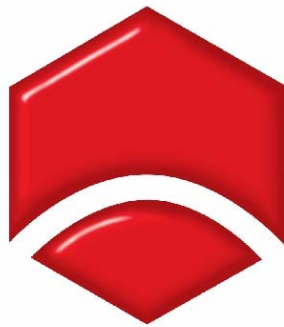


INQUIRY INTO A SUSTAINABILITY CHARTER

**Submission to the House of Representatives
Standing Committee on Environment and
Heritage**



**ENGINEERS
AUSTRALIA**

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1 INTRODUCTION

Engineers Australia is the peak body for engineering practitioners in Australia, representing all disciplines and branches of engineering. Membership is now approximately 80,000 Australia wide and *Engineers Australia* is the largest and most diverse engineering association in Australia. All *Engineers Australia* members are bound by a common commitment to promote engineering and to facilitate its practice for the common good. *Engineers Australia* is grateful for this opportunity to contribute to the House of Representatives Standing Committee on Environment and Heritage's Inquiry into a Sustainability Charter.

Sustainable development is one of the underpinnings of *Engineers Australia's* code of ethics to which all members commit. *Engineers Australia* has been a strong proponent of sustainable development for some time. In 1989 the Institution of Engineers, Australia, as *Engineers Australia* was then known, adopted a policy on sustainable development. This policy was reflected in the organisation's 1992 "Environmental Principles for Engineers."¹ In 1999, *Engineers Australia* released a report on a sustainable transport policy framework for Australia². In 2001, *Engineers Australia* released a report outlining directions and a policy framework for a sustainable energy policy for Australia³. The issues raised in these reports remain relevant to present day transport and energy discussions and it is a matter of some disappointment for *Engineers Australia* that some years later that the character of the debate has not changed a great deal. In the case of a third *Engineers Australia* report⁴, on sustainable energy innovation in commercial buildings, many of the issues raised in the report come into force nationally when the new financial year commences. *Engineers Australia's* current policy on sustainable development is based on this history and was reaffirmed in 2003.⁵

Sustainability development requires a paradigm shift in Australia's approach to reform. Sustainability will not be achieved by adding another set of targets to a list. It requires a fresh approach to policy and how decisions are made. Sustainability is as much about the process of change as it is about the outcome of change. *Engineers Australia* believes that Australia has a set off sustainability goals and principles amenable to a fresh approach. There have been some advances towards sustainable development in Australia's microeconomic reform agenda, but these are uneven and generally peripheral to the main changes. The principle impediment to sustainable development is that sustainable development is viewed as a secondary objective, subordinate to more important development objectives. This is repeatedly reflected in reluctance to consider all costs, particularly externality costs, in pricing systems, reluctance to do more than talk about competitive neutrality between competing alternatives throughout the economy, and sustainability policies which are generally pursued outside of the main game.

This Submission argues that major gains towards sustainable development could be achieved by restating Australia's sustainability goals and principles as the basis for COAG's new competition reforms. Sustainability will take time to achieve, but this is not a reason for not clearly stating future directions and preferred outcomes. *Engineers Australia* believes that the institutional framework to achieve this are largely in place and that new arrangements are unnecessary. What are needed are renewed commitments from government to sustainable development goal and

principles, commitment to the application of these goals and principles to main-stream policies and programs and the necessary leadership business and the community at large.

2. ENGINEERS AUSTRALIA'S POLICY ON SUSTAINABILITY

Engineers Australia agrees with the view that the evolution of sustainability derives from global politics “as a way of asking the world to resolve a fundamental tension that has developed between environmental, social and economic improvement. The resolution of this tension is the challenge for sustainability.”⁶ There is not a clear cut definition of sustainability here, nor are other attempts to define sustainability clear cut. Instead definitions of sustainability are aspirational and suggestive of a process to achieve outcomes as much as the outcomes themselves.⁷

Practical sustainable development in Australia first requires the articulation and commitment to sustainability goals and principles by all Australian governments. Sustainable development requires a relational approach on many fronts within a broad framework based on these goals and principles⁸. Sustainability implies fundamental changes to the socio-economic system. Some see this as overwhelming and too difficult given immediate concerns about energy and energy efficiency, transport, congestion and atmospheric pollution. However, improvements in the short term are possible by focusing on specific determinants of change and identifying solutions within the agreed long term sustainability framework for Australia.⁹

Engineers understand that the drivers for change in Australia will primarily be determined by demand factors. In past work by *Engineers Australia* the key driver has been private and public sector client demand and/or clear direction from government in policies and direction¹⁰. Rarely is lack of engineering knowledge an impediment to change. While all progress contains an element dependent on the emergence of new technology, much of the mix relies on demand-management and the application of known technologies. For this reason *Engineers Australia* believes that sustainable development in Australia depends on a paradigm shift in Australia's approach to social and economic reform.

