



Low cost and far-reaching options for carbon pollution reduction

"The Australian environment industry and cleantech sector is amongst the world's leaders in innovation but it has not had a level playing field access to market. This is because the cost of traditional fossil fuel energy is referred to as "cheap" or "low cost". Even in the Garnaut Review and the Green Paper this is the case. But once negative externalities of pollution are included, fossil fuels are no longer the lowest cost option. Even today, superficial cost analysis continues to undermine the true economic benefits that are available. This is an economics, a security, an environmental, and a community issue. Serious costs are entailed – some of which are irrevocable and could never be measured in monetary terms."

On the other hand

" ... it is entirely foreseeable that Australia could become a global minerals processing and manufacturing hub with 'clean energy parks' combining geothermal, solar thermal, marine, and wind power." *Environment Business Australia letter to the Prime Minister, 26 August 2008.*

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Low cost and far-reaching options for carbon pollution reduction

Energy efficiency, complementary measures and soil carbon offsets build the bridge to the low-carbon renewable energy and cleantech future

Part 1 - The scale of the challenge, the opportunities

Seize the opportunity

The challenge ahead of us is far more significant than achieving major reductions in greenhouse gas emissions. Our task is fundamental. It is to retain the resilient functioning environment that is the context for our wealth, shelter, amenities, commodities, agricultural productivity and global security. Australia's role in this task is to help find ways to do this at least cost and least pain, while maximising new opportunities for wealth generation and preservation in our own and in other countries.

In light of the immensity of the challenge EBA strongly recommends that Government put in place minimum greenhouse gas emission cuts of 25% by 2020 against a trajectory to secure less than 450 ppm of atmospheric carbon by 2050.

There is no economic risk in setting the target at 25% - indeed there is significant potential benefit in demonstrating that an energy intensive country can retain its prosperity by being smarter and more efficient. There are existing and near-horizon technologies which, if brought to scale speedily, can deliver a cleaner and renewable energy future. It is conceivable that by 2030 Australia could be operating mega renewable energy parks¹ providing much of the minerals processing and manufacturing for our region. We believe this is where Australia's next competitive edge lies and where growth in high quality jobs will be delivered.

However, we need bridges to this clean energy future. The recommendations in this paper are low to zero net cost examples some of which may become commercial revenue generators in their own right.

Energy efficiency - will require strong policy support and fiscal incentives if it is to be taken up at sufficient scale to lower demand for energy. And there are major low cost offsets that can earn credits – soil carbon replenishment and replanting offer the additional benefits of helping alleviate some of the worst impacts of drought, and should be revenue generators for farmers.

A 25% target is a no-lose policy that sets Australia up to export recycling, technology, renewable energy expertise, and skills and knowledge in sustainable agriculture and energy efficiency.

Emissions trading will put a price on carbon pollution. But more importantly it will galvanise the 'next great technological era' that will help deliver goods, services, infrastructure, and ultimately energy - without carbon pollution. This provides a major opportunity for global wealth generation and preservation, on a scale not seen since the beginning of the industrial revolution. In addition there are considerable energy security benefits and pricing buffers that will be achieved with domestic clean energy and clean fuel production.

The near-term **upside** of climate change action is a major aspect which is significantly under-represented in the current mainstream debate in Australia. Trillions of dollars are mobilising around the world² seeking new commercial opportunities in efficiency, clean technology and energy, infrastructure, and agricultural productivity, as action to abate and/or mitigate greenhouse gas emissions creates new drivers and new criteria for public and private sector investment. "Disruptive" technologies and systems are not negative drains on the economy; they stimulate the economy in new ways and help drive investment in jobs. They build fresh resilience into the economy.

This paper takes an in-depth look at the transition necessary to deliver this commercial upside. There is a long distance between where we are today to a future when goods and services are fuelled with clean and renewable energy. The Carbon Pollution Reduction Scheme is a vital cornerstone of the architecture but emissions trading on its own will not provide the necessary market and investment signals, nor will it be able to deal with security issues related to climate change. A number of bridges are necessary to help cross the divide.

One of EBA's most important recommendations is that Government should seek to harness multiple complementary measures through a broad policy framework. This will help to fast-track the necessary

¹ Fuelled by solar thermal, geothermal, marine, wind power

² The IPCC estimates that between now and 2030 up to 75% of the growth in global carbon dioxide emissions will be in developing countries; UNFCCC says that by 2030 developing countries as a whole will account for approximately one-third of global GDP and 40% of total global financial investments; International Energy Agency suggests much of this investment will occur in the power, transport and industrial sectors where investment lifecycles are generally between 10-50 years; International Energy Agency estimates that an additional investment of approximately \$27 trillion is needed in non-OECD countries over the period 2010-2050 to achieve a 50% reduction in global energy sector emissions. However the IEA also emphasises that the net cost will be substantially lower due to expected fuel savings; The Climate Institute says this means that investing in clean technology now will secure emission savings for decades to come; Carbon Disclosure Project has over 50 institutional investors representing more than \$55 trillion of assets under management – all seeking to avoid carbon exposure

innovation in technology, goods and services, and infrastructure. It will also help demonstrate Australia's willingness to put its shoulder to the wheel in international negotiations.

The bridging mechanisms we advocate include a national mandatory energy efficiency strategy; recycling materials, embodied energy and organic waste; public transport; switching from road to rail freight; higher performance standards for all appliances and vehicles; and very significantly – and an approach that has received little attention to date - agriculture, land management, and the forestry sector are harnessed for the major offsets that they can provide at low cost;

- o Soil carbon replenishment replacing manufactured chemical fertilisers
- o Replanting of forests and native vegetation
- o Continued reductions in land clearing
- o Minimal tillage³

Experts have advised that an increase in soil carbon across Australia's farm lands could help offset significant carbon emissions while delivering important economic, environmental and productivity benefits to the farming sector.

Environment Business Australia

Environment Business Australia is the peak organisation for the environment industry/cleantech sector. Our membership includes companies from banking and investment, energy, renewable energy, energy efficiency, technology and infrastructure, consultancy, engineering, built environment, legal, accountancy, waste and recycling, utilities, supply chain, retail, water, forestry and land management – it is a broad church drawn from major corporations represented on the ASX to SMEs.

Environment Business Australia has been an active participant in the climate change dialogue for over 12 years. We have consistently represented the voice of proactive businesses who understand the challenges ahead, but who also see strong commercial and national economic opportunity in bold and early action.

Environment Business Australia (EBA) commends the Government for the work done to date on the Carbon Pollution Reduction Scheme (CPRS). We are pleased to have the opportunity to make this formal submission on the Green Paper and to participate in the Government and industry dialogue through the roundtable process.

EBA is particularly pleased to be able to put forward to Government a number of far-reaching abatement and mitigation 'bridging' opportunities that will achieve GHG reductions while helping to build Australia's next competitive edge in the emerging low carbon-market. The recommendations we make are not altruistic, they are vested in Australia's self-interest.

Our core recommendations appear in summary on page 17.

The challenge

Australia will be severely impacted by even moderate climate change. Our terms of trade will be disadvantaged as our trading partners are affected. EBA therefore finds the protectionist stance put forward by some business organisations to be very self-serving and very short-sighted.

