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**Commentary on the report
to COAG by Infrastructure
Australia**

By

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ABSTRACT: In December 2008, Infrastructure Australia issued a Report to the Council of Australian Governments,
http://www.infrastructureaustralia.gov.au/files/A_Report_to_the_Council_of_Australian_Governments.pdf

that establishes a framework for the provision of public infrastructure services in the transport, energy, water and communications sectors of the Australian economy. Measured against the approach used by the World Bank it contains many positive features but falls short of what should be expected from a developed economy. This paper follows the framework of the Infrastructure Australia Report to comment on the absence of sufficient rigor in the subject matter addressed including by mixing social/political discussion with economic, by taking a national/external account framework as the focus of economic development, by ignoring the need for review of existing institutional arrangements including Commonwealth/State relations on infrastructure investment and collections (user charges and taxes), Many of the comments would be met by seeking to institute in the discussion on infrastructure in Australia what the World Bank terms Sector Analysis in each of the four nominated sectors. General suggestions are made on how to overcome specific shortcomings identified in the current approach.

KEY WORDS: *Public infrastructure services; transport; energy; water; communications; sector analysis; economic development; World Bank; governance; institutional arrangements; control; pricing; decision making processes.*

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The Report of Infrastructure Australia (IA) to the Council of Australian Governments (COAG)

http://www.infrastructureaustralia.gov.au/files/A_Report_to_the_Council_of_Australian_Governments.pdf comes at a once-in-a-lifetime combination of: large accumulations of public tax receipts and large accumulations of private savings in superannuation funds, together with a general public unease about their wealth and the future of the economy. Handled appropriately these circumstances provide the political will to undertake a new round of economic development through infrastructure investment.

The IA Report to COAG reflects this. It outlines an approach that contains many of the new elements needed to achieve such a goal and points to many existing initiatives that are underway. However taken in the broad, the existing situation in Australia is reminiscent of that in many developing countries where formal organizational arrangements for the supply of infrastructure services present a logical framework but where the actual institutional arrangements and their application are less than efficient. The term “institutional arrangements” is used to cover all parts of the service provision process from formal organizational arrangements through all the interrelationships of the services with other parts of the economy.

There is much to applaud in the IA Report including the early statement of the primary goal of establishing “A new national approach to infrastructure decision making”. Many of the shortcomings of infrastructure service provision in Australia reflect the neglect of the decision making process which many times has resulted in diffusion of authority and responsibility across many levels of government causing delays and misallocation of resources often more in response to short term political ends rather than long term economic development goals.

Much of the following commentary is based on direct involvement with policy formation and application with the World Bank Group and in private sector participation in the supply of infrastructure services. The focus on the four major networked infrastructure service sectors of energy, transport, communications and water reflects a broadly held view of these sectors as the foundations of a strong economy. The need for high discipline in all aspects of the decision making process including rigorous product definition, is clearly accepted in IA and the Commonwealth government. What is less clearly accepted is the need for new forms of institutional power to provide the leverage for change in the existing institutional arrangements. A hallmark of the World Bank’s success in infrastructure was and is its use of loan arrangements conditioned by scheduled changes in everything from axle load limits on roads and metering and pricing water consumption to reorganization of relevant ministries. The long term economics of infrastructure are characterized by the need for ongoing financial flows into investments and back from the community that loan arrangements provide compared with the indiscipline of grant arrangements.

This commentary generally follows the structure of the IA Report. It uses many concepts that have firm foundations in political welfare economics but lower acceptance and popularity in current political and corporate thinking which is more closely aligned to financial economics. As a “Working Paper” the explanation of these concepts is brief but their general meaning legitimacy and contribution is hopefully clear.

1 National approach to infrastructure decision making

The process of formulating a report such as this is well understood with its features that include a terms of reference within the comfort zone of political masters and exhaustive public consultation. To counteract this tendency the legislation establishing IA is delightfully broad enough to allow the Report and this commentary to venture outside the existing framework of institutional arrangements beginning with commentary on the limits of the current framework as reflected in the Report.

1.1 Limits of the Part 1 framework

1.1.1 National significance

One of the enduring concepts behind discussion of infrastructure investment as a contribution to Australia's economic development is that the impact of such development is measured in terms of external accounts. It follows but is rarely explicitly observed that the focus should therefore be only on infrastructure that directly supports international economic activity. Clearly this is not rationally so and for IA to use the implied definition of national significance that aligns it with external economic exchange is a severe restriction on its pursuit of the goal of economic development.