In the reports referred to in the Introduction *Engineers Australia* set out specific determinants for change in several important areas. The sustainability framework used for this work was the National Strategy for Ecologically Sustainable Development (NSED) developed and agreed by all Australian governments in 1992¹¹. Acceptance of the commercial building energy efficiency reforms was facilitated by the part these reforms played in achieving Australia's Kyoto greenhouse emissions target. While not wishing to ratify the Kyoto convention, the Australian Government none-the-less has put in place a policy of realising small reductions in greenhouse gas emissions in a number of areas. Collectively, these reductions will achieve the desired outcome. This example supports the *Engineers Australia* contention that Government leadership is vital.

3. SUSTAINABILITY POLICY IN AUSTRALIA

The NSESD was the Australian manifestation of world developments in sustainability policy during the 1980`s. The core objectives of the strategy were:

- To enhance individual and community well-being and welfare by following a path of economic development that safeguards the welfare of future generations.
- Equity between and within generations.
- Protection of biological diversity and the maintenance of essential ecological processes and life support systems.

These goals were accompanied by the guiding principles:

- Triple bottom line considerations should guide integrated short-term and long-term decision making processes.
- The precautionary principle should be applied to prevent irreversible damage where scientific information was incomplete.
- A strong and diversified and growing economy which can enhance the capacity for environmental protection is necessary.
- International competitiveness should be maintained and enhanced and the global dimensions of environmental impacts should be recognised.
- Cost effective and flexible policy instruments, such as improved pricing systems, should be adopted.
- Decisions and actions should provide for broad community involvement.

At the time there was an expectation that these goals and principles would be used to guide the actions of governments, businesses, community organisations and individuals. At the Commonwealth level legislation was passed to mandate the preparation of a state of the environment report every 5 years¹². The first report was produced in 1996, followed by another in 2001 and the 2006 report is currently under preparation. These reports follow the framework of indicators agreed by the Australian and New Zealand Environment and Conservation Council (ANZECC) in March 2000.¹³

State and Territory Governments developed State elements of the NSESD in various ways. Victoria now has a comprehensive Environmental Sustainability Framework, WA has a Sustainability Strategy, SA regards its State Strategic Plan as effectively a sustainability strategy, and a similar approach has been taken in Queensland, and the ACT has a Sustainability Policy. Other jurisdictions have incorporated Environmentally Sustainable Development into their policies in more specific areas. All States and Territories prepare state of the environment reports in various formats.

At corporate level, there is growing recognition that sustainability is a lead indicator of corporate fortunes whereas financial accounts are lagged indicators.¹⁴ Corporate interest in sustainability reporting is also reflected in the work of CPA Australia¹⁵ and the World Business Council for Sustainable Development.¹⁶ The Business Council of Australia has endorsed the Brundtland definition¹⁷ of sustainability as follows;

“Development seeking to meet the needs of the present generation without compromising the ability of future generations to meet their own needs.”

There are also comprehensive reports explaining to business the case for sustainability, its drivers and the benefits business can derive from adopting sustainable practices.¹⁸

This background suggests that a suitable framework to guide sustainable development in Australia is in place and has been agreed by all Australian Governments. Yet it is clear from this inquiry and other evidence¹⁹ that sustainability remains on the periphery of economic and social reform in Australia. Part of the reason for this is that developments at the Commonwealth level have emphasised growing and diversifying the Australian economy, together with broadening the economy’s international competitiveness. There is no doubt that this is consistent with the sustainability principles set out above. However, these principles are much broader than this and it is time to restore some balance.

4. SUSTAINABILITY AND MICROECONOMIC REFORM

Sustainability has been an aspect of Australia’s microeconomic reform agenda, although somewhat obliquely in some instances. While specific projects aiming to achieve sustainability may not have received the emphasis that some in the Australian community would prefer, a sound basis for the future has never-the-less been established. There are now indications, for example, the COAG revitalised climate change action plan and the Productivity Commission reference on infrastructure access pricing, that Australian governments may be willing to consider unresolved issues, such as externality pricing and competitive neutrality.

Throughout the microeconomic reform process in Australia there has been a reluctance to confront issues that have an over-riding influence on attitudes to sustainability generally. This is not to suggest that the reform process has been devoid of sustainability issues. Important advances, like the development of energy efficiency policies for both residential and commercial buildings, have been made. However, the reluctance to address externality pricing in stationary energy and land transport infrastructure access pricing and the reluctance to use, as opposed to talk about, price in water reform serve to undermine sustainability.

Reforms to Australia’s stationary electricity sector were initiated through the application of national competition principles to achieve structural reforms to public monopolies. Included in the National Competition agenda was establishing competitive neutrality, price oversight of government business enterprises and establishing third party access arrangements. The objective of reform in stationary

electricity was to improve economic efficiency of the industry, and through this, the economic efficiency of the economy overall. Sustainability objectives were implied by focusing attention on excess generating capacity and, when this was reined in, on arrangements to limit the growth of generating capacity by managing the growth in demand. There was also a more direct connection to sustainability in the National Competition objective of achieving competitive neutrality.