It is hard to imagine any mid to long-term opportunity in rising sea levels, salt encroachment of groundwaters and agricultural land, spread of disease, faltering/failure of ecosystem services delivery, acidification of oceans, decreased rainfall, more severe storms, soil erosion, and reduced agricultural productivity.

It is hard to imagine investor and consumer support for those who would willingly defer action.

The success of climate change action (and in the context of this submission the CPRS) will require all Government policies working in concert – if this is achieved then the structural overhaul of the economy can be a win-win-win politically, commercially and for society.

For this reason, and as emphasised throughout this paper, EBA does not support free allocation of permits or "compensation". However, EBA does very strongly support financial assistance at household, commercial and industrial levels that will facilitate energy efficiency, uptake of new technologies, retirement /replacement of outdated plant and funding of activities that reduce the carbon intensity of goods and services, and development of next generation 'national interest' infrastructure.

Australia can and should provide leadership where practical

EBA believes that Australia should be at the forefront of international burden sharing of action to tackle climate change. We have a high per capita emissions level, a successful economy, a good resource base, and we are listened to on the international stage. Our innovation (notwithstanding our poor commercialisation performance) is strong.

Historical imperatives, no matter how well they have served Australia to date, will not serve us in the current situation.

³ Submissions to the Garnaut Review from The Wentworth Group of Concerned Scientists and the Terrestrial Carbon Group

There are some areas where Australia should play a lead role and others where we should support other nations in the areas where they can lead. We see no benefits to Australia of taking a 'back seat' or to beating the drum of sovereign protectionism. Only aggressive action to curb the emission of greenhouse gases gives any likelihood of success. We believe our future lies in successfully commercialising GHG abatement and mitigation innovation, scaling it up and helping transfer solutions to other countries.

This is a 'different' commercial strategy but while it combines international trade, aid and diplomacy it is still distinctly a business approach. EBA believes that Australia can, and should help create, and then access a fair share of the new global market for cleantech and clean energy, especially in countries in our region. One step further. This is not just a commercial development opportunity for Australia, it is action that will leverage our ability to tackle climate change in the area where the battle is most likely to be either won or lost – Asia.

"The rise of China and India is bringing the centre of gravity of world markets closer to our shores, and with it, a myriad of opportunities. This means that 3 of the 4 biggest economies in the world now sit within our region." Wayne Swan, Treasurer (Australian 23-24 August 2008)

If Australia can be at the forefront of commercialising sustainable agriculture that sequesters soil-carbon (already being done economically on hundreds of progressive farms); landfill diversion and recycling; renewable energy and energy efficiency; and building the supporting physical and market infrastructure, then we have a special role to play in helping transfer these clean technologies and sustainable systems to other countries. We will be building on our recently regained international goodwill. We will be better positioned to claim a role as one of the region's key hubs for carbon finance and services, not to mention sustaining our exports of agricultural and mineral products as carbon-compliant.

Let the market find the price of carbon

EBA does not believe that a controlled price for permits in the initial two years will deliver a desirable outcome. If a fixed price scenario is to be a feature of the CPRS then we most strongly suggest that:

- o \$20 should be the low reserve price at which Government would either buy back any unsold permits or hold them over until the next auction
- o An upper price limit should not be below \$100 (it is difficult to envision carbon capture and storage taking place under this price)

The market is speaking

EBA believes the growth of the cleantech and clean energy sector provides one of the most significant opportunities to build Australia's next competitive edge, especially as both investors and consumers are increasingly demanding that environmental degradation be removed from production, consumption and the supply chain that links the two.

The recent decision by Norway's sovereign wealth fund to divest from Rio Tinto is, EBA believes, a harbinger of far greater action to come from institutional investors and it is testament to the argument that companies must maintain the same level of performance in all countries. Lower performance in developing or least developed countries is not acceptable to investors or consumers.

EBA has long refuted the claims of 'carbon leakage'. We believe that the market will not support companies who do fail to perform to a high environmental and occupational health and safety standard with all projects they either manage directly or invest in. There is further information on this issue on page 14 of this submission.

Putting forward options

The purpose of this submission is not to criticise the weak arguments of others but to put forward options to Government on how to achieve the outcomes that the community wants at lowest cost. EBA has investigated in this paper the benefits of measures and offsets that are available at low or no net cost. The recommendations we have included provide significant opportunities to bridge the gap while the technologies and infrastructure that will deliver renewable energy and cleaner energy are demonstrated, refined, scaled up and commercially diffused into the eagerly waiting international market.

EBA believes, very strongly, that the full 'upside' of available proven offsets, energy efficiency, technology, market and industry development is still to be fully acknowledged for the potential beneficial environmental, economic and security outcomes they can deliver. EBA commends the authors of the Green Paper for picking up this issue.

We are vulnerable

Australia is particularly vulnerable to the impacts of climate change but clearly we are also vulnerable to economic restructure going wrong.

EBA does not underestimate the enormity of the task ahead, and we acknowledge the difficulty and complexity and the major transformation that will be required. We argue however, that this pales into insignificance when compared with the complexity, difficulty and cost of irrevocable climate change.

Bluntly, we either build the architecture and the road to Australia's future prosperity now - or we defer and diminish the opportunity. There is significant commercial opportunity available simply by harnessing existing skills, expertise, capital and offsets.

Our blueprint is possibility; our cornerstones are policies, technology and financing; our yardstick is public will.

Australia's resilience can be built on near-horizon technologies, next generation systems and major breakthrough technologies. But this will only be realised with political and business leadership determined to use every tool, all ways and means at our disposal to achieve the outcomes needed.

Much debate has centred on getting the emissions trading scheme and the Carbon Pollution Reduction Scheme (CPRS) "right". At EBA we believe this is process and while important, it is secondary to achieving the outcomes that are needed. The broad principles of the Green Paper are strong and provide a good framework for the White Paper to evolve and for Australia to benefit from the major transformation that lies ahead.

We are convinced, as business people, that there is a transitional path that delivers the targets we propose at very low cost to the Australian economy, and potentially at a net GDP benefit from day one. The current system is economically/environmentally/strategically unsustainable, as evidenced by the Murray Darling destruction, the petroleum trade deficit and manufactured chemical fertiliser pricing/nutrients run-off damage, inter alia.

"Australia matters. What we do matters. When we do it matters. It would be really silly to take action with costs to ourselves meant to assist the emergence of a good international agreement, but to do it too late to have a chance of avoiding high risks of dangerous climate change. What we do now, in time to influence the global mitigation regime from the end of the Kyoto period, is of high importance. What we do later runs the risk of being inconsequential in avoiding dangerous climate change." (Page 23 Garnaut supplementary draft report).

Economic upside of action

Action using just the methodologies in the Green Paper's CPRS outline has been estimated at a cost of \$145 billion to GDP by 2050, or an approximated \$3.45 billion per annum between now and 2050. EBA estimates that this could be reduced by 30% if complementary measures and offsets were used to maximise energy efficiency and CO2 reduction measures⁴.