Consequently the topic of infrastructure service provision in the Report's four selected sectors of energy, transport, water and telecommunications should be explicitly defined as economy wide.

1.1.2 Project approach based on problem solving

The improvement of the decision making process on infrastructure begs the question of what is the focus or product of this decision making. The answer in the Report and more broadly in the community is "projects". However this is not correct in economic (development) terms where it is the services flowing from the infrastructure that is the real product. This accords with the need for a long term view of what is efficient infrastructure and adjusts the terms of discussion away from construction to the full gamut of construction operations and maintenance (whole of life) of the service.

Also to focus on a "problem solving" approach suggests that the desired infrastructure services and institutional arrangements for supplying them for long term economic growth are well known and accepted – but there are some existing gaps or "problems". It is clear that currently there is a need for swift investment flows to mitigate the impact of a contracting economy but it would be useful for IA to begin at the same time as identifying projects to be funded, a broader discussion of the underlying economic development strategy and infrastructure services role in it.

1.1.3 Mixture of political/social concerns with economic efficiency and with environmental concerns

The stated focus on decision making requires discipline in defining which decision making we plan to improve. Infrastructure investment decisions are always the result of seeking to fulfill a combination of economic (mainly financial) efficiency goals and political goals. In a representative democratic system politicians set the political goals and allocate funds from the general tax base for such infrastructure, and professional experts in the relevant field are charged by society in providing advice that quantifies costs and benefits of resource allocation for efficiency gains (usually cost reductions) as well as those for political goals.

Discipline around assessment of costs and benefits of environmental concerns also exhibits a combination of expert professional concern with efficiency (long term) interspersed with politically driven activity which views any change in natural systems as too costly. Conceptually the process of analysis generally labeled Environmental Impact Assessment (EIA) is a sound way of combining many areas of concern including economics. In practice the way in which power or discretion over the decision making process is distributed equally among areas of interest creates major problems. This is not difficult to overcome and are worthy of IA's attention.

In terms of IA's desirable role in decision making it would appear to be closer to the expert efficiency end rather than the political end. And yet it occasionally appears to go beyond the expert profile to become a political advocate for political inspired investment (which the writer supports politically), for example, in both rural and regional, and indigenous development and some environmental issues.

1.1.4 Cost benefit analysis: Purpose & limits including intersectoral

In the political economic discussion in Australia and elsewhere the logical foundations of cost benefit analysis (CBA) have been stretched often in the EIA process to encompass its application to a range of decision making way beyond what can be supported. CBA's primary legitimacy rests in ranking alternate options for investment in projects of a similar characteristics, size and longevity. Input-output analysis has allowed some extension of CBA to intersectoral impacts of investment in dissimilar investment options but collection of the data and its analysis is costly and fraught with problems. This has not restricted governments from making wild statements about the multiplier effects in support for some investments but Australia through IA deserves better.

1.1.5 Confusion re competition, markets, public & private sector roles

A fundamental issue in the discussion of topics covered in the Report is the confusion about the nature and roles of competition, markets, and the roles of the public and private sectors.

In this commentary and elsewhere in economics the term "market" is used to refer to resource exchange where there are many participants demanding and supplying products that are broadly similar. Consequently "competition" or competitive tendering is not the same as a market although a market includes much competition among the entities involved.

Similarly at the level of disciplined discussion desired for IA, the roles and characteristics of the public and private sectors need more sophisticated use than the broad inference that the public sector is inefficient and bad, and private sector efficient and good. Already we use combinations of public sector and private sector roles that take many forms, suggesting that a broader dialogue that goes to the issue of appropriate governance (decision making control) structures commented upon below.

1.1.6 Need for sector analysis approach

Much of the above comment on the limits of the current discussion of investment in infrastructure services would begin to be overcome by the introduction of what the World Bank terms "Sector Analysis". Sector analysis will be described more fully later in this paper but to understand its relevance it incorporates much of what is discussed in the Report as Nationwide Infrastructure Challenges but goes beyond them to ensure

cognition of the interconnectedness of many sectoral policy settings, including policies on the level of investment.

2 Nationwide infrastructure challenges

Many of the challenges facing the delivery of infrastructure services in different parts of Australia are similar and in that sense they are national issues. But the delivery of the service product has different characteristics in different parts of Australia and for different demands. The complication that policy makers struggle with is that many of the services are physically connected in networks and/or economically connected as inputs to other products suggesting that our institutional arrangements should reflect this dependency by being themselves more appropriately interconnected.

