



Wedges, levers and a zig zag

A framework for Australia's continued prosperity in the low carbon market

"... for too long, we have failed to give a value to our climate. We have failed to put a price on pollution. We have overloaded the earth's atmosphere with greenhouse gases with no accountability for what happens next." Senator, Penny Wong, Minister for Climate Change, 6 February 2008.

Core climate change action recommendations for 2008

- Create the architecture to demonstrate that an energy intensive economy can remain robust by becoming smarter and more efficient and developing competitive advantage in carbon constrained markets
- Design and implement a government enabling policy framework to match private sector innovation - regulation, fiscal incentives/penalties, market based mechanisms, standards, education, government procurement and investment - should be structured to help achieve climate change action and development of new markets. The 3 levels of government should be engaged in the process
- Put in place a target of 40% cuts in GHG emissions by 2020, with an early target of 20% by 2015
- Create a *Climate Bond* to finance action. Auction all permits in the National Emissions Trading Scheme (NETS) and hypothecate funds to necessary action. In addition transfer proposed tax cuts to national interest infrastructure projects – starting in 2008
- Institute full cost recovery pricing throughout the supply chain to overcome negative externalities; to help provide funding for the 'next great technological era'; to reinforce competitive neutrality; and to phase out waste, pollution and GHG emissions
- Subsidies and preferential contracts that produce perverse outcomes should be removed or re-allocated to help achieve sustainable outcomes
- Engage all sectors of the economy (no exemptions) as quickly as possible in the National Emissions Trading Scheme and put in place complementary measures to fast-track climate action
- Provide support to cities to change 'profit centres' like public transport into 'efficiency centres'
- Plan to host one of the future international annual UNFCCC CoP/MoP two-week conferences

Environment Business Australia

Environment Business Australia (EBA) is the peak body representing the Australian environment and sustainability industry. We are a business think tank and advocacy group promoting commercial solutions to environmental challenges. Our objective is to help drive transition that enhances Australian prosperity while at the same time protecting the natural capital which underpins our wealth, competitiveness and lifestyle.

We represent many industry leaders and investors keen to be proactive and to share their knowledge and expertise, to try new ideas and to be agents of change across a broad spectrum of industry sectors. These companies understand that there are commercial opportunities in tackling climate change. Individually and collectively many of them are championing practical steps to help speed up the action that is needed to avoid climate change going beyond a point of no return.

We are a not-for-profit organisation with no political alliances, entirely funded by membership subscriptions and the events we stage.

EBA and its member companies look forward to working with the Rudd Government to tackle climate change.

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This submission is addressed to the Prime Minister, the Garnaut Review, the Treasurer, the Ministers for Climate Change, Innovation, Industry, Science and Research; Finance, Foreign Affairs, Trade, and Services, as well as their Departments. The paper is also submitted to the Productivity Commission, the Australian Bureau of Statistics (ABS), the Australian Competition and Consumer Commission (ACCC), Australian Energy Regulator (AER), Austrade, and State Premiers and Ministers.

In addition to this overview paper, Environment Business Australia is updating a series of explanatory background policy papers, previously submitted to Government, and these will be forwarded shortly. An appendix to this paper 'Targets for our future' outlines some of the major technology and policy steps that can be taken to increase efficiencies and deliver the recommended 40% cuts in GHG emissions by 2020.

Overview

Action taken over the next 10 years to tackle climate change will largely determine whether or not mankind is successful in securing a tenable planet. More specifically, the battle will probably be won or lost in Asia.

The recent IPCC Synthesis Report has highlighted the urgency of action and deliberations at the Bali Climate Change Conference suggested cuts in GHG emissions in the order of 25% to 40% need to be made by 2020.

In this paper Environment Business Australia proposes that the nation accept the challenge of the higher 40% figure - this is a highly ambitious but necessary target. We make this recommendation because we believe it will help define the architecture and road map for Australia to build its next competitive edge in the face of rapidly restructuring markets where an international price on carbon and the 'next great technological era' will predominate.

The road map for action will not be a straight green line into the future. It will be more like a zig zag as initially we head right and then left for 5 paces, but perhaps only 2 steps forward. As technology is refined, financing is refocussed and public understanding demands faster action, then our zig zag can change shape – 2 paces to the right and then the left, but with 5 giant strides forward. Eventually the road will straighten, but this requires forethought, planning, architecture and determination.

Our neighbours, many of them developing countries, are seeking ways to meet the challenge of building their economies in the face of the biggest threat that has ever-faced civilisation. Add in the complexities of peak oil, peak fish, peak soil and water shortages, and it is clear that the vulnerabilities facing nations have major economic and security implications.

Overcoming these vulnerabilities and helping to shape a marketplace based on sustainable production and consumption without waste, pollution and greenhouse (GHG) gases, is conceivably the biggest wealth generation and preservation opportunity since the industrial revolution.