With the very conservative estimate that the environment industry/cleantech sector will grow from today's base of \$21 billion by 4% per annum, a further 25% could realistically be saved. However, as outlined elsewhere in this paper we believe the new industry development opportunities could have far greater positive economic benefits to Australia.

Modelling - include the complex awful and the complex opportunity

This economic stimulation and commercial opportunity should be fully reflected in economic modelling. Current outputs of modelling provided by the Garnaut Review's Supplementary Draft Report suggest that we are not up to the task of our future. Environment Business Australia does not agree and argues most strongly that if fundamental decisions about the economy and the environment are to be made on the basis of modelling, then the models must include the complexity of both the full foreseeable awfulness and the vast opportunity. Otherwise we do not recognise the lost opportunity cost, cannot fathom the price of irrevocability, and will not benefit from new era technology. Acquiescence is not a strategy for success; it would be tantamount to assuming that Australia could not have adopted IT and the internet.

Climate change is not just a risk and a challenge to humanity, but also a significant opportunity to create innovative solutions and new ventures that may result in better quality of life for millions of people across the world. Copenhagen Climate Council

Armed with foresight

It was said of the OK Tedi disaster "If we had known then what we know now, we would have done things very differently." Now we are armed with foresight about the impacts of pollution. Even if we do not know how to *model* this foresight perfectly we must certainly use it with common sense to help prevent disaster.

Media dramatisation

Much space in mainstream media has been given to rising energy prices and "keeping the lights on"; climate action has been referred to by some commentators as a radical switch that will turn off Australia's "growth".

What lies ahead certainly requires major investment of capital, intellect and resources. But the energy price rises referred to are rarely spoken of in terms of timeframe, and they are hardly ever analysed in context with all the other things that will likely occur in the economy over the next 10-20 years. For example, a rise of \$10 per barrel of oil is equivalent, in terms of its impact on the economy, to an approximate \$30 per tonne price on CO2. Given that we have seen oil go from \$15 a barrel to \$150 and back down to \$100 over recent times, with some economists suggesting it could reach \$170 within 6 months in light of peak oil, one must question why there is so much hysteria over a nominal price on carbon.

There is a major adjustment ahead of Australia as there is for every other country, but it is something that needs to occur over the next 10-15 years; all proposed action does not have to occur in the next 24 months. What does have to emerge in the next two years is the map, the framework, the roles that everyone must

⁴ Centre for international Economics; Global Renewables

take. It is certainly a major shift but it is one we are capable of - as long as the early stepping stones are not destroyed and action is not deferred by short-sighted protectionism.

Government policy framework and complementary measures needed

In all of EBA's recent submissions to Government we have argued two very closely linked points and they are core recommendations regarding the design of the CPRS:

- The private sector has innovation in technology and financing but requires a policy framework to shape the market and remove market failures that support free-riders who undermine new technologies and approaches by taking advantage of pollution subsidies
- The cost of negative externalities – collateral damage – must be internalised in pricing at all levels of the supply chain if the market is to function optimally

The first point requires an overhaul of subsidies and removal of barriers to innovation. The second requires Government to be as innovative as business. Money will continue to be invested by governments and the private sector. What is vital is to ensure that these funds flow to projects that provide maximum positive outcomes.

Government, not the market, is the driver of long-term infrastructure. The standards, tender specifications, energy selection, grid access, and in some cases energy prices, are still determined by government policy. No electricity market anywhere in the world has emerged without government intervention - the low carbon energy era requires similar intervention.

Regulation, fiscal incentives and penalties, standards, governments' own procurement and investment, market instruments, education, need to be brought together in one cohesive strategy. The CPRS is one of the cornerstones of that strategy.

There is an important period at the beginning of the emissions trading scheme when it needs to be supported by a transitional framework. Eventually emissions trading will be robust enough to ensure innovation, infrastructure, investment are heading in a low carbon direction, but the first five years are crucial and it is unlikely that trading on its own will deliver everything that is needed for the trajectory that is needed. Australia has an opportunity to take advantage of very low cost offsets that can help enable a smooth and rapid transition to meaningful reductions of greenhouse gas emissions.

Complementary measures are necessary to drive the uptake of energy efficiency in particular. Energy use is largely price inelastic and a weak signal from a low carbon price in the early years of the CPRS will do little to achieve sufficient change.

Government's recently released Innovation Review highlights just how important it is to have all drivers working synergistically.

There are several reasons why EBA recommends complementary measures. Firstly the CPRS is not equipped to deal with dynamic change. Secondly, the CPRS has to operate against a backdrop of fragmented policies and regulations created in goodwill but for an economy with very different challenges and aspirations. And thirdly, the market has not yet come to grips with either the foreseeable ramifications of climate change or the fact that there is no longer such a thing as a cheap, abundant, secure and safe supply of energy. This observation applies equally to water and to fertilisers.

Complementary measures help policy flexibility while maximising opportunity to deliver serious GHG cuts. EBA does not consider that complementary measures will undermine the 'purity' of the market mechanism, indeed they give stronger signals to the market enabling it to act more efficiently, this minimises scheme failure risk and provides a low cost immediate transitional path while long term investments deliver renewables and clean coal. Complementary measures must of course be transparent, accountable and verifiable. Measurement inaccuracy can be managed by statistical means and/or discounts.

Some of the complementary measures proposed by Environment Business Australia include:

- Government's committed Renewable Energy Target of 20% by 2020
- Taking full advantage of the potential energy efficiency gains available from the built environment and commercial operations throughout the supply chain
- A gross feed-in tariff to encourage installation of renewable energy by households, commerce and industry
- Government procurement, investment and leasing funds to include carbon criteria. Fuel efficiency standards for government (all levels) vehicle fleets could provide a sufficiently large 'clean car' market to bring down costs to consumers
- Tax incentives (such as accelerated depreciation, re-investment tax concessions will be important drivers and could be considered as deferred revenue)
- Offsets - soil carbon, replanting, and waste recycling mentioned frequently in this submission
- Standards for material selection/goods/appliances/vehicles
- WTO trade regulations, especially in relation to subsidies and anti-dumping laws

Energy efficiency

Energy efficiency and demand side management of electricity at household, commercial, industrial and whole of supply chain levels have yet to be applied systemically. The Princeton University study into technology wedges suggests this area will offer the most rapid and far-reaching gains over the next 15-20 years. Many other studies concur⁵, yet Australia has only begun to address the opportunities available.

EBA suggests that energy efficiency should be made a core 'enabler' in CPRS and supports the Green Building Council of Australia and ASBEC calling for the built environment to be fully included in the CPRS. Investment in this area offers some of the most affordable and potentially significant GHG abatement in the economy with no substantial risk or uncertainty.

It would be optimistic at best and unachievable at worst to assume that energy efficiency will occur without major policy intervention i.e. complementary measures alongside the CPRS. The current 'welfare' approach of the CPRS with assistance to disadvantaged households will be unlikely to overcome inertia; action-focused financial incentives via the CCAF would have a far greater positive outcome.