This duality between low scale products needing, for efficiency, to be tailored to local demand, and higher scale connected products needing to contain many standardized elements is manageable using the organizational concepts of Self Organizing Hierarchical Order (SOHO) whereby high scale organizations dictate rules to lower level organizations who are free to operate within those rule frameworks to meet locally specific demands and who in turn feedback to higher levels to inform the evolution of higher level rules. It is an axiom of economic development that growth occurs largely through differentiation of products to meet specific needs. So to move to uniformity by requiring the same approach nationally on all issues misses large opportunities for economic development.

The challenge is that currently the three tiers of government (and their borders) that dominate decision making on infrastructure rarely coincide with the physical boundaries of concentrations of demand for infrastructure service. For example, transport has urban sub-metropolitan demands for service, and then metropolitan, and then regional, then national levels of demand, that only occasionally coincide with political boundaries. This issue is at the centre of the pursuit of better governance.

2.1 Better governance

Comments have already been made about the need to define the product of infrastructure as the service delivered and that infrastructure service products have different demand and supply characteristics, for example, the scale of the demand catchment for a general cargo port is different to the scale of demand for urban transport. And yet they are interconnected through the impact that freight transport has on both systems.

Similarly the transport product demand met by road and rail is currently in popular public discussion seen as market competition between organizations requiring different forms of governance. However for the urban transport product they are just different ways of meeting the same demand for service and should be under the same governance structure.

Again the urban road rail competition does not constitute a market. As has been discussed elsewhere (Stone 2008)¹ from a decision making process point of view urban transport infrastructure service provision should logically be provided under a single governance structure that reflects the monopoly nature of the service and the dominance of the network of rights of way in the cost of provision.

As an efficiency goal for IA governance concern, the SOHO form of organization would solve many existing problems. Without getting into too much detail the SOHO structure unlike the military hierarchical top down centralized control, allows control to flow both ways. Representatives from the lowest scale level, say urban transport, would be represented on the next level up say regional and so on up to national. That way when a higher level service is being considered say an investment in an international airport then local concern say for noise would have a hearing as would the regional and national economic importance in a governance structure process with the power and legitimacy to make the tradeoffs between competing concerns. This is a much more efficient and fair decision making process driven in part by the property rights behind accessibility as well as political rights. This is in contrast to the default policy to uniformly increase centralization and standardization with power over decision making residing in the exercise of political rights. Again this is so because the efficiency of markets is largely based on exchange of property rights over resources and not political rights even though the later has residual responsibilities and rights to ensure free and open markets do not create unacceptable distortions in who benefits. The later is particularly true in regard to infrastructure services which, more often than not, have monopoly characteristics.

2.2 *Creating competitive markets*

As previously noted the characteristics of efficient markets include competition amongst entities on both sides of exchange of resources but importantly requires many entities to be participating. In the market for infrastructure services many entities compete to supply various inputs but there is a need for clarity in defining which product inputs have the potential for supply that markets can make efficient and which products are closer to being monopoly inputs given the constraints on supply. With this in mind the Reports assertions on creating competitive markets needs expansion for clarification.

On energy the focus on development of a high capacity national grid mistakes its physical and economic nature. To gain a perspective it is estimated that in the USA around 40% of the cost of electricity delivery from generation to point of use is in the cost and losses of the grid ⁱⁱ. In Australia with a less dense pattern of energy use and a more linear grid network (as compared to grids with a more uniform spatial pattern as in the USA and Europe) the cost may be considerably higher. And yet discussion in the Report proceeds as if location of the generation unit as compared to the location of use is not an important factor except that completion and development of the grid is essential to allowing competitive markets for generation to develop. Grids are important for redundancy and hence reliability of supply but not at a level where all generators can bid for supply with little constraint imposed by transmission costs.

The development of an economic competitive market for electricity requires that investment options be considered that compare generation and transmission costs of various sizes, locations and technologies and reliability for supply to entities demanding service of various sizes, etcetera, various locations. To truncate that decision making into a plan to develop and complete a national grid is not a path to efficiency.