This process led to the development of a fully competitive National Electricity Market for south-eastern Australia in which physical connectivity of State power grids are supplemented by electricity trading arrangements enabling surplus generating capacity in some jurisdictions to be traded to jurisdictions with excess demand. The reform process was complex and difficult. While the reform process is widely regarded as successful, and the source of many of the gains from National Competition reforms²⁰, it remains incomplete and the source of some tension between jurisdictions.²¹

Competitive neutrality between different State based retailers and wholesalers of stationary energy is on the way to being achieved, albeit reluctantly in some areas. However, competitive neutrality between alternative energy sources, notably between fossil fuel generated electricity and renewable electricity generation has been ignored. The main bone of contention here is un-costed greenhouse gas emissions from fossil generated electricity. This issue was a casualty of the pursuit of lower electricity prices. The compensation for this absence of a level playing field was the introduction of the Mandatory Renewable Energy Target (MRET) to enable the renewable sector to compete.

The application of sustainability principles would entail upfront recognition of the unpriced greenhouse gas externality in electricity generated from fossil fuels. It would also entail recognising that the fossil fuel electricity industry grew to its present scale under government ownership and stewardship. Establishing a level playing field between alternative sources of energy means applying a similar consideration to renewable energy, that is arrangements which allow renewable energy providers to grow to a scale which will result in competitive prices. German developments provide an instructive example of this approach.²²

However, limiting the growth in demand for new electricity generating capacity has assumed a dual character over time. On the one hand, demand management, in concert with energy efficiency and the MRET, has been used to forestall investment in additional, expensive generating capacity, and on the other, it has become an important vehicle for the achievement of Australia's Kyoto target. There is clear cut recognition of sustainability here on both counts. However, the benefits of these positive developments have been undermined to a significant extent through perverse price effects which were predictable.

It has become far cheaper to install an air conditioner than to insulate either a house or commercial premises. The consequence has been the emergence of summer peak spikes in demand for electricity. The magnitude of these demand spikes is sufficient high for the National grid manager to conclude that there will soon be a summer-time deficit in generating capacity²³, precisely what was not wanted. This unforeseen problem is now to be rectified by the installation of interval metres over coming years,

passing the higher costs of peak electricity on to consumers²⁴ and this is a positive development.

Water reform is being addressed through the National Water Initiative (NWI) and from the beginning had a focus on sustainability. This comprehensive set of reforms seeks to address issues relating to both rural and urban water use. The genesis of the NWI is the 1994 COAG water reform agreement which achieved considerable progress in respect of institutional reform and the introduction of two-part pricing for water in both sectors. As progress waned on the 1994 agenda COAG agreed the NWI to revitalise the reform process. A common feature of the two agendas was the role expected to be played by the price of water in redistributing the demand for water and in the creation of new markets for water of lesser qualities. In contrast to electricity reform externality pricing was expressly included in the reforms.

In the rural sector, price was seen as underpinning water trading which in turn is the mechanism to redistribute irrigation water to its most valuable use, including water for the environment. In urban areas the price of potable water was seen as setting the upper bound for the price of the highest quality of water allowing the emergence of lower but congruent prices for recycled stormwater and recycled waste water. Much of the reforms to date have involved legislative and institutional changes by the States and Territories.

While there have been a lot of changes, real progress towards redressing over-allocations in some water basins, notably the Murray-Darling Basin, remains illusive. Water trading in irrigation water is limited by regulatory arrangements and in urban areas price has only achieved limited success in influencing demand. There is a general reluctance to face issues associated with using the price of water as intended by the reforms. There is also reluctance inherent in regulatory arrangements to allow urban water authorities to price water so as to achieve commercial returns on assets. Consequently, the revenue base available for reinvestment in water saving and/or recycling technologies is limited. Replacement of old infrastructure is also slower than is optimal and the private sector is reluctant to invest in circumstances where commercial rules do not apply.

Much of the success achieved in managing water demand in urban areas is the result of qualitative policies in the form of water restrictions. These offer short term gains but limit enduring reforms. Efforts by public sector and private sector agencies to recycle water are impeded by the price of potable water limiting the economics of new recycling technologies, and by the exercise of residual monopoly power by urban water authorities through access charges and in some instances, simply by an unwillingness to change²⁵.

Sustainability requires Australians to lower their per capita consumption of water and to use available supplies of water more effectively. Restrictions on water use and moral suasion are not enough. Enduring outcomes require fundamental changes which cannot be achieved by regulation alone. The reform package has identified a better mechanism, but decision makers are reluctant to use it and appear reluctant to agree to compatibility yet alone commonality.