Offsets – recycling, forestry/replanting, soil carbon replenishment

Offsets such as recycling soil carbon and reforestation, while not abatement, offer extensive mitigation opportunities. Recycling of materials can offer abatement opportunities by reducing the need for virgin materials and energy inputs into production. It is most strongly recommended that they be included in the CPRS. As mentioned above, it is recognised that at this stage they are not Kyoto compliant but EBA recommends that Australia lead the way on renegotiation so that soil and biological sequestration of carbon is ultimately included in international emissions trading. Recent data suggests that the value of forestry sequestration has been undervalued by up to 300%.

A combined land-management approach to abatement (emissions prevention) and mitigation (emissions impact reduction) is recommended. This could include:

- Carbon capture from energy production with biological/charcoal sequestration
- Replenishment of soil carbon via recycling the organic components of the municipal waste stream and charcoal, and changed farming, tillage and fertilisation practices
- Replanting of forestry, shrubs and native grasses
- Enforcing existing land-clearing bans

Each offers improved soil fertility and resilience to drought while sequestering significant quantities of carbon. The 'plant stone' silica/carbon benefits of grasses is only now beginning to be understood for the long-term storage of carbon provided. Inconsistencies with current accounting practices that deem felled trees as immediate carbon emissions need to be addressed as wood products and building materials offer long-term storage of carbon.

A revision of Kyoto clause 3.4 would not only benefit Australia, it is an outstanding opportunity to mitigate carbon on a broad basis and would provide offset credits to boost least developed country economies and provide soil stabilisation and agricultural benefits to many countries. Niger provides an excellent case study showing how tree-planting (2 million trees) has multiple benefits improving evapo-transpiration; providing cattle fodder; and increasing agricultural yield.

EBA supports the approach proposed by the Green Paper which would allow "Kyoto-compliant" forestry to voluntarily participate in the CPRS as a covered section. However, parties will only be able to count increases in forest carbon over the commitment period (2008 – 2012) from forests established after 1 January 1990 (on previously cleared land). This essentially means a 2008 baseline is created and only increased abatement over and above 2008 levels would be eligible to receive permits.

The forestry rule, as currently proposed, provides no incentive to landholders to reforest or re-establish existing forests, even if this was being done explicitly for carbon sequestration purposes unless they are able to time their plantations in line with the proposed baseline.

While land-clearing laws are in place in Australia they could be strengthened and they certainly require better enforcement. The agricultural sector should receive reward for improved stewardship.

Manufactured chemical fertilisers should be included in the CPRS and not aggregated in under agriculture.

Aggregation at point of obligation - such as at abattoirs, dairies and beef exporters (as suggested in Green Paper 2.19) makes sense as it allows the scheme to deal with large users/emitters who can then work with farmers to reduce emissions – e.g. ruminant inoculation to reduce methane emissions; soil carbon replenishment. It is fair to suggest that domestic offsets from the agricultural sector would not be included prior to coverage of emissions, but agriculture may well be missing out on important benefits by not being involved in the CPRS from inception.

⁵ International Energy Agency, IPCC, McKinsey, Princeton University, Energetics, inter alia

Funding the transformation

As the CPRS develops significant revenue will be generated from the sale of permits; we propose later in this submission how this revenue should be allocated. In addition to complementary measures and offsets, EBA recommends that funding for early stage intervention (years 1 and 2) in innovation development and national interest infrastructure could be sought from the Future Fund on a combination of commercial, grant, or matching-fund bases as considered appropriate.

Previous papers by EBA have recommended revenue raising from offset credits; super funds investments in carbon efficient companies/projects approaches; institutional fund carbon awareness screens; and pooled index funds for individuals to be able to invest in the new cleantech market with lower risk exposure.

Where will commercial benefits and low cost solutions come from?

Clearly the bulk of emissions can be addressed by getting energy suppliers and major industry to significantly cut their carbon footprint and this is well covered in the Green Paper.

But, there are other significant areas where, for example, demand side management can reduce energy use, energy efficiency can be increased, and where abatement or mitigation approaches have no net cost or, indeed can induce activity that provides a net economic benefit⁶. And, while a more diffuse source of emissions - aggregation at the household and commercial levels could achieve very beneficial outcomes. Major gains can be harnessed from:

- The environment industry (cleantech and clean energy sector), offers both existing and near horizon technologies and 'national interest' infrastructure solutions with significant commercial growth potential domestically and in our export markets. Currently worth \$21 billion to the Australian economy with approximately 4%⁷ growth per annum. Globally the sector is expected to double its \$750 billion (2000 figures) by 2010-2012
- The built environment and the property sector – responsible for 23% of GHG emissions and a major opportunity for systemic energy efficiency and materials substitution. ⁸(and further information is included in the energy efficiency section below)
- The agriculture, land management, forestry sector – soil carbon replenishment replacing chemical fertilisers; replanting of forests and native vegetation; reducing land clearing; minimum tillage⁹. Experts have advised that a 4% increase in soil carbon on just 10% of Australia's farm lands could conceivably offset the majority of Australia's carbon emissions for 40 years and deliver economic and environmental benefit to the farming sector
- The waste and recycling sector – responsible for approximately 3% of emissions but capable of recycling materials, embodied energy and soil carbon to the extent of providing 10% reductions against Australia's projected 2020 carbon footprint
- The transport and fuel sector – major developments are being commercialised in biofuels, lightweight vehicles, battery capacity and electric car infrastructure
- Cogeneration and improved fossil fuel generation including switching to gas, brown coal drying, carbon capture and storage
- Greater uptake of new fuels – LPG and next generation biofuels. Improved fuel efficiency through vehicle improvements. Recycling oils¹⁰. Fleet procurement of energy efficient vehicles reducing unit cost for community
- Rail transport of freight instead of road, and sensible logistics solutions such as relocation of Port of Melbourne to Hastings with rail link to outer ring road to avoid traffic congestion of 8 million containers being transported through Melbourne city and suburbs
- Public transport
- Materials, energy and systems substitution particularly in minerals and chemical processing, heavy industry, manufacturing and retail supply chain¹¹
- Ensuring that water recycling and desalination is fuelled by renewable energy sources¹²
- Arresting fugitive emissions - capture of coal seam methane for electricity generation; reduction of gas leakage rates

⁶⁶ Published papers by ACIL Tasman, Allens Consulting, McLennan Magasanik, Climate Institute, Climate Group, Warnkenise, Wentworth Group of Concerned Scientists, Terrestrial Carbon Group, CSIRO, Clean Energy Council, Environment Business Australia

⁷ This is expected to increase significantly with global market and investment pressures for cleantech and clean energy as well as national and regional interest infrastructure projects

⁸ The Green Building Council and the Australian Sustainable Built Environment Council are making submissions on the opportunities available

⁹ Submissions to the Garnaut Review from The Wentworth Group of Concerned Scientists and the Terrestrial Carbon Group

¹⁰ Including transformer oils

¹¹ Globally, more of the smelting industry's power comes from zero-emissions sources such as hydro, geothermal and nuclear, or relatively clean gas, than from coal. Brian Toohey, AFR 16-17 August 2008

¹² Or in an interim phase at the very least harnesses flash distillation combined with thermal electricity generation (to double thermal efficiency by utilising waste heat)

Part two - Response to specific aspects of the Green Paper

Overview

As stated above we believe the broad principles of the Green Paper are sound. The two themes that we believe to be the most important are:

- The strong message that the Green Paper gives to business and the community that carbon pollution needs to be seriously curbed and that a price on carbon is necessary for GHG abatement and mitigation. It is also inevitable, so business should plan accordingly
- The CPRS will help enable Australian business to more fully participate in the new and rapidly growing market for renewable energy technology and cleantech

If there is an over-arching constructive criticism about the Green Paper, it is that it is not going to deliver transformation soon enough. EBA encourages Government to take this into account with the White Paper - we need to go a very long way in a relatively short period. This is why EBA believes credit for early action and complementary measures and offsets that provide greater flexibility and more low cost options are vitally important.