On communications careful assessment of the inputs for service delivery yield a very different profile from the one used in the Report where again the jump is made to a belief that efficiency will come from competition between complete packages of service delivery that include content and accessibility through physical networks owned and operated by each supplier. Transmission technology suggests that fiber-optic cable

provides the most efficient transmission with little cost constraint on providing high capacity. Consequently any duplication of networks simply increases the transmission cost of service delivery by a factor close to the number of networks. Service suppliers want their own networks simply to provide control especially where as in the Telstra copper network case, they are required to give regulated access to other service providers. For Australia to have more than one telecommunications network is economic stupidity. An analogous situation confronted member banks in the early days of credit cards where the costs of each supplier processing transactions became crippling. The situation was resolved with the formation of the company called VISA which has many users who compete on a level playing field on service features other than transmission cost and control. This situation should not be confused with political/social initiatives to subsidize service delivery to groups disadvantaged by location (rural/regional) or social circumstance. The only proviso rarely acted upon, is to make such transfers completely transparent to the whole community.

Water infrastructure services have an abundance of physical constraints arising from rainfall patterns, catchment characteristics and linkages, and location of point of use. These lend themselves to governance structures of the SOHO type that for efficiency should include again careful definition of products at different scales and a closing of the connection between investment cost and user charges. This is a more complex topic than can be covered in the working paper, but well established forms of institutional arrangements would remove the current pricing distortions that have arisen through lack of understanding that required politicization of the process of water resource exchange where property rights to water were distributed well beyond their long term and reliable availability.

Again on transport there is a paramount need to move to a definition of transport that is demand driven, namely the delivery of transport services, rather than the historically founded supply definition that has resulted, in economic development terms, in the nonsensical call for competition among modes. The transport “service” definition rather than an investment project definition would highlight the distinctive cost functions for various modes of supply which despite the calls for competitive markets rarely overlap when particular services are analyzed. For example high speed rail has distinct cost advantages when there is high demand for long haul service as in the mineral export industry but not in the intercity passenger market unless road and airways are congested.

2.3 One economy, one set of rules

The position reflected in this area of general discussion is easy to accept provided we are all holding the same position. But given the importance of such a general proposition high discipline and more detailed description is called for to ensure clarity. As already commented much economic growth comes from disaggregation of the economy to suit local demand and supply which is not uniform across the economy. What undoubtedly should be uniform are the physical rules and procedures that the Report advocates. The COAG transport reforms are examples of this and they are also examples of the need for leverage (power) to be established that would force along the speed of their adoption by the States.

The push behind the “one economy” label is surely to recognize the interconnectedness of the cells in the infrastructure service networks and again the need for SOHO type institutional arrangements that distinguish between the need for uniform

physical/procedural rules and the need for responsiveness to the local characteristics of demand.

On specific sectors the comments on the need to carefully interpret the role of competition in seeking the efficiency available from true markets are applicable here.

2.4 Existing infrastructure

Of the keys to improving the contribution to the economy of existing infrastructure services listed in the Report, the use of increased productivity and increased employment are examples of generalities that everyone one will support. What needs to be asked in reviewing a Report of this nature is “what is their operational significance?” Both measures are the result of many other interventions and are notorious for their definitional and data collection problems. Given the operational focus of IA particularly on improving the decision making in the provision of infrastructure (service), discipline calls for the description of how each improvement in infrastructure service would contribute to increases in productivity and employment.

The call for open access to monopoly infrastructure networks again needs to be interpreted as a challenge to improve the institutional arrangements for control which is wrapped into the area we now call governance.

The institutional arrangements for pricing are also nominated as a key to improvement. In economic development terms again the need is to carefully define the product being exchanged and hence priced. For example, the cost of access to the transport network should be the most significant price presented to the user. Economically once an investment in service is made, maximization of economic benefit from it comes from allowing use without a charge at the time of use until congestion occurs at which time user charges should reflect the economically well established principles of temporal marginal cost pricing. Of course the economic benefit of this all depends on users having already been charged for access to the network of rights of way and the facilities therein.

2.5 Climate change

From an economic point of view the climate change issue in assessing infrastructure investment is simply one of internalizing costs that have been largely external up to this point of time. The most effective way of doing that in the past has been to establish limits (caps) which impose costs that can then be minimized through technological and production innovation. In the current situation in Australia the Commonwealth’s approach is to establish an emissions trading market. The focus on establishing such a market and granting existing emitters free rights to trade or keep has diverted the discussion from focusing on the setting of the limit and ultimately its price. An alternate approach based on experience of appropriate pricing at desired limits would impose carbon emission costs as a tax. The transaction costs of internalizing carbon costs with a uniform tax per ton of carbon would be much lower and involve fewer distortions (picking winners and losers). Economically it is the same as imposing seat belt, noise and emission controls on vehicles.