Road and rail freight arrangements present major sustainability challenges. The use of fossil fuels in motor vehicles is a major source of greenhouse gas emissions and like in electricity generation is an uncoded externality. There are also other uncoded land transport externalities which have significant impacts on the efficiency, amenity and sustainability of cities. These include congestion, accidents and deteriorating air quality. For some time *Engineers Australia* has been pointing to major deficiencies in land transport infrastructure arrangements²⁶. *Engineers Australia* has also drawn attention to the issues that need to be addressed to deal with greenhouse gas emissions in the transport sector and problems for the industry emanating from uncertainties over the future of oil²⁷.

Reform in both road and rail transport arose from the National Competition process, but in different ways which resulted in inconsistent outcomes. Rail reform was initiated through the arrangements directed at reforming public monopolies. The reform process led to corporatisations and privatisation of rail organisations and to separation between “below rail” and “above rail” arrangements. The new arrangements are characterised by commercial arrangements in which asset owners seek positive returns on the value of their asset. In contrast regulatory arrangements predominated in road access pricing.

Road transport access pricing developed as one of the “related reforms” in the National Competition process. Although the National Transport Commission claims that road transport pays its share of road infrastructure costs, it is well established that the attribution methodology used by the Commission is flawed and results in a significant subsidy to road transport, particularly to the largest vehicles²⁸. This places an upper bound to commercial arrangements in rail transport through an implicit subsidy to road transport. This lack of competitive neutrality undermines the attempts to redress the balance between road and rail initiated under Auslink. Existing growth trends in road transport and declines in rail transport are expected to continue unless these arrangements are changed. Another major issue is that new rail investments are evaluated on the basis of potential commercial returns whereas road investments are evaluated using cost-benefit analyses leading to uncoordinated decisions.

Sustainable transport requires, as a minimum, competitive neutrality between transport modes and the inclusion of externalities in access pricing regimes. Infrastructure decisions should be integrated with an emphasis on overall efficiency. The present arrangements will impede adjustment to cope with rising oil prices. They also concentrate the dominant portion of land transport in the sector with the highest greenhouse gas emissions which has serious implications for the transport sector under the newly announced COAG collaborative action plan on climate change.

In summary, *Engineers Australia* believes that sustainability has been an aspect of Australia’s microeconomic reform agenda, although somewhat obliquely in some instances. Progress towards sustainability has occurred, but it has been inconsistent and uneven. The lessons from the examples outlined are that government leadership is vital and that significant costs and/or complications are associated with reluctance to address fundamental issues. It is not surprising that the NSESD has lost credibility in recent years.

5. A SUSTAINABILITY CHARTER, A SUSTAINABILITY COMMISSION AND SUSTAINABILITY TARGETS

Calls for a Sustainability Charter for Australia reflect a frustration with the situation illustrated in the three examples discussed above. Similar points can be made about other proposed reforms in Australia. There is also a total lack of integration of town planning, transport planning, energy, water and other influences on Australian cities. Instead there are competing bureaucracies at municipal, state and commonwealth level. The intention underlying the declaration of a Sustainability Charter is to move beyond these problems. *Engineers Australia* applauds the intent but does not agree with the direction of this proposal. Sustainability is best dealt with as an overarching requirement of reform and not by setting up independent processes and institutions. The difficulty of defining sustainability has been discussed above. The corollary of this is that defining sustainability targets independent of mainstream policy targets is fraught with difficulty.

Fourteen years have passed since COAG adopted the NSESD and the Australian economy has developed considerable robustness. World views on sustainability have developed further and the Australian economy and society have moved on. There remains, however, a pressing need for a sustainability framework to guide future developments. Accordingly, *Engineers Australia* believes that the time is right to restate and update Australia's sustainability goals and principles, as embodied in the NSESD, to reinvigorate the sustainability agenda, to incorporate lessons from experience in Australia and overseas and to re-assert government leadership as the basis for businesses and broader community action. A key expression of leadership would be for COAG to require its new National Competition agenda to be implemented consistent with the enunciated sustainability goals and principles.

Whether a restatement of sustainability goals and principles is called a "strategy" or a "charter" is not particularly important. What is important now, given likely world developments towards emissions reductions, the future price of oil, deteriorating conditions in many cities and chronic water problems, is a serious effort by government to prepare Australia for the changes ahead. This may be achieved by undertaking announced reform intentions within an agreed sustainability framework, but this will need more consistency and commitment than has been demonstrated in the past.

Change as significant as implied by the pursuit of sustainability goals and principles will need to be managed over time. Simply introducing competitive neutrality into all facets of Australian economic activity will require massive change. Economics is notorious for having little to say about the best adjustment path in these circumstances. *Engineers Australia* believes that adjustment will require time for change to be absorbed without major disruption to life in general and without disruption to the economy. Adjustment, however, should occur in the knowledge that the long term goal is the achievement of a sustainable economy and a sustainable Australian lifestyle.