The amount of CO₂ in the atmosphere is the only arbiter, so Australia must be prepared to lead the world with low cost transitional measures that work in Australia that deliver low-cost CO₂ mitigation. Australia must equally be prepared to renegotiate the land use and forestry clause of the Kyoto Protocol to ensure that our farmers can access international investment for forestry, native planting and soil carbon replenishment.

The attention paid to the energy intensive and trade-exposed sectors and companies, and the debate over compensation, is obscuring broader argument about the need to act and is deflecting attention away from where it is most needed – real abatement and mitigation; new opportunity-building for Australia; and technology transfer to developing countries.

While we agree that it is important to have a robust and credible emissions trading system in place, the logistics of the trading scheme have scope to evolve. The scheme does not have to be 'perfect' at the outset, especially if perfection entails deferring action that would deliver desired outcomes.

EBA most strongly agrees that the wording "carbon pollution permit" should be replaced with "Australian emissions unit". The title of the trading scheme the 'Carbon Pollution Reduction Scheme' should however, be maintained – it emphasises exactly what has to be achieved.

The architecture for confidence

EBA encourages Government to prepare a White Paper that gives confidence to early investment in transition, remembering that the earlier the action, the lower the cost, the more equitable the action, and the higher the potential dividends.

There is still sufficient time to substitute materials, systems, and energy sources that will lower Australia's carbon footprint without a negative shock to the economy.

EBA recommends the broadest possible inclusion of sectors at the earliest possible date, recognising that the top 1000 carbon emitters have been identified for inclusion in the CPRS. EBA recommends that Government ensure that the waste sector is included (as recommended in the Green Paper) from the perspective of offsets for recycling materials, embodied energy and soil carbon; this offers far greater gains than methane flaring. EBA recommends that the built environment; agriculture and forestry; and the aggregated household and commercial sectors be included at the earliest possible opportunity.

There is scope to capitalise on the benefits available in international commodity markets. For example, as the demand for lightweight and fuel-efficient vehicles (hybrids or electric vehicles) grows so will the demand for lightweight metals. Australian policy design should encourage the commensurate revenue benefits to be returned to Australia and not siphoned off-shore.

Start date

EBA is most strongly supportive of a 2010 start date.

Targets

A more stringent target than 550 ppm of atmospheric concentrations of CO₂e is important. We are at the beginning of the journey and we want to arrive safely at our destination. We need to know what we have to pack, the distance we have to travel, our means of transport. 450 ppm is a better roadmap than 550 ppm, it may be a steeper route but it can be navigated.

EBA fully understands the concerns about the willingness of the global community to accept a 450 ppm target for 2050 but maintains that Australia needs to be one of the leaders in proposing action and demonstrating how such a trajectory can work alongside maintaining prosperity. It is in no country's interest to settle for a 550 ppm target.

"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." *Michelangelo*

Loading the front end of emissions reduction action is a safety net – we need to be aiming for the goal that stands a chance of delivering a future and that means bringing CO₂e atmospheric concentrations below 450 ppm. As the world has already reached 455 CO₂e this means there is an inevitable overshoot but it is better to have a lower ppm target, albeit it extraordinarily difficult to achieve, than a target that we know is doomed to take us to a place we do not want to go to. EBA recommends 450 ppm as the interim target, recognising that NASA climate scientist Dr James Hansen has stated that concentrations should be brought below 350 ppm if life on earth as we know it is to have a chance of continuing. 550 ppm is above all levels deemed 'safe' and no country would be advantaged with this level.

Environment Business Australia does not consider the Garnaut Review proposed target of 10% cuts in GHG emissions by 2020 to be adequate, either as:

- Part of the international burden-sharing in GHG cuts
- Or as a means of catalysing investment and technology development

EBA therefore most strongly urges Government to take on the science-based target of 450 ppm with an absolute minimum of 25% cuts in GHG emissions by 2020 against a 2000 baseline.

EBA has previously recommended cuts of 40% by 2020 (against a 2000 baseline and a business as usual scenario); this is relatively close to the McKinsey recommendation of 30% cuts by 2030 from 1990. We are not suggesting that this will be easy, very far from it, but we do believe that with strong policy framework that is supported by all portfolios of Government, it would be *possible* at very low cost if not net benefit. "Possible success" scores more highly with most people than guaranteed failure to safeguard the Great Barrier Reef and the ecological life support systems that underpin humanity's way of life.

Most importantly, a firmer target and trajectory will send signals to investors and boards of directors that our future depends on getting the *outcome* not the process right. The task is to deliver an outcome that will have meaning; business will respond positively once they know to what extent their creativity and ingenuity needs to be applied.

In '*Targets for our future*' EBA provided an outline of how a combination of existing and near horizon technologies and approaches could achieve over 40% abatement in GHG abatement:

- 20% from energy efficiency
- 10% from fuel switching to gas
- 10% from solar thermal energy
- 10% from recycling materials, embodied energy and soil carbon
- 5% from wind energy
- 2% geothermal energy
- 2% marine energy
- 2% solar photovoltaic energy

On top of this are the mitigation benefits from replanting that are outlined extensively in this paper.

The full report 'Targets for our future' and also 'Wedges, levers and a zig zag' can be seen at www.environmentbusiness.com.au / EBA policy work/ Strategic policy papers

It should be noted that cleaner coal with CCS or algae sequestration were not included in these figures as 2020 was considered too early for these to be available at sufficient scale. Geothermal, marine and solar photovoltaic were included because, although offering relatively modest GHG reduction by 2020, they would become considerably more effective between 2020 and 2030 and will come down the technology cost curve.

No regrets targets for developing countries

Negotiations on the post 2012 framework would logically be centred around firm targets for developed countries and rich developing countries and no regret or 'no-lose' targets for developing countries. In other words the framework would include incentives to action but no penalties, or lesser penalties, for non-compliance. Developing countries would be more likely to accept this approach because they want access to technology transfer, CDM projects in their countries and the financial benefits of being able to sell excess credits in international carbon markets. A no-regrets target is not only an incentive for developing countries it will also help to catalyse investments into those countries.

Coverage

All greenhouse gases should be included in the CPRS.

Stationary energy, transport, fugitive emissions, industrial processes, waste, forestry sectors (opt in) are included; EBA recommends the inclusion of the built environment for the GHG abatement potential, and agriculture for the important carbon sequestration potential. Even if agriculture is left out initially from an emissions perspective, soil carbon and replanting offsets should be included for everyone's benefit.