The inclusion in the Report of a discussion on energy security and peak oil provides an opportunity to comment on the limits of modeling techniques used to quantify such issues. The statistical relationships that underlie most of these models ensure that their predictions are in the form of projections of existing states and relationships rather than

forecasts of future states that embody fundamental change mostly in technology but also in the communities tastes and preference that mould the way goods and services are valued. As such much of this modeling is deeply flawed conceptually.

In regard to the Reports coverage of renewable energy, the national grid carbon capture, and issues such as energy intensity of various modes for meeting the passenger and freight tasks, need for analytical discipline in evaluating alternatives, is all clear. Similarly the primacy of economic analysis in bringing all the different ways of analysis together to guide decision making over the allocation of resources to alternative infrastructure services is clear but it is unusual not to frame the analysis as Environmental Impact Analysis using the concepts of economics.

In this frame the legitimacy of the place of investment in carbon capture in national infrastructure service development is hard to see. However its legitimacy in support of export activity in the coal trade is clear but it should be transparently identified in that category.

3 Location specific infrastructure challenges

As has been noted above the location specifics of infrastructure are an important descriptor of the form and scale of the service product they are delivering. The categorization used in the Report to describe challenges nods in that direction but can be improved again with a disciplined approach consistent with product definition that reflects the physical constraints on service demand and supply. Physical mapping of the infrastructure locations by sector and type, as would be a part of Sector Analysis, would improve decision making by clarifying the nature of decision making process required for each infrastructure product.

Despite the absence of the Sector Analysis framework, some comments using the Report framework may be useful for future development.

3.1 Cities

On cities, The Report recognizes their importance and infrastructure's role in the efficiency of their economy. However it would be more responsible for economic development to use evidence based information as for example, in urban transport where on public transport systems the costs of rail metros is so high as to rationally rule them out from consideration for new networks. Fully developed bus rapid transport delivers service at the cost per passenger kilometer as rail based metroⁱⁱⁱ.

Similarly the comment on a conflict between sustainability and affordability in housing and associated infrastructure serviced land betrays a lack of comprehension of both the sustainability concept and the origins of much that establishes land value in the available services to which particular land has access.

An axiom of economic development is that policies (economies) are not sustainable unless the goods and services, including infrastructure, are affordable to the community. So there is no conflict between sustainability and affordability only a clear principal in service delivery of the need to supply services at costs the community can afford.

The reference in this section of the Report to sewer mining and public vs private provision provides an opportunity to raise the use of publicly held property rights that is part of all public infrastructure systems. These community collective property rights are often referred to as the "commons". To argue that the private sector proponent has

intellectual property rights over the idea through its proposed specific application is absurd. Sewer mining or reuse of effluent is a well known process and any specific application will use the effluent input over which the upstream community has invested private and public (commons) property rights to present the opportunity. The community property rights far exceed the property rights of the “good idea opportunity” claimed by a proponent. This is not to say efficient inputs to “sewer mining” can not be provided by the private sector from existing competitive markets.

There is undoubtedly a cultural as distinct to a scientific challenge in the reuse of water and its solution would appear to lie in redesign of the governance arrangements (and hence investment/price of use) to shorten the connection between demand and supply to prevent users believing they can call on some remote entity such as the Commonwealth to subsidize the cost of their infrastructure services.

Bound up in a lot of the infrastructure challenges in Australia is the role and work practices of the existing labor force. Throughout the world large networked infrastructure services have employed large numbers of labor as demanded by early technologies as in rail. Modern service provision including in rail requires different processes and fewer employees. Strategies are required to change processes and to manage the reduction while supporting the dismissed work force. Such strategies are often as important as the selection of new capital works projects. This is not a new problem in development and the example of Spanish Railways transformation in the nineteen seventies under World Bank leverage is relevant, particularly in New South Wales. The solution to improving urban rail service in Sydney of building a metro system separate from the existing organization is a “banana republic” response to the problem. It is plainly in the interest of organized labor to secure the future of public transport infrastructure services and their role in it by participating. In Spain the development experts of the World Bank required the rail organization owned by the Government to invest in the financing of retraining relocation and redundancy payments for the work force to bring it in line with efficient levels of staffing for Spanish conditions as part of the Loan Agreement.