Engineers Australia sees sustainable development involving a paradigm shift in policy and how people think about everyday issues. The required shift over time to competitive neutrality and pricing systems that cover all costs, including externality

costs will need extensive communication with stakeholders will provide important foundations for other more specific policies. Sustainable behaviour needs to become widespread and part of everyday life. Sustainable behaviour requires decisive leadership through setting clear and unambiguous directions and broad policy parameters to encourage change in the desired direction. Adding an additional layer of bureaucracy to complicate projects and activity will simply give sustainability a bad name. *Engineers Australia* could not commend such an approach.

At its 10 February 2006 meeting COAG agreed in principle to establish a COAG Reform Council (CRC) to report to COAG annually on progress in implementing the new National Reform Agenda agreed at that meeting. The intention is that the CRC will replace the role played by the National Competition Council in the 1996 reform agenda, including functions relating to third party access to infrastructure. The CRC would provide transparent reporting on the performance of all jurisdictions, including the Commonwealth. This is a positive step towards realising more consistent progress and improved coordination. The final decision to proceed with the CRC is contingent on the development of a business plan for the CRC and agreement to financial arrangements for the reform agenda.

Engineers Australia believes that the role envisaged for an Australian Sustainability Commission can be and should be undertaken by the proposed CRC. The establishment of an overarching body to oversee sustainability, while the proposed CRC looks after all other reforms would be unhelpful. Instead, the proposed CRC should undertake its oversight of the COAG reform agenda and discharge its reporting responsibilities consistent with restated COAG sustainability goals and principles.

In the past the National Competition reforms were associated with significant competition payments by the Commonwealth to the States and Territories. From 1997-98 to 2005-06 some \$5.74 billion were included in this process (the last two years are estimates for the last tranche which has now been agreed²⁹). Commonwealth forward estimates included provision for further rounds of competition payments in 2006-07 and 2007-08. These rounds will not take place because the Commonwealth has allocated the funds to the Australian Government Water Fund administered by the National Water Commission.³⁰

National competition payments were seen as a way in which the benefits of reform could be shared between levels of government in the context of a high degree of vertical fiscal imbalance. The payments were linked to reviews of progress by the National Competition Council. Penalties for inadequate progress were imposed for the first time in 2003-04 and 2004-05 but were temporary suspensions, recoverable in the future and typically were not financially significant. The States and Territories have argued that the new reform agenda should be accompanied by a continuation of substantial National Competition payments. Indeed this appears to be the main cause of delay in finalising the CRC proposal.

The National Competition Council believes that competition payments have been effective in achieving reform outcomes. This may be the case in terms of the reviews carried out by the Council, but other evidence points to a distinct lack of progress, notably in water reform³¹, but also in ceding power to the National Energy Regulator³². There has also been uneven progress between the States and Territories

as noted in the Victorian Government to the Productivity Commission review of national competition policy reforms³³.

Engineers Australia is aware of the tensions in Commonwealth-State funding arrangements arising from vertical fiscal imbalance, but is unconvinced about the need to formally connect essential reforms to the availability of additional funds. Good governance requires that governments initiate and implement arrangements within their jurisdictions to optimise economic and social conditions for their citizens. As one commentator has observed “Australian federalism has been dysfunctional for a long time.³⁴” This is a view shared by supporters and opponents of federalism alike and requires the Commonwealth and the States to “work out some longer term solutions.³⁵” The issues here extend well beyond a new round of competition reform and will not be resolved by a dispute over another round of National Competition payments.

There is a particular issue relating to the application of the National Competition payment model to the sustainability agenda. This relates to the difficulty of formulating sustainability targets as discussed above. The type of reporting which has been characteristic of the National Competition payment process is likely to be even less successful in this situation. The objective of sustainability should be to achieve tangible outcomes which will stand the test of time. Yet another bureaucratic solution will not be helpful.

National Competition payments have not been hypothecated by State and Territory governments and have been treated as components of consolidated revenue. While The States also argue the need to meet administrative and adjustment cost, this can be taken up in other ways. Indeed at the February COAG the Commonwealth indicated that it would provide funding to the States and Territories “on a case by case basis once specific implementation plans have been developed if funding is needed to ensure a fair sharing of the costs and benefits of reform.”³⁶ This is similar to the model the Commonwealth has implemented in the Australian Government Water Fund.

In summary, *Engineers Australia* does not favour the application of the National Competition payment model to the sustainability agenda. *Engineers Australia* recognises that there are problems relating to Commonwealth-State financial arrangements, but believes that these should be addressed more directly and a long term enduring solution found. Another round of National Competition payments will simply delay this.

6. SUSTAINABILITY REPORTING

Policy development and change management are facilitated by quantifying desired outcomes and by systematic analyses of progress towards them. Problem solving is strengthened through systematic empirical work which can be used to identify areas requiring greater attention and progress can be bench-marked across jurisdictions and internationally. An empirical approach can also facilitate communication about the need for change and success or other wise of new directions. This is reflected in the growing acceptance of sustainability reporting in the corporate sector, in particular the

use of sustainability reporting to identify a company's future business risks³⁷. An empirical approach is also less susceptible to spin.

