdotally we understand that China has recently adopted a 10% renewable energy target.

Recommendation: Increase the MRET to 10% by 2010 and 20% by 2020 and extend the cut off date until such time as the market is demonstrating equal opportunity for renewable energy.

Emissions trading

EBA is very strongly supportive of a technology way forward to reduce GHG emissions, however we advise that emissions trading provides an excellent opportunity to catalyse R&D and the uptake of new technologies.

Emissions trading is set to become a major international tool that will shape energy, commodity and services markets as well as trade and environment outcomes. The EU trading scheme will create a new billion dollar market as of January 2005, and it is predicted that during 2005 some 5000 to 6000 European companies (all major industries, including energy companies) will be subject to the mandatory emissions trading pilot, designed by the European Union.

The emissions trading market in Europe is projected to develop into a multi billion Euro market within a few years and Australian companies should be given every opportunity to participate in this major new marketplace. It is important to note that companies from Kyoto Protocol ratifying countries such as Japan, New Zealand and Canada will be able to take part in the EU scheme.

Even on the current voluntary operational basis this EU market is expanding rapidly²⁰. This expansion is due to a handful of companies adopting strategies in anticipation of this enormous market. Some countries, such as the UK, have emissions trading schemes in place and new schemes are being developed. On 21 April 2004, Sir John Bourn, head of the UK National Audit office, reported that the UK Emissions Trading Scheme has brought about a reduction in emissions of greenhouse gases and that the scheme has benefited the UK economy.

Even a domestic-only trading scheme would allow Australian companies to gain valuable experience and would free up new forms of capital. Trading is five times more capital efficient than prescriptive regulation and delivers a firm signal to the market that carbon has an asset or a liability cost associated with it. This market intelligence will take significantly longer to achieve via a technology-alone route.

To be effective an Australia national emissions trading system should include all relevant sectors of the economy including energy intensive sectors of the economy.

Tackling the 'low-hanging fruit'

Sectors that can be more rapidly engaged to curb CO2 emissions are transportation, household and commercial.

Energy retrofits for the commercial and household sectors

Ensuring that the household and commercial sectors are retrofitted with energy efficient appliances and technologies, insulation and double glazing²¹ could provide a rapid way to

²⁰ Baker & McKenzie

²¹ Lighting, heating, cooling, refrigeration and cooking has Australians currently using energy at 10.3 thousand kilowatt hours of electricity per person

reduce Australian emissions of GHGs²². Individually, households and small enterprises may find it difficult to finance a retrofit, but a national financing package could provide a win-win solution either through a mortgage or a lease-financing scheme. Banks, insurance companies, and energy retailers as well as the companies providing the technologies and installations would likely want to be involved. The costs of the energy retrofit would be repaid with the energy bill over a period that would reflect an equivalent amount saved on the energy bill. There should be no cost of such a programme to taxpayers and the program would generate significant employment opportunities in manufacture and installation.

Transport

Globally, transportation is responsible for 20 per cent of GHG emissions and this is another area where fairly rapid action can be taken. Hybrid lightweight fuel-efficient cars are already making headway in the market. To fast-track this, Governments could mandate benchmarks (such as kilometres per litre) for fleet procurement (all levels of Government and businesses over a certain size) this would create a market of such scale that the unit cost of these cars for the general consumer market could be sharply reduced.

This approach, combined with cities applying congestion taxes, and governments improving supply and performance of public transport, would dramatically reduce urban pollution CO₂. The technology already exists to reduce car emissions by 50% plus, and the industrial revolution based on sustainability and a carbon-restrained future will develop new aspects of the transport industry. Again employment opportunities are clearly visible.

Other areas where a government framework could assist transition include:

- A national hot-line showcasing lightweight, fuel-efficient cars (constantly up-dated with new benchmarks); tax incentives for purchase of fuel-efficient vehicles for companies and consumers
- Follow the successful lead of the City of London which applies a five pound per day congestion charge for drivers entering the City (the result is that the air is cleaner, health problems due to air pollution are reduced, gridlock is reduced and productivity increased)
- Adapt the congestion charge to focus on vehicles with high fuel consumption in city centres. For example, the City of Paris is discussing banning 4-wheel drives outright in the City centre. An Australianised program need not affect Australia's rural and regional community who require rugged all terrain vehicles
- Regulate that drivers of 4-wheel drive vehicles be required to have heavy goods vehicle licences

Addressing specific recommendations of the Energy White Paper

Geo-sequestration

“Assuming that geo-sequestration will be proven - and be cost effective is a bit like going for a drive in a car with no brakes, and hoping that someone will invent brakes before you get to a corner. It’s rather ironic that people who think that we can’t assume that renewable technology will evolve and be more cost effective are quite happy to make a heroic leap of faith that geo-sequestration will be proven in the next five minutes.” Professor Ian Lowe, Griffith University

While we support R&D into a suite of clean coal technologies, we do so on the understanding that geo-sequestration should be only one element of a portfolio of technologies important for

²² Several programs are under way to ensure that new built environment is energy efficient

Australia's future as an energy-intensive nation. We certainly wish to express our unease about geo-sequestration becoming the 'technology of choice'.