Environment Business Australia (EBA) believes that helping to shape the new markets of the second industrial revolution will do more to strategically prepare Australia's next competitive edge than continuing with the historical imperative of exporting agricultural produce and unrefined resources. The new markets for technologies, services and infrastructure development are right on our doorstep and we can be well-positioned to supply to them.

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Can Australia be a leader on climate change action?

What exactly does Australia have to offer? We have the highest per capita GHG emissions, and over the past decade we have stalled our own domestic action while our international policies¹ have supported a slowing of international response to climate change. Our track record is not exactly one of leadership.

However, EBA believes that Australia does have an international leadership role to play in helping combat climate change.

If an energy intensive country like Australia can maintain a robust and competitive economy by being smarter, more efficient, and making the transition to cleaner and renewable sources of energy; and if it can help develop the markets for the next great technological era; then it is in a strong position to help attract major private sector and institutional investment into solutions that will assist developing countries leap-frog the mistakes of Western countries.

How we do this brings into play one of the most fundamental of all issues for Australia. Can we create the vision, backcast, plan, put in place the architecture and start achieving real GHG abatement and commercial outcomes quickly enough?

Scope of the market

As the scope and scale of the Australian marketplace on its own is unlikely to offer sufficient reward for investors, or for technology and infrastructure project developers, it is imperative that we look to the markets in our region, especially India and China.

The global 'carbon constrained' marketplace is expected to double the \$750 billion market² for environmental goods and services. When investment is added a multi-trillion dollar market emerges. This is a market that Australian companies want to be able to compete fairly in – especially the part that is right on our doorstep.

It is worth noting that fund managers who are part of the Carbon Disclosure Project (CDP) represent \$US41 trillion of funds under management. They are requesting companies they invest in to have a carbon strategy to avoid direct or latent exposure to litigation and to be competitively prepared for market shifts.

As Tony Maher, President of the CFMEU said on the final day of the Bali Climate Change negotiations "Climate change action is the biggest economic and trade treaty in the world."

Achieving GHG emissions reductions

The Rudd Government's ratification of the Kyoto Protocol and intention to begin carbon emissions trading in 2010 and to set interim 2020 emissions targets are welcomed by EBA. The recent announcements on the importance of infrastructure, educating and skilling up the workforce, innovation, productivity and competitiveness are also timely - Australia needs to build its next competitive edge based on international recognition that the environment is our most fundamental asset. We are in 'catch up' mode to be accountable and responsible.

The private sector has the innovation in technology, expertise and financing, but it needs a 'government enabling framework' to get on with the job. Business cannot overhaul regulation, put in place market based instruments, revitalise standards across the board, redirect fiscal incentives and penalties, or fundamentally change government procurement, leasing and investment patterns. Adjusting government policy *levers*³ is critical to ensuring that the technology *wedges*³ are brought into play quickly and deeply enough.

¹ Policies of the previous government exacerbated this because of the refusal to refresh policy stances on energy and climate change and because of Australia's isolation from the Kyoto investment community. For example, Australia lost significant investment in carbon sinks because Japanese investors selected forestry projects in New Zealand.

² Globe Foundation and Asia Pacific Foundation of Canada, USA Department of Commerce circa 2002

³ Princeton University 'wedges' theory suggest that any 7 of 15 technologies outlined would be capable of reducing GHG emissions without curbing prosperity

One of EBA's core recommendations therefore is that over the next 12 months all three levels of government work together to overhaul key policies in the areas of energy efficiency and demand side management, regulation, taxation, industry development, innovation, trade, foreign affairs, agriculture, health, finance, and at the same time bring a suite of market based mechanisms and complementary measures into play.

Achieving the needed greenhouse gas abatement and the climate change mitigation (and adaptation) outcomes will require many things but above all money, technology, and a fundamental change in societal behaviour patterns. Outcome focussed policy is a prerequisite to achieving any, let alone all of the desired outcomes we outline in this paper.

By putting a price on carbon the NETS will take us part of the way forward. But the short and mid-term transition needs complementary measures to drive step changes in technologies and services; we have therefore put forward recommendations for a suite of policy measures which will help provide the regulatory clarity and equity required by investors and company boards of directors.

It is worth highlighting that no electricity market anywhere in the world has emerged without government intervention and the clean energy market and sustainable production and consumption require equal intervention. But there is far more urgency than previously, this new intervention is needed in a very short timespan if we are to tackle the immense task ahead speedily and effectively enough.

Clean energy, sustainable production, consumption and transport, are not about setting up a generation of more expensive infrastructure - it is about modernising our systems and approaches to harness commercial return without inflicting short, medium or long-term damage on humanity or on the environment.