While the NSESD provided for state of the environment reporting and considerable work was undertaken by ANZEEC to identify suitable indicators for these reports, the approach taken was not sufficiently balanced, and too infrequent to assist implementation. The first NSESD state of the environment report was for 1996 and reports were planned every 5 years. The 2006 report is currently under preparation. Annual reporting is essential to ensure that the need for change is constantly reinforced.

The state of the environment reports were organised in a way which gave rise to a perception that the indicators were primarily concerned with environmental issues at the expense of social and economic issues. Few of the indicators related to concepts recognisable by typical members of the community. Furthermore, while there remains a great deal to do before Australia can claim to be a sustainable country, substantial progress has been achieved and needs to be recognised and reinforced as part of the effort to achieve more progress. *Engineers Australia* believes this is why state of the environment reporting did not achieve expected success. Restating Australia's sustainability goals and principles will offer the opportunity to look again at sustainability reporting.

The development of a fresh approach to sustainability reporting can build on the ANZEEC work as well as international research. A useful model to consider is the Environmental Sustainability Index (ESI) developed by Columbia and Yale Universities in collaboration with the World Economic Forum.³⁸ Like the ANZEEC indicators, the ESI is organised into themes, issues and indicators, although there are slight differences in terminology. However, the organisation of the measures selected addresses the comments made above. Table 1 appended to this Submission compares the two methods.

The measurement system should also allow international comparisons. The ESI does this. Thus, stakeholders can observe that Australia was ranked 16th in 142 countries compared in 2005. Australia scored well in the social and institutional capacity, reducing human vulnerability and environmental systems components, but scored relatively poorly in the reducing stresses and global stewardship components. Australia's greatest comparative strength was in the social and institutional capacity component and here disaggregation showed a weakness in eco-efficiency as measured by energy efficiency and the extent of renewable energy used. In the reducing stresses component weaknesses were evident in respect to reducing air pollution, reducing waste and consumption pressures, reducing water stress and natural resource management. The ESI is capable of providing these comparisons between Australian jurisdictions as readily as international comparisons.

Engineers Australia recommends annual sustainability reporting be an integral component of a revitalised COAG sustainability agenda. The measurement system adopted should build upon past work, but endeavour to overcome its limitations. In particular, the indicators selected should be relevant to the environment, to social issues and to economic issues and not favour any one of these over the others. The indicators should be relevant to the circumstances of governments, businesses and

individuals. If specialised detail is required, this can be developed in ancillary ways. Finally, the indicators should reflect the progress that has already been achieved in Australia to improve prospects of wide acceptance of renewed sustainability efforts.

7. ENGINEERS AUSTRALIA'S VIEWS

Engineers Australia agrees with the view that the evolution of sustainability derives from global politics “as a way of asking the world to resolve a fundamental tension that has developed between environmental, social and economic improvement. The resolution of this tension is the challenge for sustainability.”³⁹ There is not a clear cut definition of sustainability here, nor are other attempts to define sustainability clear cut. Instead definitions of sustainability are aspirational and suggestive of a process to achieve outcomes as much as the outcomes themselves.⁴⁰

Engineers understand that the drivers for change in Australia will primarily be determined by demand factors. In past work by *Engineers Australia* the key driver has been private and public sector client demand and/or clear direction from government in policies and direction⁴¹. Rarely is lack of engineering knowledge an impediment to change. While all progress contains an element dependent on the development of new technology, much of the mix relies on demand-management and the application of known technologies. For this reason *Engineers Australia* believes that sustainable development in Australia depends on a paradigm shift in Australia's approach to social and economic reform.

Engineers Australia believes that sustainability has been an aspect of Australia's microeconomic reform agenda, although somewhat obliquely in some instances. Progress towards sustainability has occurred, but it has been inconsistent and uneven. The lessons from the examples outlined are that government leadership is vital and that significant costs and/or complications are associated with reluctance to address fundamental issues. It is not surprising that the NSESD has lost credibility in recent years given the disregard for key sustainability issues.

Engineers Australia applauds the intent but does not agree with the proposition to establish a Sustainability Charter in the form envisaged. Sustainability is best dealt with as an overarching requirement of reform and not by setting up independent processes and institutions. The difficulty of defining sustainability and the associated problems of defining sustainability targets independent of mainstream policy means that sustainability should be addressed as a main-stream policy issue.

Engineers Australia believes that the time is right to restate and update Australia's sustainability goals and principles, as embodied in the NSESD, to reinvigorate the sustainability agenda, to incorporate lessons from experience in Australia and overseas and to re-assert government leadership as the basis for businesses and broader community action. A key expression of leadership would be for COAG to require its new National Competition agenda to be implemented consistent with the enunciated sustainability goals and principles.