Much apprehension has been expressed to EBA, even by those who are supporters of clean coal technology, that the Energy White Paper positions geo-sequestration as the main way forward to reduce greenhouse gas emissions by industry. This may be at the expense of further meaningful investment, or signals that encourage investment, in the renewables industry.

There is confusion relating to the broad term "geo-sequestration" and there needs to be clearer definition between deep-ocean sequestration of CO₂ for enhanced oil or gas recovery by re-injecting waste by-product emissions, and the significantly different processes and costs associated with geo-sequestration of emissions from coal fired energy plants.

Work done by Statoil at the Sleipner Project in the North Sea has demonstrated that the capture and re-injection of GHG emissions from deep sea oil drilling can be done in a closed-loop and relatively inexpensive system. This company has stated its confidence on the security of this deep ocean storage and the only comment that EBA wishes to make on ocean sequestration is that it would appear to be a good transitional GHG mitigation tool for the North West Shelf to deal with CO₂ emissions. More generally we are strongly in favour of fuel-switching from coal to gas especially where the gas can be exported to developing countries to replace coal burning.

However, GHG emissions from coal fired power plants present a very different set of problems and significantly higher costs.

There is little evidence to date to provide confidence that the capture, compression, storage and transportation of CO₂ along with the additional high costs of preparation of suitable sites and site security maintenance will allow geo-sequestration to be cost-competitive when compared with emissions prevention or with alternate energy generation from renewable energy sources such as wind in the short term, or solar, wave, tidal, co-generation with bio-fuels, and perhaps most importantly geo-thermal energy in the longer term (2015).

Added to the above costs are the acknowledged reduction in efficiency of coal fired plants (10% to 25% losses) because CO₂ capture and compression is highly energy intensive.

Where suitable and secure carbon sequestration sites are hundreds of kilometres away from the power station, pipelines would have to be built and this would be a further costly infrastructure to build and maintain security on. Trucking of compressed CO₂ is an alternative but again carries risk and high cost.

Investment may be better focused on making coal-fired electricity plants operate to maximum efficiency during their lifespan prior to energy switching to gas or other sources of cleaner energy for future power generation plants.

The PMSEIC estimate for CO₂ geo-sequestration was a mere \$10 per tonne. We request that the basis upon which this figure was put forward to Government be made available. Elsewhere in the world costs in the order of \$80 to \$140 (US\$) plus per tonne of CO₂ sequestered are anticipated for older plant and this level of cost seems to be the generally accepted range.

In contrast to the PMSEIC figures the following costs are from Anderson and Newell quoted in the CICERO Report 2004 'Prerequisites for Geological Carbon Storage as a Climate Change Option'²³. The report was authored by Asbjorn Torvanger, Steffen Kallbekken and Kristin

²³ www.cicero.uio.no

Rypdal for the Center for International Climate and Environmental Research (CICERO) in Norway.

C02 capture from coal fired plants	US\$ 45.00-58.00
Transportation US\$ 5.60-10.80 per 100 km (x 8 for Australian transportation relevance)	US\$44.80-86.40
Storage	US\$1.40-8.40

Therefore, according to this research, the basic operational costs in Australia geo-sequestration of carbon dioxide from coal fired electricity plants would be in the order of US\$91.20 to US\$152.80 per tonne. It is important to note that these figures do not include additional costs of ensuring community acceptance for specific sites, site security and leakage prevention monitoring, project and latent liability risk insurance, or negative impacts on the environment or health in the event of a leak.

We acknowledge that cost estimates vary significantly between different fuels and types of processes, but as the Energy White Paper has chosen to focus on carbon capture and storage from coal fired electricity plants, this submission does likewise.

Other analysts have arrived at higher figures and some have arrived at lower figures and a cross section of data is available from the organisations' websites (the figures below are in Australian dollars)

IPCC (2002)	\$52-\$86
IEA (2001)	\$69-103
DoE USA (2003)	\$46-140

Importantly these are general figures comparing an aggregate of old and new coal fired plants and geo-sequestration from gas-fired plants. Many Australian coal-fired plants have 30 to 40 year life spans left and the costs of geo-sequestration would be higher here than for newly built plants therefore we do not believe that these aggregate figures are as applicable as the CICERO findings.

There are three questions which must be answered before geo-sequestration can be seriously invested in:

- Where will the toxic waste sites be situated?
- Will there be transfer of legal ownership and liability from companies to Federal or State Governments?
- Which insurance companies are prepared to underwrite the latent liability risks?