Australia has high levels of innovation but has a lumpy history regarding commercial development of new technologies in the domestic market. Unfortunately for Australia, this has led to a number of outstanding technologies being developed overseas⁴. While altruistically this is good for climate change action, it is not good for our export profile. EBA welcomes the Clean Energy Export Strategy and we believe there is scope to further link environmental performance of technologies and services with trade.

Innovation needs an enabling framework

Business is pivotal to achieving real carbon reduction outcomes and Australia has private sector innovation in technology, operational management, infrastructure and financing that is capable of achieving the outcomes that the community expects.

EBA believes that there is an urgent need to update the policy areas below (an indicative list) so that they are more effective 'levers' to the transition to a low carbon economy:

- **Regulation** – focussed on outcomes not process, to be harmonised over the three levels of government and across all jurisdictions; prevent business leaders from being undermined by poor performance of competitors
- **Full cost recovery pricing** - costs of negative externalities internalised throughout the supply chain to the end consumer
- **Fiscal rewards and penalties** – use the tax system to reward what society values and penalise detrimental activities
- Specific and tailored **market based mechanisms** which can work under an 'umbrella' national emissions trading scheme; for example the Mandated Renewable Energy Target (MRET); a mandated energy efficiency performance target; a pollution and waste eradication target; a low emissions energy target
- **Government procurement and investment** – an example is cited later in this paper

⁴ Australian technological innovation and infrastructure development headed overseas where clean/greentech technologies earned more because of the value-adding they could achieve for delivering environmental and health returns as well as basic goods and services. Two examples are Suntech (China) and Global Renewables (UK), both now have multi-billion dollar markets overseas and their technologies are yet to be broadly supported in Australia.

- **Standards** - speedier process for setting new benchmarks
- **Education and community empowerment**
- **Financial incentives** for R&D, demonstration, operational refinement, commercialisation, deployment and export - including technology transfer to developing countries

The biggest challenge is monetising tomorrow's value to galvanise action today. This does not necessarily mean major new investment by government, but it does mean re-allocating existing investments and using policies to drive opportunities and to eliminate barriers to success. An enabling framework does not 'pick winners' per se, but it does create better opportunities for winners to emerge by rewarding high performance in any sector.

Attracting sufficient money to invest in action – create a 'Climate Bond'

Achieving all the right outcomes will require major investment. The International Energy Agency and other international bodies have suggested that over 60% of financing for future climate action and clean/renewable energy supply will need to come from the private sector. We propose that Australia create a *Climate Bond* similar to the Future Fund to harness necessary financing for technology deployment, national infrastructure projects, systemic energy efficiency upgrades, and the training and re-skilling for green employment across all sectors of the economy. We recommend government looks at the following areas to attract and harness this investment:

- Create a 'Climate Bond' with underwritten guaranteed returns. Funds provided to Federal, State and local government for long-term infrastructure borrowings at 50% of the reserve cash rate
- Auction all permits in the National Emissions Trading Scheme (NETS) and hypothecate revenue which should be in the order of \$10 billion to \$12 billion a year (revenue from 2010 onwards)
- Divert proposed tax cuts in the 2008, 2009, and 2010 budgets to national infrastructure projects. This could raise revenue from mid 2008 onwards
- Increase compulsory contributions to employee superannuation funds to a minimum of 12% and preferably 15% in the 2008 budget⁵
- Provide policy incentives and underwrite IRR of 8% to superannuation funds to commit a minimum of 10% of their investment portfolio to climate action. This could raise revenue from mid 2008 until 2020 approx when a high number beneficiaries call on their super funds
- Make Australia more attractive for inward bound investment and provide additional incentives to attract major international pension funds and institutional investors who are looking for long-term environmental infrastructure investments)
- As part of the Climate Bond create a specialised index fund for individual investors to participate in technology, infrastructure and systems overhauls
- 10 per cent allocation from Future Fund earnings (not capital)
- Provide incentives to insurers to offer lower premiums for companies verified as taking meaningful measures in energy efficiency, pollution and waste abatement

What would the Climate Bond invest in?

- National mandated energy efficiency performance program for business; backed up by a nationwide energy efficiency retrofit program for households and the broad commercial sector (linked to a lease-financing/mortgage extension scheme)
- National infrastructure approvals requirement for full lifecycle analysis of GHG emissions performance of all infrastructure proposals
- Speeding up accelerated depreciation and project amortisation encouraging plant retirement, plant retrofit so that companies can adjust their emissions profile consistent with the emerging global carbon restraint. Funding of necessary action is preferable to "compensation" for perceived market loss

⁵ No additional employer cost is envisaged, simply a transfer from ATO revenue from income tax on salaries to super funds