The emissions threshold at the outset of the scheme in 2010 is 25,000 tonnes of CO₂e p.a., EBA recommends that the threshold be reduced by 5,000 tonnes every three years, e.g. in 2013 it would become 20,000 tonnes.

EBA also recommends including on an aggregate basis the household and commercial sectors whose demand for energy results in approximately 23% of Australia's emissions from a built environment perspective.

We do not believe that emissions sequestered in plastics should be excluded. Plastics do not provide a permanent or even in many cases long-term sequestration. On the other hand, recycling of plastics offers abatement potential as it reduces the need for virgin materials.

Auction of permits and use of revenue

There have been many analyses of the revenue that the CPRS will generate, they range from approximately \$7 billion to \$20 billion per annum¹³. Optimal revenue will be contingent on a free market setting the carbon price. EBA's recommendation is to auction all permits and hypothecate revenue as outlined below.

EBA does not support issuance of free permits; this simply puts the onus on other participants to take up the extra load and slows the pace of emissions reduction. The availability of low-cost offsets that can be accessed through the market with little effort is a bridging solution. Some forward commitment banking may be necessary to facilitate the transition.

It is recommended that all CPRS revenue, net of scheme administration costs, be transferred to the Climate Change Action Fund (CCAF) for investment in positive transition to the low carbon economy, for example:

- Providing transitional support to households, all sectors of commerce and industry, affected communities. Focussing primarily on a fund to provide systemic energy efficiency and skills retraining – *30% of revenue*
- General innovation commercialisation fund - shaping the market in our region for cleantech and clean energy – developing the environment industry that will serve that market. Demonstrating innovation in Australia and in countries in our region with a focus on clean energy, technology transfer, and skills capacity building. It is recommended that the start of the Renewable Energy Fund be brought forward to begin immediately – *20% of revenue*
- Emissions reduction action in Australian based operational entities of energy intensive and trade exposed companies – with an initial focus on energy efficiency and fuel/energy switching measures – *10% of revenue*
- National interest infrastructure projects e.g. fast-tracking renewable energy access to the grid; developing 'mega clean energy parks', public transport and fuel-efficient vehicles; enhancing grid efficiency; providing gross feed-in tariff of 40 cents KWh; recycling materials, embodied energy, soil carbon; materials substitution for less energy intensive materials throughout the supply chain; soil carbon replenishment combined with enforcing land-clearing bans and reforestation and replanting of native vegetation – *30% of revenue*
- Reforestation/deforestation avoided in least-developed countries and support of major REDD projects – *10% of revenue*

Linking the Future Fund with the CPRS Climate Change Action Fund at least for the next 2-5 years would help bring forward next generation industry and infrastructure development.

Gateways

The underlying concept of gateways is sound but a 10 year initial start and 5 year gateways may not give sufficient flexibility if more stringent action is required in response to changes in climate change data.

Compliance

In addition to penalties for non-compliance there should be a 'make good' provision to be completed within 12 months.

Energy pricing

Recognising that costs should be passed on throughout the supply chain to the end user, EBA recommends removal of remaining State based energy price caps. Market driven energy pricing which internalises the costs of negative externalities will help drive energy efficiency and lower demand for energy.

Price of permits/AEUs

While recognising that there is support from some sectors of industry for an interim price base and cap, EBA suggests that this would not allow the market to operate effectively and would be the source of considerable lobbying for extension. If there is an interim price cap to 2012 Government should carefully consider the merits and pitfalls of the \$20 proposed by the Garnaut Review – this would galvanise very limited investment. If EBA was to select a starting price we would suggest between \$45-\$50 as this is where the majority of action will occur (forestry, renewables, fuel switching to gas, etc.). However, it is noted that soil carbon offsets would probably be possible at \$15 a tonne while carbon capture and storage is unlikely to come below \$100 a tonne. EBA's strong preference is for the market to establish the price of carbon. If Government is set on fixed interim prices a \$20 reserve base price and an upper limit no lower than \$100 could be applied.

International linkages

Environment Business Australia supports the proposed linking of Australia's CPRS with the Kyoto Protocol's project mechanisms. Allowing Australian companies to import CERs and ERUs to assist meeting compliance

¹³ AMP, ASX, Climate Institute

requirements will reduce overall costs for compliant parties, and is a positive development for CDM and JI projects globally. However, suppliers of domestic offset credits should not be disadvantaged.

In line with the intention of these flexible mechanisms (allowing for a flexible and efficient approach and, importantly, allowing Australian business to seek the lowest cost abatement, whilst still delivering the same global emission reductions) EBA would support a broad and generous cap on the importation of CERs and ERUs. A high CER/ERU importation cap will allow Australian companies to continue to grow and expand at a feasible cost.

Early action

The Green Paper states there will be no credit for early action. Environment Business Australia strongly recommends that this aspect of the CPRS be revisited and that a formula be developed to recognise early action prior to the start of the scheme. For example Greenhouse Friendly has produced relatively high quality carbon assets, given it was originally based on the Clean Development Mechanism. The 'additionality' component is of particular relevance. In addition, it is internationally recognised.

Without this early action measure, there is very little incentive to implement emission reduction projects in the lead up to the scheme, and, going forward, Greenhouse Friendly projects will have limited value in a relatively small voluntary market in Australia. This decision significantly reduces the flexibility afforded to compliant parties undertaking early action. Should they be awarded Greenhouse Friendly credits for early action which they could then swap for permits, they have a greater chance of achieving lowest cost abatement. This is due to the fact that reducing emissions at certain sites may be cheaper than other sites. If they can generate permits (by swapping awarded Greenhouse Friendly credits) for early action, the permits can be used for compliance at any site and can potentially reduce overall compliance costs.

Transport

The suggestion in the Green Paper of cutting fuel taxes on a cent for cent basis is not supported by EBA. Firstly, it will be difficult to ascertain if fuel is increasing because of a carbon signal or if it is due to other factors and at what ratio. Secondly, it is a move which sends entirely the wrong signal to the consumer regarding vehicle use, and to manufacturers regarding the need to invest in next generation fuel-efficient vehicles.

There is an argument for rebates to regional and rural Australia until next generation vehicles are available as there is no alternative transport option. In cities however, public transport infrastructure should be fast-tracked. Public transport can make a major contribution, but needs expanded capacity. Due to the current low uptake, incentives are needed to encourage Australians to switch to public transport – enhanced infrastructure and quality, and improved performance. Passing higher energy charges on to public transport users is hardly an incentive, is self-defeating and is economically irrational. A number of international studies have compared public expenditure on public transport with public expenditure on maintaining the infrastructure for private automobiles and shown that public transport is at least 75% less costly to the public purse¹⁴.

The cost of congestion in Australian cities is put at \$20.4 billion and is expected to double by 2015 if no action is taken¹⁵. In addition, the cost of oil, although in a volatile market, is expected to steadily rise at the same time as supply security issues grow.