Economics is notorious for having little to say about the best adjustment path in times of change. *Engineers Australia* believes that adjustments towards sustainable development will require time for change to be absorbed without major disruption to

life in general and without disruption to the economy. Adjustment, however, should occur in the knowledge that the long term goal is the achievement of a sustainable economy and a sustainable Australian lifestyle.

Engineers Australia sees sustainable development involving a paradigm shift in policy and how people think about everyday issues. The required shift over time to competitive neutrality and pricing systems that cover all costs, including externality costs will need extensive communication with stakeholders will provide important foundations for other more specific policies. Sustainable behaviour needs to become widespread and part of everyday life. Sustainable behaviour requires decisive leadership through setting clear and unambiguous directions and broad policy parameters to encourage change in the desired direction. Adding an additional layer of bureaucracy and more targets to a list will unnecessarily complicate change and will simply give sustainability a bad name. *Engineers Australia* could not commend such an approach.

Engineers Australia believes that the role envisaged for an Australian Sustainability Commission can be and should be undertaken by the proposed COAG Reform Council (CRC). The establishment of another body to oversee sustainability, while the proposed CRC looks after all other reforms, would be unhelpful. Instead, the proposed CRC should discharge its oversight of the COAG reform agenda consistent with restated COAG sustainability goals and principles.

Good governance requires that governments initiate and implement arrangements within their jurisdictions to optimise economic and social conditions for their citizens. *Engineers Australia* does not favour the application of the National Competition payment model to the sustainability agenda. *Engineers Australia* recognises that there are problems relating to Commonwealth-State financial arrangements, but believes that these should be addressed more directly and a long term enduring solution found. Another round of National Competition payments will simply delay this.

Engineers Australia recommends annual sustainability reporting be an integral component of a revitalised COAG sustainability agenda. The measurement system adopted should build upon past work, but endeavour to overcome its limitations. In particular, the indicators selected should be relevant to the environment, to social issues and to economic issues and not favour any one of these over the others. The indicators should be relevant to the circumstances of governments, businesses and individuals. If specialised detail is required, this can be developed in ancillary ways. Finally, the indicators should reflect the progress that has already been achieved in Australia to improve prospects of wide acceptance of renewed sustainability efforts.

TABLE 1
ANZEEC AND ESI SUSTAINABILITY INDICATORS COMPARED

ANZEEC		ESI					
ISSUE	INDICATOR	COMPONENT	INDICATOR	VARIABLE			
CLIMATE	Southern Oscillation Index	ENVIRONMENTAL SYSTEMS	AIR QUALITY	Urban pop weighted NO2 concentrations			
	Daily & Extreme Rainfall			Urban pop weighted SO2 concentrations			
	Average max & min temperature			Urban pop weighted TSP concentrations			
GREENHOUSE	Atmospheric gas concentrations		ENVIRONMENTAL SYSTEMS	BIODIVERSITY	Indoor air pollution from solid fuel use		
	Annual emissions				% of country in threatened eco-regions		
STRATOSPHERIC OZONE	Ozone concentrations			ENVIRONMENTAL SYSTEMS	BIODIVERSITY	Threatened birds species as % of breeding species in each country	
	Recovery & destruction of ozone depleting substances					Threatened mammal species as % of known mammal species in each country	
	Ultra-violet radiation levels at the surface					Threatened amphibian species as % of known amphibian species	
OUTDOOR AIR QUALITY	Exceedence of NEPM air quality standards for CO concentrations				ENVIRONMENTAL SYSTEMS	LAND	National biodiversity index
	Exceedence of NEPM air quality standards for ozone concentrations						% of land area (incl inland waters) having low anthropogenic impact
	Exceedence of NEPM air quality standards for lead concentrations						% of land area (incl inland waters) having high anthropogenic impact
	Exceedence of NEPM air quality standards for NO2 concentrations					WATER QUALITY	Dissolved O2 concentration
	Exceedence of NEPM air quality standards for SO2 concentrations						Electrical conductivity
	Exceedence of NEPM air quality standards for particle concentration	Phosphorus concentration					
	Emission of air pollutants	Suspended solids					
THREATENING PROCESSES	Native vegetation clearing	REDUCING ENVIRONMENTAL STRESSES				REDUCING AIR POLLUTION	Fresh water available per capita
	Aquatic habitat destruction		Internal ground water available per capita				
	Fire regimes		Coal consumption per populated area				
	Introduced species		Anthropogenic NOx emissions per populated land area				
	Species outbreaks		Anthropogenic SO2 emissions per populated land area				
				Anthropogenic VOC emissions per populated land			