We believe that it will take another 10-15 years to prove-up geo-sequestration technology. In the meantime the advances in renewable energy may make the necessity for geo-sequestration obsolete. We particularly refer to the ability of fuel cells to store energy for release on demand and the advent of the hydrogen economy, combined with advanced voltage conversion and the many new devices capable of reducing energy consumption at the household, commercial, social infrastructure, and industrial levels.

Another issue is that as much of the production of Australian brown coal is exported we have little or no control over the emissions in other countries. Clean coal technology developed in Australia may therefore have a limited impact on global emissions of carbon.

The safest way to sequester carbon is to leave it in the ground in the first place.

Recommendation: Government should ensure a broad portfolio approach to support of innovation and should recognise the significant cost, waste disposal and security issues associated with geo-sequestration of compressed CO₂.

Fuel excise

Fuel excise changes outlined in the Energy White Paper will have far-reaching negative impacts on the stated desire for Australia to have a low emissions energy future. This is another highly contentious aspect of the paper. The substantial proposed expansion of the availability of excise relief, will effectively make excise-free the use of fuels for stationary energy applications such as power generation, heating and industrial applications. This will encourage the use of 'dirty' inexpensive diesel and will reduce the competitiveness of regional renewable power generation projects.

Changes will cost taxpayers a direct \$1.5 billion over the period 2006 to 2013 and the ensuing decline in competitiveness and uptake of renewable energy sources will reduce employment options in rural and regional Australia and will result in additional negative externalities.

We find this objective to be contradictory to the Government's existing greenhouse policy strategies and would suggest that a better way forward would be for individual landholders and farmers to have recourse to rebates for clean diesel for transportation purposes.

Recommendation: Repeal the proposed excise relief

Obtaining a fair share of the global market

According to the International Energy Agency (IEA) renewable energies are projected to be the fastest growing energy sector across the world for the next decade. In July 2001 it was estimated that the value of the global energy technology market was \$7 billion and that this figure was expected to grow to \$82 billion by 2010. The Prime Minister's Science, Engineering and Innovation Council (PMSEIC) submitted a report in July 1999 indicating that the marketplace for greenhouse gas emissions reductions technology and systems could exceed \$700 billion and they recommended that Australia aggressively pursue a fair share of this marketplace.

Australia has leading expertise in a variety of renewable energy technologies such as wind energy, solar energy (including photovoltaics), wave energy, potentially tidal energy, remote off-grid systems and biomass power systems. As mentioned above there is tremendous potential for deep hot-rock geothermal energy and research into fuel cells is apace with other countries.

Australian companies want to be able to access a fair share of this global market and we call on the Federal Government to provide support that is equivalent to that provided by countries such as France and Canada to their emerging environment industries.

Future generations may have better and less expensive technologies to address climate change but in the interim the carbon concentration continues to develop, and Australia is handing our competitors in other countries our potential share in future markets

We urge Government, in the strongest possible terms, to encourage the 'home-grown' R&D that spawns new industries, new employment, and new levels of national security. This is simply not achievable solely by importing the achievements of others, especially if we seek to

grow our education base, avoid a 'brain drain', have pride in our achievements and our abilities to assist other countries, and develop Australia's emerging environment and sustainability industry.

Employment

We refer the reader to the House of Representatives Standing Committee Inquiry report *Methods, Measurements and Messages* released on 1 December 2003 into employment in the environment sector. This report clearly outlines growth in quality and quantity of employment opportunities from addressing climate change and specifically the opportunities for rural and regional employment from renewable energy.

While there are jobs in the construction of coal-fired power stations very few long-term jobs are available in the operation of these largely mechanised plants. Employment in coal-fired electricity has declined by 50% since 1991. Clean energy alternatives provide new jobs. Wind energy developments, for example, provide 2 to 3 times more jobs for each unit of electricity generated.²⁴

We understand the status quo - but we vehemently oppose it dictating our future!

EBA is very concerned that at present the strongest industry voice in the Energy White Paper is from the coal and the energy intensive sectors. This voice that has been seen and heard consistently in the media opposing renewable energy.

Fossil fuels have served Australia and other developed countries well in the early and mid-industrialisation eras but as we move into this new millennium our current energy production, subsidies and preferential contracts must change to embrace future sources of energy and productivity that are more acceptable to the international marketplace because they do less damage to our global commons.

"The dangers of asbestos emerged in the 1920s. Why did successive governments fail to protect us?"²⁵ The dangers of climate change have likewise been known about for a considerable amount of time. Again latent liability is being traded against current returns. Tobacco and asbestos have provided adequate case histories that eventually those who cause damage are brought to justice.

Carbon emissions are causing emphysema of our future and the latent liability risks are as high for governments who shield as for those who perpetrate the harm. Governments cannot afford to delay on meaningful response, the need to curb GHG emissions is of paramount importance.