The importance of transport is threefold:

- There are significant GHG reduction gains to be made with new materials, lightweight metals, fuels and battery design and particularly the electric car to grid system
- Secondly, public transport in high population density areas is long overdue for a radical overhaul – starting with the conceptual infrastructure - public transport should be considered as an efficiency centre (not a profit centre) that increases the efficiency of other profit centres (like employees not being stuck in traffic jams)
- The majority of the supply chain of goods and services funnels into cities so a critical mass approach can be applied to energy-intensive transport infrastructure – rail hubs; improved warehousing over just-in-time-delivery; etc.

Paradoxically, many of the 'bad' things about transport – such as car crashes, or air pollution and ill-health – are reflected positively in current GDP measurements.

Urgent attention should be paid to rail infrastructure to replace trucking where feasible.

Supply chain

McKinsey analysis suggests that for consumer goods makers, high tech companies, and other manufacturers, between 40% and 60% of a company's carbon footprint resides upstream in its supply chain – from raw materials, transport, and packaging to the energy consumed in manufacturing processes. For retailers, the figure can be 80%. Therefore any significant carbon-abatement activities will require collaboration with supply chain partners, first to comprehensively understand the emissions associated with products, and then to analyse abatement opportunities systematically. McKinsey found that many of the opportunities to reduce

¹⁴ E.g. University of British Columbia, Prof Setty Pendakur

emissions carry no net life-cycle costs – the upfront investment more than pays for itself through lower energy or material usage¹⁶

Grid access

Better grid connection and improved transmission capacity are critically important. The current regulatory framework doesn't support strategic geographical extensions of the grid and the current situation means that if a whole lot of new power were to arrive it may not be able to link into the power system.

Market failures

Carbon pollution undermines the potential uptake of energy efficiency, cleaner energy and renewable sources of energy. Free-riders have, for decades, manipulated a market that has not evolved sufficiently to recognise the impact of artificially deflated prices. These have propped up otherwise unsustainable ventures where profit has been a thin margin derived from pollution and waste.

Both the Green Paper and Garnaut papers address market failures but not to the full extent of impact on wealth generation and wealth preservation.

Until recently the market has:

- Failed to embrace long-term strategies, the market is still dominated by short-term rewards and driven by lowest cost expenditure in the short-term
- Not put a price on carbon pollution. Until emissions trading corrects that, emerging technologies and infrastructure are undermined by free-riders whose profits are comparatively high because they can outsource pollution. This is a hidden and perverse subsidy.
- Not differentiated between higher capex 'investment' with lower operating costs and less collateral damage, compared with low capex, but higher opex and high pollution
- Been unable to assess how competitive a company/technology/process is likely to be in next-generation markets
- Not assessed where credit or risk really lie. The implications of this include taxpayers being expected to foot the clean-up/mitigation bill; and, where this is not possible society is expected to cope with the consequences
- Not assigned value to the *context* for commodities, or to common goods such as eco-system services and public health
- Not recognised the opportunity to bring forward next generation commercial opportunity in overcoming problems
- Ignored the insidious detriment to GDP, health, ecosystem services, security
- Failed to address peak energy, peak fish, peak soil, peak rare metals, peak water, or brain drain

At present Australia lags in innovation and its commercialisation, is behind others in implementing energy efficiency, and has yet to adequately harness the sources of renewable energy and the technologies and infrastructure approaches that have been developed here and overseas.

Barriers to innovation

In addition to market failures there are multiple barriers to innovation accessing the market. The core barrier is that innovative technology has to prove itself in a market that is dominated by attention to short-term costs and short-term revenue and, at the same time, finds it difficult to access that market because tender specifications are prepared to meet historical standards and processes rather than desired outcomes. Another barrier is the reluctance of entrenched providers to 'give way' to newcomers. These and other barriers limit access to the markets of scope and scale that innovation needs in order to be brought down its natural cost curve.

Many important tenders are in the hands of government (all levels of government) and governments' own procurement, investment and leasing spend could do much to revolutionise this situation. Constant updating and application of new standards is a critical first step.

Perhaps however, the most fundamental barrier is a mindset based on the historical imperatives and artificially deflated prices mentioned above; this mindset continues to deny the need for action by 'us' and 'now'. This may well bring about risk of latent liability similar to tobacco and asbestos industries, but with the signal difference being that all humanity, all species, and virtually all support systems are impacted by climate change.

Structural adjustment not compensation

Meaningful action on climate change is being compromised in Australia as organisations and companies representing trade exposed industries, strongly-affected industries, and coal-fired generators, press their case for free permits or other forms of "compensation". Such compensation or subsidy would materially affect the credibility and the operation of the CPRS.

Free permits should be discouraged as they constitute a further subsidy of pollution and waste with no driver to improved action. Free permits to some mean others have to carry an extra burden – further, the taxpaying community must fork out to mitigate the ongoing pollution.

¹⁶ Climate change and supply chain management, McKinsey Quarterly, July 2008

Instead of tackling the problems we face and seizing commercial opportunity in the process, the debate over "compensation" is in reality subsidised protectionism. This approach risks unstitching international goodwill towards Australia and will delay building our next wave of competitiveness. This delay is not in the national interest as the global investment, production and consumption markets are rapidly evolving in response to carbon restraints. Australia will get left behind just as we are realising the need to reinvigorate the commercialisation of innovation (Cutler Review).

As a way forward in the current debate we would like to suggest that instead of compensation to energy intensive and trade exposed companies, Government investigate structural adjustment assistance to make Australian operating entities as efficient and competitive as possible in the rapidly evolving international carbon-constrained market. Accelerated depreciation, innovation and R&D funding, re-investment tax concessions, are just a few of the options available to provide the same measure of assistance but on a more equitable basis. This industry development support should of course be equally available to emerging industries.

Any support should be under the Climate Change Action Fund or Treasury (e.g. in the case of accelerated depreciation) this is for transparency, comparability, and ease of administration purposes.

Carbon leakage

The threat of carbon leakage should not be accepted lightly. Any declaration that a company would consider leaving a stable economic and political regime (with comparatively secure access to low cost energy) and abandon sunk assets and valuable resources of high quality - merely to defer a shadow cost of carbon, should be considered a statement of intent and a material declaration to analysts, investors and the stock market. Have they for instance, weighed up the amortisation period for new projects overseas? It stretches credibility to suggest that developing countries will not introduce carbon caps as they move to embrace the need to tackle climate change in the next 5 to 10 years. Do we believe the international market will support carbon pollution leakage and reward it with ongoing procurement contracts?

Let us be very clear - what these companies are really saying to their employees, shareholders, investors, bankers, insurers and stock exchanges is that they should be handed a mandate to pollute otherwise they are not up to the task of competing in the new global market. They are now asking Government to endorse this message and provide pollution subsidies.

It should perhaps be noted here that 'argy bargy' discussions happen all over the world but the OECD reports that little if any carbon leakage has occurred.

Standards

There should be an immediate review of Australian standards in relation to energy, pollution, waste, and toxicity. Manufacturers and importers are then given 6 months to conform. Non-confirmation should entail prohibiting that good, technology, appliance, vehicle or material from the market. At present it can take up to three years to have a standard re-written which is completely outside the norms of a competitive marketplace.