- Encourage early portfolio diversification to more sustainable production/supply and uptake of more energy efficient processes and low emissions technologies this could extend as far as support for mergers and acquisitions and capitalising new business opportunities
- Fast-track a portfolio of renewable energy technologies capable of delivering baseload and peak energy requirements
- Support R&D, including early stage start up through to demonstration projects (in Australia and overseas), commercialisation and deployment of clean technologies and energy efficiency measures
- CDM and JI projects
- Joint venture business development (when sold capital would revert to the Climate Bond). Objective to have 5 major businesses developed in Australia every five years
- National standards for manufacture and import of appliances, vehicles, goods
- Improved and expanded rail networks including inter-city very fast trains to replace air travel and transfer of road freight to rail
- Public transport to reduce cities' road congestion
- Support for deforestation avoided in developing countries
- Overhaul of waste management to focus on recycling of materials, embodied energy, and soil carbon from the food chain
- Technology processes that use CO₂ as a feedstock
- National soil carbon replenishment program for food production and carbon sequestration
- Financial remuneration to farmers and land-holders for carbon offsets such as forestry sinks and land-clearing avoided
- Transition from the NSW GGAS to NETS with current investments and future positions transferred on a tonne for tonne basis
- Analysis and adoption of world's best practice in energy efficiency, demand side management and clean and renewable supply of energy

EBA recommends that the Climate Bond be administered by an independent board with representation from all three levels of government, industry, employees, science, the Reserve Bank and the Future Fund and the CEO of one of the four major banks (rotating annually).

Government policy and the Climate Bond can together provide significant incentives:

- For the community - individuals struggle to find ways that they can personally contribute to climate change action. The creation of an easy to access index fund would provide both education and empowerment. Through the fund private investors would be able to participate in, and feel a sense of ownership of the development of real outcomes
- Committing to fixed long-term investment returns for employee funds invested in the Climate Bond
- Reducing contributions tax from 15% to 10% on funds contributed by employees to the Climate Bond

Empowering action at community and city level will become increasingly important as governments find it necessary to stop downplaying the risks of what lies ahead and step up action (abatment, mitigation and adaptation).

Funding of this magnitude will help build flexibility and willingness to weave new solutions into the market and policy mix, and to winnow out approaches that have reached their 'sell by date'.

Emissions trading

A price on carbon, initiated with a national emissions trading scheme, is necessary to the development of the marketplace for clean energy and helps to lead the economy away from broad risks associated with investments modelled on outdated scenarios. But emissions trading on its own is insufficient to drive action quickly and deeply enough, EBA therefore emphasises that one of the core recommendations is for government to fast-track complementary measures – particularly regulation.

Appendix 2 to this submission is a slightly revised version of the papers submitted to the States and the former Prime Minister's Emissions Trading Task Group. In outline, EBA recommends the earliest possible start to emissions trading and we support the cap and trade model.

We also strongly recommend that all permits be auctioned with a reserve base price but no upper limit. According to research by the ASX and AMP the auction of permits would realise revenue of between \$10 billion and \$12 billion per annum. One of our strongest recommendations is that this revenue be hypothecated to drive desired outcomes and to help business make the transition to a carbon restrained economy.

Targets

"The danger is not in setting our sights too high and failing to achieve our target. It is in setting our targets too low and achieving them." Michaelangelo

There has been much discussion nationally and internationally about long-term and intermediary targets. A recent EBA paper *Targets for our future* deals with these issues in more depth and is attached as *Appendix I*.

Targets for our future has been revised since its publication last September, in one very important aspect. Prior to the IPCC Synthesis Report EBA had recommended an interim target of 20% by 2020 against 2007 emission figures. In light of the importance of recent scientific data and the urgency of the task ahead we now most strongly recommend that Government aim for a target of 40% cuts in GHG emissions by 2020 and put in place 2015 targets of 20% to be supported by a major community education program.

Targets for our future outlines how Australia can set a high 2020 target and achieve it while growing green employment and fast-tracking the emergence of the environment industry and cleantech sector. We emphasise most strongly that success will be predicated on the right policy settings being put in place by government.

The recent McKinsey report agrees with EBA's findings stating that Australia could achieve 30% in GHG emissions by 2020 at a cost of less than \$300 a year per household or \$2.9 billion. Like the EBA report, McKinsey does not bring geosequestration or nuclear energy into play for the 2020 targets. They also suggest that 60% cuts by 2030 are possible using existing technology and we agree with that finding.

Inclusion of sectors

EBA recommends that the waste, built environment, transport and agricultural and forestry sectors be included in emissions trading. There are considerable offset benefits to be harnessed and speed of action, especially in the transport sector is essential to success in curbing emissions. Reports from the Waste Management Association of Australia, the Green Building Council and the National Farmers Federation have also spoken to the importance of early engagement and reward for early movers which emissions trading and complementary measures can facilitate.

EBA also recommends that the NETS include the aggregate sectors of households and commercial activity to ensure that demand side management measures are designed and implemented as quickly as possible.