Impediments to a clean energy future

Technology transition occurs when markets receive proper intelligence based on rigorous analysis and interpretation of new needs and trends. But market failures happen and it is naive to assume that good technologies will automatically be welcomed by the market, or that the future will provide miracle cure-all technologies at a pittance of today's prices.

²⁴ Sustainability Centre, 2003; WWF News

²⁵ Alan Mitchell, Australian Financial Review 9 July 2002

It is the role of Governments to create market signals through appropriate policy and regulatory settings.

An integral part of the dilemma we have is the denial that anything truly threatening is happening and as long as that denial is the basis of public policy we will not see the necessary catalysts for:

- Market mechanisms such as emissions trading
- Updated (and harmonised) legislation that works with benchmarks rather than against them
- The integration of social, environmental and economic planning and policy development that will encourage creative private sector financing.

The framework of transitional strategies outlined earlier in this submissions should also focus on removing impediments to clean energy and to fast-tracking the development and commercialisation of renewable energy sources and we acknowledge that this point is referenced for financing in the Energy White Paper. However, this industry does not recognise the impediments outlined in the Energy White Paper as those that are the most critical.

The biggest hurdles to overcome are:

- The scope and scale of the Australian marketplace
- The non-costing and lack of internalisation of negative externalities
- The conservative and risk averse approach of governments to new technology and hence to full scale demonstration sites
- Perverse subsidies supporting outdated energy supply to certain energy intensive sectors
- The political power base of status quo industry
- The lack of incentives to major investment
- The difficulty that major American pension funds (for example CALPERS, or the New York State Pension Fund) find in investing in Australian technology in Australia

Ironically, the Energy White Paper itself has created four very specific impediments and they are:

- The focus on geo-sequestration as an alternative to a low emissions abatement pathway
- Positioning MRET as an "expensive" option
- Reinforcing the decision to avoid a national emissions trading scheme
- The fuel excise rebates

The issue of energy storage would not be significant if grid connections were easier to obtain for renewable energy. Nevertheless, there is significant work underway into energy storage technologies that will be applicable for remote and regional areas. Proposed projects such as the Derby Tidal Project would be ideally suitable for the nearby location of a minerals processing plant.

Carbon leakage

There has been much media attention paid to certain companies' and organisations' claims regarding MRET and emissions trading, and the potential increase in energy costs which according to some may result in some energy intensive companies seeking to relocate overseas. As demonstrated by studies undertaken by McLellan Magasanik on behalf of Origin Energy, inter alia, these increases in costs are likely to be marginal only.

The issue of potential 'carbon leakage' where companies threaten to move to less demanding regimes in order to be able to continue to pollute should be seriously questioned. Exactly how many reputable companies will seek a 'licence to pollute' from their shareholders, insurers and bankers, and abandon sunk assets in the process of relocating to a less stable economic and political regime in order to seek marginal reductions in energy costs for an indeterminate period? There may well be *some* decisions to put new investment into other countries but the reasons for doing this will be complex and it is unlikely that the shadow cost of carbon will be as important a consideration as labour costs, taxation, exchange rates, and the general cost of infrastructure and services in Australia. It would be interesting to see an analysis of any likely losses compared with gains from new technologies and approaches.

Conclusion

The Energy White Paper needs to be urgently revised to create a level playing field for Australia's emerging industries and to ensure that Australia plays a leadership role in addressing climate change. This leadership role is required to ensure Australia's competitiveness in the future carbon-constrained marketplace.

The national energy policy needs a long-term vision that recognises the deep cuts in carbon emissions that are needed. Investment certainty for future energy sources and infrastructure development requires a strategic pathway to be mapped out and the transition will require a combination of economic, regulatory, fiscal and technology solutions.

Other EBA recommendations that we highlight in this conclusion include:

- A coalition 'war council' approach to urgently address the security risks of climate change
- Commitment to cuts of CO₂e emissions by 60% by 2050 and 80% by 2100
- The adoption of a national carbon emissions trading scheme
- An increase of the Mandated Renewable Energy Target (MRET) to 10% by 2010 and 20% by 2020 and removal of the cut-off date (until the market demonstrates equal opportunity for renewable energy)
- A national externalities study to cost collateral damage and to provide market signals that monetise clean energy action
- Assistance to developing countries to reduce their carbon footprint while growing their economies
- Ratification of the Kyoto Protocol, because it is the first step forward on a 100 kilometre journey and 124 of our trading partners and competitors are involved.

*Fiona Wain
Chief Executive Officer
Environment Business Australia
National Press Club
8/16 National Circuit
Barton, ACT 2600
Tel 02 6270 1333*

Supporting documentation can be obtained from EBA's website www.environmentbusiness.com.au and include policy papers on externalities, emissions trading, the Mandated Renewable Energy Target, and the Kyoto Protocol