Risk transfer

Future insurability of carbon intensive projects/operations poses a question over potential transfer of risk from the private sector to the Government and the taxpayer.

Carbon capture and storage

The Green Paper proposes that CCS emissions be netted out of a company's emissions profile once sequestered. EBA seeks clarification as to whether the risk of leakage would then revert to government.

There have been arguments put forward that technology investment should be focused mainly on carbon capture and geological storage (CCS). We most strongly disagree with this approach. While, like all parties seeking solutions we seriously hope that CCS will one day be proven up to the task at scale, at reasonable cost and safety, and most importantly in time to have a positive impact especially on emissions from China and India, there is no guarantee of this happening. Therefore other major technology shifts, most notably to renewable energy need to be fast-tracked alongside CCS. Carbon capture and biological storage in new era biofuels produced from algae should also be given maximum development support.

Biofuels

The Green Paper proposes that biofuels and biomass be given a 'zero rating' for emissions. EBA recommends that this should only be applied to those biofuels and biomass that don't compete with the food chain or speed up depletion of soil minerals and nutrients.

Security risks

'Peak oil' and rising costs for coal, oil and gas are further aspects of the growing concerns about energy security. The challenge of climate change is compounded by each of the 'peaks' listed in the market failure section above particularly in the short term 'peak oil' and security of energy supplies. The Pentagon and the Lowy Institute¹⁷, inter alia, have written extensively about the risks of millions of environmental refugees foreseeably migrating as rivers and groundwater supplies dry up or become contaminated and agricultural

¹⁷ Heating up the planet; climate change and security – Prof Alan Dupont and Dr Graeme Pearman

production falters. Ocean acidification may also pose a significant risk to food supplies, especially in the Southern Hemisphere.

Governance /administrator

The concept of an Independent Bank of Carbon like the Reserve Bank is supported. For governance transparency and accountability an independent body rather than Ministerial oversight is desirable. The scheme regulator should have responsibility for all operational aspects of the CPRS.

Harmonised national action

Industry action is best served when there is a clear set of nationally consistent objectives, performance standards and market signals.

Conclusion

Australia has done well by every past technological leap forward – the next technological era offers perhaps the best opportunity for wealth generation and wealth preservation.

It is time for the business community to act as leaders, to show that they are capable of developing their next competitive edge without resorting to pollution and undermining next generation technology or the global commons. The situation we face is "diabolical" as Professor Ross Garnaut correctly describes it, but are we to throw up our hands and say "too hard" or are we to say "we are up to this challenge"?

The vulnerabilities we face in climate change include significant damage to the ecosystem services that supply us with food and water; exacerbated energy supply security issues; rising sea levels and salt water encroachment affecting agricultural land, groundwater and infrastructure; and more severe weather impacts. These are environmental concerns but they are also economic, security, agriculture, employment, infrastructure, housing and health issues that have potential global impacts that are unprecedented since the beginning of civilisation.

While focus at the Copenhagen meeting in December 2009 will be on the post Kyoto framework, the UNFCCC meeting in Poznan this December, may be an appropriate opportunity to harness the one common thread among developed, rich developing, developing and least developed nations – the need for technology. Australia would be well served if we could help broker a deal for international technology development in tandem with the UN's sustainable production and consumption goals.

A summary of core recommendations included in this paper

- **THE WORLD WINS OR LOSES IN ASIA** - Recognise that the battle against climate change will be won or lost in Asia – Australia should do its utmost to help drive beneficial outcomes in the region
- **GREENHOUSE GAS EMISSIONS CUTS** – Meet the Bali Roadmap recommendations – put in place 25% cuts in GHG emissions by 2020 against a 450 ppm CO₂e maximum atmospheric concentration by 2050
- **OPPORTUNITY** - Give equal weight to the opportunity side of action to tackle climate change. Demonstrate that an energy intensive country can retain its prosperity by being smarter and more efficient. Play a lead role in galvanising the "next great technological era" and building markets for cleantech and clean energy in our region
- **RENEWABLE ENERGY** - Aim to have the Australian economy largely fuelled by renewable energy by 2030. Mega clean energy parks provide minerals processing and manufacturing to countries in our region. Maintain the committed Renewable Energy Target of 20% by 2020. Gross feed-in tariff for renewable energy take up
- **ENERGY EFFICIENCY** - Put in place systemic energy efficiency strategy for households, commercial enterprises and industry (recognising that efficiency gains help buffer households and business against rising prices and looming oil shortages). Include the built environment and property sector in the CPRS
- **LAND MANAGEMENT OFFSETS** - Key measures are:
 - SOIL CARBON replenishment
 - REPLANTING of forests and native vegetation
- **COMPLEMENTARY MEASURES** - Put in place a comprehensive portfolio of complementary measures particularly during the early transition phase (5-8 years). This should include:
 - RECYCLING of materials, embodied energy and organic waste
 - STANDARDS update for all goods and services especially re energy performance, materials selection, toxicity
 - PROCUREMENT AND INVESTMENT. Use Government spend to drive new markets for new standards e.g. for fuel efficient vehicles
 - CARBON EFFICIENT USE OF EXISTING FUNDS. Use existing spend ((current and predicted spend and the Future Fund) to bring forward national interest infrastructure projects. Require that all infrastructure projects be assessed for their contribution to carbon efficiency, abatement and mitigation

- TRADE, AID AND DIPLOMACY. Assist developing countries to avoid deforestation and embark on forestry replanting programs. At the UNFCCC help negotiate a no-regrets target for developing countries and offer tangible assistance with technology transfer, skills training, capacity building. At the WTO help facilitate anti-dumping measures and removal of perverse subsidies relating to carbon pollution; seek preferential treatment for cleantech and goods/services produced with clean/renewable energy. Domestically, use border tariff adjustments if necessary in the short-term to assist exports of trade exposed energy intensive companies competing against overseas companies operating to lower standard. Apply import sanctions to goods, technologies not meeting high carbon standards
 - STANDARDS. Review, refresh and enforce new standards for both domestic production and import
 - FISCAL INCENTIVES. Link to Henry Review of Taxation and encourage financial or in-kind incentives to action that will galvanise lower GHG emissions performance from industry e.g. accelerated depreciation; re-investment tax concessions that reward commercial success
 - INNOVATION. Nowhere is innovation more important than in driving abatement of GHG emissions at energy, technology and infrastructure levels. Link with recommendations from the Cutler Review
 - OVERCOME MARKET FAILURES. Internalise negative externalities in pricing
 - ECONOMIC MODELLING. Include data representing full awfulness and full opportunity
- CARBON POLLUTION REDUCTION SCHEME – Start in 2010; auction all permits/AEUs; hypothecate all revenue net of scheme operating costs to abatement and mitigation action. Invest in:
 - Demand side reduction (households, commerce, industry)
 - New market and new industry development
 - Structural adjustment for energy intensive companies
 - Retraining
 - Assisting States, Territories and local government to improve public transport
Switching from road to rail for freight haulage
 - Include liquid fuels - no rebate other than to rural and regional Australia; enhance LNG and LPG market seek CDM status with stapled credits