We raise here an issue that concerns a number of our members and where we have serious reservations. We have noted in the initial recommendations of the Australian Energy Regulator (AER) that there is a divergence of opinion with the stated aims and objectives of the Rudd Government regarding demand side management (DSM) and energy efficiency. We recommend that the AER's determination be held in abeyance until such time as they are brought fully up to speed by the Department of Climate Change, and, until there is a clear understanding of the solutions that business has to offer and what is available as world's best practice in DSM.

We strongly recommend that there should be no 'carbon holiday' for the energy intensive or trade-exposed sectors. The NETS needs depth and liquidity to function successfully. Furthermore, we do not believe that exemptions are in the best interests of the national economy, and we consider they would reinforce the current failings in competition policy.

In response to commentators and lobby organisations who suggest that trade-exposed companies will leave Australia and pollute elsewhere, our research has not brought to light one company prepared to make a material declaration to the ASX that it will leave Australia when emissions trading is introduced and:

- Seek a licence to pollute from their shareholders, investors, bankers, insurers
- Abandon sunk assets and long-term resources, good infrastructure and skilled personnel
- Relocate from a stable economic and political regime to a country where these assets and stability are not present
- Gamble on marginally lower costs of electricity remaining low, or a carbon price not coming into play in other countries
- Ignore market signals of an international carbon price and increasing demand from consumers and investors for 'clean and green'

Research by the OECD supports our findings. Following introduction of new or strengthened environmental regulation in a number of countries the OECD have not found evidence of companies relocating to countries with less stringent regulation and enforcement.

There will inevitably be investment in other countries with strong natural resource bases, cheap labour and lower rates of taxation. However, it is highly unlikely that the shadow cost of carbon will influence that decision.

And regarding a possible future transfer of wealth overseas, we highlight that this is already happening through damage to the commons - and in virtually every report, scientific or economic, about climate change, Australia is singled out as one of the countries most vulnerable to early and deep negative impacts from climate change.

That incumbent polluters will be disadvantaged (comparative to their status quo benefits) by governments putting in place frameworks to protect the public good is to be expected, and is a step in the right direction for the economy and for the next wave of wealth generation. There are however, many ways to ease the transition which, although it must *begin* immediately, gives most companies and sectors 20 to 30 years to adapt.

A piecemeal approach to a national emissions trading scheme, providing a 'carbon holiday' for some sectors, would in reality extend the market for inefficiency. EBA therefore recommends that all significant players – companies and sectors should be involved in trading from the outset.

Offsets

A number of carbon offsets can deliver returns that are additional to carbon credits - biodiversity conservation, renewable energy generation, soil regeneration, water catchment maintenance, and dryland salinity reversal are some examples. An excellent paper on biological sequestration offsets has been submitted to the Garnaut Review by New Forests⁶ and we commend this to readers.

There is considerable offset potential to be gained from:

- Biological sources - forestry, soil carbon rehabilitation, land-clearing avoided (with farmers being rewarded for a role as environmental custodians)
- World-leading, proven technologies are ready to be rolled out to recycle the materials, embodied energy, methane and soil carbon in municipal waste streams
- Considerable, as yet unexploited, opportunities to repatriate 'embodied energy' credits from our overseas projects and exports (such as LNG sales to China).

⁶ See www.newforests.com.au or email nobrien@newforests.com.au

Australian exports have more value, and are more competitive when additional revenue from carbon credits can be stapled on.

- Assisting developing countries to avoid deforestation
- And, although in early stages of research, the force-feeding of CO₂ to rapidly growing biomass such as algae may provide a biological sink that can be turned into bio-fuels, soil carbon fertilisers, or even animal fodder. If successful at scale, this would take pressure away from geological sequestration of CO₂

While major landholders and businesses will be able to fund the early activity before offset revenue is received, many small landholders and forest growers may find the compliance costs and obligations of the NETS difficult to handle. We have included offsets in the recommended investment list for the Climate Bond so that aggregate 'pool' projects can be developed to assist small operators.

Australia's outstanding expertise in carbon accounting is an exportable service – as evidenced by the selection of the NCAS by the Clinton Foundation. And, now that Australia has ratified the Kyoto Protocol there is scope to investigate how our offsets as well as our technologies can become part of CDM and JI projects.

Government procurement and investment

Government is the biggest market in Australia. An example of how the government procurement/leasing/investment can shape new markets is in the automobile sector.

While it may be difficult to encourage a consumer to pay an extra 10% or 20% to purchase a low emissions vehicle without incentives, an energy efficient vehicle can pay off the marginal investment within 3 or 4 years. Further, if all manufacturers faced minimum performance standards on energy efficiency, very quickly there would be little differential in manufacturing costs between a standard and high efficiency vehicle. This change can be demonstrated in the cost and efficiency of refrigerators over the 20 years since minimum standards were applied in USA and Australia.