LOSS OF BIODIVERSITY	Extinct, endangered & vulnerable species & ecological communities	(cont)	(cont)	Vehicles in use per populated land area	
	Extent & condition of native vegetation		REDUCING ECOSYSTEM STRESS	Annual average forest cover change	
	Extent & condition of aquatic habitats			Acidification exceedence from anthropogenic sulfur deposition	
	Populations of selected species				
BIODIVERSITY CONS MANAGEMENT	Terrestrial protected areas	REDUCING HUMAN ENVIRONMENTAL STRESSES	REDUCING POPULATION PRESSURE	% change in projected population	
	Marine & estuarine protected areas			Total fertility rate	
	Recovery Plans				
	Area revegetated		REDUCING WASTE & CONSUMPTION PRESSURES	Ecological footprint	
USE & MANAGEMENT EROSION	Changes in land use				Waste recycling rates
	Potential for erosion				Generation of hazardous waste
	Wind erosion from high wind events				
SALINITY	Area of rising water table			REDUCING WATER STRESS	Industrial organic water pollutants (BOD) emissions per available fresh water
	Area affected by salinity				Fertiliser consumption per hectare of arable land
ACIDITY	Area affected by acidity				Pesticide consumption per hectare of arable land
CONTAMINATION	Exceedence of max residue levels in food & produce				% of country under severe water stress
GROUND WATER	Groundwater extraction v availability				
	Exceedence of quality guidelines				

SURFACE WATER	Extent of deep rooted vegetation cover	(cont)	NATURAL RESOURCE MANAGEMENT	Productivity overfishing	
	Surface water extraction v availability			% of total forest area certified for sustainable management	
	Environmental flows objective			World Economic Forum survey on subsidies	
	Discharge from point sources			% salinised irrigation area in total arable land	
	Surface water salinity			Agricultural subsidies	
	Exceedence of water quality guidelines			Death rate from intestinal infectious diseases	
	Fresh water algal blooms			Child death rate from respiratory diseases	
AQUATIC HABITATS	Waste water treatment	REDUCING HUMAN VULNERABILITY	ENVIRONMENTAL HEALTH	Mortality rate for children under 5 relative to live births	
	Waste water reuse			BASIC HUMAN SUSTENANCE	% of undernourished in population
	Vegetated streamlength			REDUCING ENVIR REL NATURAL DISASTER VULN	Av no of deaths from floods, tropical cyclones & droughts
	River health				Environmental Hazard Exposure index
Extent & condition of wetlands	ENVIRONMENTAL GOVERNANCE	Ratio of petrol prices to world average			
MARINE HABITAT & BIO RESOURCES	Estimated fresh water fish stocks	SOCIAL & INSTITUTIONAL CAPACITY	ENVIRONMENTAL GOVERNANCE	Corruption measure	
	Changes in coastal use			Government effectiveness	
	Disturbance of marine habitat			% of total land area under protected status	
	Total sea food catch			World Economic Forum survey on environmental governance	
ESTUARINE & MARINE WATER QUALITY	Estimated wild fish stocks	SOCIAL & INSTITUTIONAL CAPACITY	ENVIRONMENTAL GOVERNANCE	Rule of law	
	Coastal discharges			Local agenda 21 initiatives per population	
	Marine pollution incidents			Civil & political liberties	
	Exceedence of marine & estuarine water quality guidelines			% of variables missing from CGSDI Rio to Jo burg Dashboard	
	Bio-accumulated pollutants				
	Algal blooms				
	Waste water treatment				
GLOBAL PROCESSES	Disturbance of potential acid sulfate soils				
	Sea levels				
	Sea surface temperature				

		(cont)	(cont)	IUCN member organisations	
ENERGY	Energy use			Knowledge creation in SET	
	Energy sources			Democracy measure	
WATER QUALITY DEMOGRAPHICS	Exceedence of drinking water quality		ECO- EFFICIENCY	Energy efficiency	
	Urban green space			Renewable power as % of total consumption	
	Residential density			Average Innovest Ecovalue rating of firms	
	Population distribution & people/dwelling			No of ISO 14001 certified companies rel to GDP	
TRANSPORT	Visitor numbers		PRIVATE SECTOR RESPONSIVENESS	World Economic Forum Survey on private sector environmental innovation	
	Public transport use			Participation in the Responsible Care Program of the Chemical Manufacturers Association	
	Fuel consumption per transport output			Innovation index	
WASTE COMM ATTITUDES & ACTIONS	Solid waste generation & disposal		SCIENCE & TECHNOLOGY	Digital Access Index	
	Community attitudes & actions			Female education rate	
		GLOBAL STEWARDSHIP		Gross tertiary enrollment rate	
				No of researchers per million population	
				PARTICIPATION IN INTERNAT COLLAB EFFORTS	Membership in environmental intergovernment organisations
				GREENHOUSE EMISSIONS REDUCING TRANSBOUNDARY ENV PRESSURES	Internat & bilateral funding of environmental projects & development aid
					Participation in internat environmental agreements
		Carbon emissions per million \$ GDP			
			Carbon emissions per capita		
			SO2 exports		
			Import of polluting goods & raw materials as % of total imports		

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