EBA has proposed to the Federal Government that a policy where all three levels of government work together could 'kick-start' a highly efficient automotive market. By mandating that their own fleet procurement and leasing be based on world benchmark efficiency low-to-zero-emission cars; giving automotive companies 18 months to retool their plants; and giving importers strict standards to adhere to; would provide a guarantee that Australia would purchase somewhere in the region of 87,000⁷ vehicles at Federal and State Government levels (figures for local government are still being researched). While this is not an annual figure it is still sufficient to conclude that it is a sizeable enough to allow for the unit cost of low-to-zero-emissions cars to be substantially reduced for the consumer. This government market would also accelerate clean cars into the second-hand market.

Transport more generally should also be a focus of government spend. In many cities efficiency and productivity is lost because of the lack of public transport. Traditionally viewed as a 'profit centre' public transportation should be treated as an 'efficiency centre' which helps other centres of activity to operate more efficiently and profitably. Each private car on the road receives significantly more subsidy than each user of public transport. At the very least car-owners should be paying their fair share of road building and upkeep; air pollution impacts on health; cost of accidents on the road; traffic jams and lost productivity. We recommend that government undertake an analysis of the benefits of providing public transport free of charge and the GHG reduction benefits that would accrue.

Supply chain transport of goods, materials, livestock should use the most cost efficient long-term method which in many cases would be rail. EBA strongly recommends that government investigate the potential for building new rail networks to link major towns and cities and to enhance rail links between major supply centres (mineral resources, agriculture) and cities/ports.

⁷ Federal Government 13,500; Victoria 8,000; SA 8,000; WA 8,400; QLD 13,000; NSW 35,000; local government not available at the time of writing

As recommended by Michael Luscombe, CEO of Woolworths, at an EBA forum on climate change action, we should also investigate 'what' we are transporting and taking the 'unnecessary' out of the equation (for example transporting highly concentrated washing powder rather than large volumes of watered down washing liquid).

The current fiscal incentives to GHG emissions should be removed. For example:

- Car users increasing their mileage to meet FBT requirements
- Diesel rebates designed to assist rural communities being accessed by bulk diesel users in cities (e.g. Sydney Ferries which then states that clean energy technology is too expensive for them to adopt)

New standards and benchmarks

Australia has a poor track record of instigating new standards on the world market and is slow to adopt new standards domestically. This aspect will be developed further in future submissions but for the time being we recommend

- National verification/audit scheme
- Environmental Technology Verification Program to be reciprocal with our major trading partners. Australia could assist with setting up this scheme in APEC countries

Building the market for an emerging industry

There is a recent example of a long-term deterministic plan to build a new market. China's need for resources to fuel their massive infrastructure expansion has seen that country build equity and financing capacity into the supply market. What has emerged is resource export countries now having an unprecedented dependence on China's ongoing procurement and investment. Suppliers have become locked in to long-term contracts at relatively low rates of return because of contracts aimed at exceeding short-term performance targets (when seen over a 10-20 year contract period). While this may well prove detrimental to suppliers over the longer-term, it does provide a useful lesson that markets can be manipulated and re-structured. We suggest that Australia take heed of this and investigate ways to create future markets where we in turn supply technology, professional expertise, project development and financing.

The emergence of markets for the next great technological era, which we have referred to on several occasions in this paper, is key to securing a sustainable future.

As with any sunrise industry, the environment and sustainability industry not only has to forge new markets, but it has to do this by demonstrating strong return on investment and proving that new technologies, infrastructure, and operating systems have significant efficiency, productivity, waste avoidance, and resiliency benefits over traditional approaches.

This can sometimes create conflict with more established enterprises that see:

- The potential erosion of their existing market
- Prices that have been artificially deflated for decades starting to rise for goods and services (such as water and electricity)
- Costs (such as pollution prevention) that have been 'outsourced' onto the environment must now be brought in-house

Technology transfer has been both a strong and a weak point at international climate change negotiations. The premise is right, but developing country want aid or at the very least subsidised technologies, while suppliers want commercial returns. While much of this debate should be seen in the context of diplomatic positioning some facilitators and assistance programs – for example existing web-based programs such as UNFCCC's TT Clear, have become overburdened by bureaucracy. EBA has proposed a virtual marketplace (rather like a green E-Bay). Again this is a subject for further exploration but we attach as *Appendix 3* an interim paper released at the Bali Climate Change Conference in December 2007.

EBA and Austrade are in discussions alongside other organisations such as Clean Technology Australasia (Cleantech Forum) about focussing on specific markets where both the need and the opportunity are greatest. Developing a closer relationship through DFAT and Austrade with key countries is an aspect of industry-government work that EBA is very keen to pursue. Incoming and outgoing trade missions can help showcase Australia's technological, professional and infrastructure investment expertise.

EBA, with publisher WME Media, has produced the Australian Environment Industry Directory for over ten years. We propose to step this up to support the virtual green marketplace place mentioned above and to develop a brokerage service alongside. This will match investors, technology providers, export assistance, tenders, etc., in a more proactive format.

Current impediments to action

The first major impediment is that the debate about climate change action has been hijacked for the past 10 years by those who have forcibly argued that the "cost of action is not worthwhile".

This is an irrational economic argument, not so much because it discounts the value of the future, but because it fails to address the cost of inaction or the cost of lost opportunity. More fundamentally it is an erroneous and dangerous argument because it fails to consider the cost of irrevocable impacts of climate change.

Compounding the problem, our markets and our personal and corporate reward system are based on free-ride short-term gains⁸. Decades of artificially deflated prices and pollution subsidies have undermined competitive neutrality⁹. And, until now, they have effectively stifled Australia's ability (or interest) to investigate how it will build its next competitive edge.

We have arrived at a point where the market is incapable of rational differentiation between a low cost service/good with high collateral damage costs, and a service/good with higher initial cost but no latent drain on consolidated revenue or quality of life.

Fortunately, Australia is now seeking to understand future risk, our environmental obligation and new commercial opportunity. Notwithstanding this enlightenment there is still a misconception that clean energy technology costs will remain high.

Current pricing differentials certainly make it difficult for new market entrants to be competitive, especially as they carry all the early R&D, trialling and commercialisation costs that more traditional energy supplies have amortised over many decades. At the same time they pose little or no negative externality cost - but there is currently not sufficient economic reward process for this. Inference that gas and renewable energy sources are "more expensive" is misleading policy makers and the public because only part of the cost of fossil fuels is being considered. Clean technologies, introduced into a market of sufficient scope and scale will come down the cost curve on quite a steep trajectory^{10, 11}.

It is important to bear in mind that where the consumer pays a low energy price, the taxpayer must pick up the ensuing burden for mitigation of pollution/GHG emissions, or the whole of society is left to pay the larger price of a compromised quality of life.

In comparison, the costs of traditional fossil fuel energy can be expected to rise as future resources will be more costly to access¹² and as society demands action to internalise the

⁸ The current turmoil in financial markets should demonstrate what happens when warning signs are ignored and when short-termism is allowed to override commonsense.

⁹ Sustainability and cleantech leaders have been undermined in the marketplace by those who could profit from pollution and waste. This is similar to the acceptance of injury and even death in the workplace prior to industrial reform.

¹⁰ E.g. Wave, solar thermal, deep geothermal

¹¹ Dr Tom Denniss, founder of Energetech wave power company states that wave energy - even in its early market penetration costs less in today's economy than coal fired electricity 100 years ago

¹² The era of 'low hanging fruit' of easily explored and mined fossil fuels and minerals is nearing its end

costs and then eradicate negative externalities. Coal may still be referred to as "cheap" but current coal-burning processes externalise costs of pollution onto the environment, this is a transfer of wealth away from the national or global commons. When the costs of CO₂e abatement and mitigation are factored in 'clean coal' is unlikely to be less expensive than other sources of energy including gas. The sheer abundance of coal deposits however, makes it worthwhile continuing to investigate whether clean coal can be made a reality as part of the broad portfolio of competitive and exportable solutions.

A further impediment is an unwitting collusion between 'traditional' industry and government that has built up over a number of decades.

- Status quo suppliers have little incentive to improve performance while they are beneficiaries of perverse subsidies/preferential contracts that give them a competitive edge over new market entrants and the sustainable performance of businesses who seek to reduce GHG emissions. Until waste, pollution and greenhouse gases are priced out of the market there are those who will receive a competitive advantage from creating collateral damage that others have to pay for/deal with. This situation is in contradiction with Australia's competition policies and laws
- Government tenders prescribe twenty year old technologies and low capital expenditure. As the biggest procurer in many parts of the market governments have a critical role to play in championing, trialling and refining the new. There has been much commentary about governments "not picking winners" but until governments provide clear signals to the market, and adhere to those signals themselves, they will continue to "pick losers".

Government policy is needed to redress the inequities and the lack of competitive neutrality in such a biased and inefficient market. Only a policy overhaul can eliminate the underlying market failure where our economy is geared to value tradeable commodities, but scant regard has been given to the context for those commodities or to the cost of 'anti-commodities' and collateral damage.

The value of our eco-system services is part of Australia's natural competitive advantage and must therefore be protected because we could not afford, nor would we have the technology to replace ecological services if the natural system went into chaos and delivery of eco-services ceased. This is a cost that neither the planet, nor any individual country, could afford.¹³

A specific impediment, mentioned earlier, is the lack of correlation between the work of the Department of Climate Change and the Australian Energy Regulator on carbon abatement, energy efficiency and demand side management. The proposed \$2.3 million fund for 'learning by doing' is irrelevant if lessons from other countries are not taken into account and if a shadow cost of carbon is not implied.

One of the most important recommendations of this EBA paper is that negative externalities must be priced into the entire supply chain. Anything else will be anti-competitive to our future wealth generating enterprises.

How big is the problem?

There is international consensus on the need to stabilise atmospheric carbon to avoid crossing a 2 degrees centigrade rise in average global temperature. The general consensus is that to achieve this 60% to 80% cuts in emissions need to be made by 2050. But here is the rider – the Intergovernmental Panel on Climate Change (IPCC) estimates that 450 parts per million (ppm) of CO₂e¹⁴ in the atmosphere is the danger point that should not be crossed. A footnote in the 2007 Synthesis Report suggests that 455 ppm of CO₂e in the atmosphere has already been reached.

¹³ On a global scale eco-system services (clean air, drinking water, pollination, stable climate and weather conditions, agricultural productivity, inter alia) have been put at the equivalent of global GDP by some economists.

¹⁴ CO₂e – Carbon dioxide equivalent measurement of CO₂ and the other main greenhouse gases

Peaking emissions in 2014 and then bringing emissions down should therefore be revised and all efforts put towards immediate and major reductions in GHG emissions.

This is an extremely tough call given that the International Energy Agency (IEA) has predicted that energy demand is likely to rise by 70% by 2030 under a business as usual scenario. It is an exceptionally tough call for developing countries where over 1.5 billion people are still without electricity and without the basic survival services of clean drinking water and sanitation that electricity can help to provide. But without action to combat climate change the situation in many of the least developed nations will worsen, not improve. Climate change must therefore be recognised as one of the most important development challenges.

What is the most significant risk from climate change? Rising sea levels, severe droughts, perturbations in weather patterns and ocean flows, acidification of the oceans, desertification, crop failure, changing disease patterns are all precursors for eco-system collapse if they happen more quickly than natural systems can adapt to. As mentioned above, we cannot buy back eco-system functionality, and we would be unable to provide a techno-fix.

With regard to adaptation, we suggest that even adapting to climate change that is 'in the pipeline' and unavoidable, is not being addressed seriously enough given the rate of glacier, ice cap and ice sheet melt. We strongly recommend a strategic security analysis of elevation zones suitable to sustain migration from Australia's coastal zones. This requires not only thinking about habitation and essential infrastructure but also communication corridors and food production (and analysis should include consideration that much of our current fertile agricultural land lies in the same coastal zones we may need to vacate). Insurance risks related to flooding pale into insignificance at this point and we suggest that productive soils as well as quantity and quality of water supplies will be the prime resources of our future.

The size of the environment industry

The Australian environment industry has an approximate turnover of \$20 billion per annum in Australia¹⁵ – its broader economic and unpriced benefits have not yet been analysed. We recommend that the Australian Bureau of Statistics (ABS) include the environment industry/cleantech sector in their accounting, we equally recommend that the value of Australia's environment and healthy population be valued economically as well.

As mentioned earlier in this paper, internationally the sector was valued at \$750 billion by the Globe Foundation/Asia Pacific Foundation in Canada in 2002 and at approximately the same amount by the US Department of Commerce. Growth in the sector is expected to double in the next 10 to 15 years for basic technologies and services as the need to tackle climate change increases. But, we foresee that the additional investment in retiring and replacing old plant, steering energy supply in developing countries towards the cleanest benchmark, sourcing adequate water supplies, boosting food supplies, and redesigning the architecture for the world's built environment and security will create a multi-trillion dollar market.

Conclusion

We may not have a perfect picture of the problems of climate change. We may not be able to predict precisely what will happen when and where. But there are clear trends of increasing CO2 accumulation in the atmosphere; rising temperatures; and rising sea levels. Therefore, we know enough to fast-track measures to try to prevent the *foreseeable* negative impacts that these trends are likely to inflict on the resilience of economies and eco-systems; on our health, agricultural productivity, water availability, and quality of human life.

We know that Australia in particular is highly vulnerable to the impacts of climate change. We have a vested self-interest to make sure that investment, business action and government policy, here in Australia and in our overseas markets, contributes to the world

¹⁵ This is extrapolated from the Environment Industry Capability Study undertaken by the (then) Environment Australia Department of the Federal Government in 2001

heading in the right direction. That is where our commercial markets lie, it is where our future security also lies.

We know enough to act - we know we need to act rapidly - we have the means to help developing countries. Now we need to implement our knowledge and achieve our goals of carbon abatement, and climate change mitigation in time to stop runaway climate change that would devastate the economies and security of human civilisation.

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