3.2 Exports

The Report’s section on boosting exports raises several of the issues that need addressing for Australia and its infrastructure service base to move to a higher level of efficiency.

The first of these issues applicable to both sea ports and airports is the need for new institutional arrangements, particularly the organizational governance arrangements that reflect the scale of these products. They are mostly regional and national rather than local and need controls over decision making at that scale. Again SOHO style arrangements would ensure local representation at regional and consequently national levels to allow them higher decision making discretion over these services than the discretion that local level exercises under current arrangements that give control to local communities dominated by local concerns, the “not in my back yard” (NIMBY) syndrome.

This section of the Report also reflects the “default” view that competition/markets/private sector/centralization (nationalization), and in the case of freight that the “rail” approach is good – anything else not so good. As discussed above the removal of “bottleneck” problems is only part of the story and broader sector issues

such as organizational forms that are not private corporate or public corporate should be explored.

3.3 *Indigenous communities*

The concern for indigenous communities is the result of expression of a political concern that is strongly supported by the broad community and the author. However the use of racial determinant by IA as an expert technical group dilutes the putative power of IA to improve infrastructure services to all.

Again others have dealt with the issues and in the example of the World Bank it was covered in the introduction of an emphasis on the rural and urban poverty issue that proved to be an effective target for economic development without shifting into the political arena. This is not to say that IA should not be responsive in a transparent manner to a political dictate. But this should not confuse the pursuit of its primary purpose of advising on economic efficiency in the provision of infrastructure services.

3.4 *Rural & regional communities*

Again the promotion of the simplistic view that economic development is driven purely by direct external account (export) economic activity reduces the effectiveness of IA. External economic activity is dependant on internal activity and vice versa.

In all discussions about rural and regional community development issues IA has the opportunity to lead the discussion in the direction of economic development with social issues discussed in that context to provide a clear economic cost benefit perspective for resource allocation decision making rather than the current confused mixture.

Only then will discussion of such issues as national electricity and gas grids, and broadband networks including such policies as the universal service obligation be put in proper perspective. To be clear this comment is not a criticism of such social political policies but a call for better analysis and transparency regarding the economic consequences of such resource allocation.

4 Meeting the challenges

Based on the above comments it should be clear that the themes, project proposals, and priority list are viewed as a good beginning but that there is a substantial opportunity in the future to move to a level of analysis that would be more supportive of economic development and particularly the improvement of the decision making processes involved. As such commentary in the next three sections will be restricted however the fourth section on Financing raises issues that deserve additional discussion.

4.1 *Themes*

The themes listed suffer form the perception of their resulting from the IA “picking winners” with all of the associated baggage of that political approach. Again much of this could be dismissed if themes selection would have been provided with sectoral analytical justification against economic development goals.

4.2 *Project proposals*

The list of project proposals is presented in the context of being based on using responses to the call for suggestions from interested parties. While this is flattering to interested parties it is misleading in regard to the level of expertise and motivations

behind the proposals which vary considerably. An ongoing dialogue around the framework of sectoral analysis would improve this situation.

Again given IA's commentary on the absence and/or level of cost benefit analysis (CBA) the limits of CBA and admonitions as value for money need to be more explicitly recognized. To go from using the legitimate conceptual framework of considering all forms of costs and benefits of alternative investments to guide political decision making to monetizing costs and benefits of "good idea" proposals as some form of absolute measure of economic justification, goes way beyond the legitimate sectoral confined monetized (even shadow priced) application of CBA.

The IA methodology framework includes many general attributes such as strategic fit that could be the same as for sectoral analysis but brevity of presentation leaves uncertainty. As with most government backed reports in Australia there is an absence of analysis of desirable changes to institutional arrangements required beyond the generalization of the default move towards centralization/private sector. The analysis of strategic fit is an indication of recognition of need but further methodological development and disciplined application is required.

The short term economic challenges of the world wide credit crunch call for prompt action to stimulate the contracting economy. These circumstances can be compared again with the World Bank's experience applying the "Reconstruction" mandate of its full title. The analytical framework used for such loans was conceptually grounded in sector analytical thinking without the high level of quantification typically used in the normal course of the World Bank's lending program.

The bottom line is a need to emphasize the grounding and sourcing of strategy and resource allocation (investment) guidance from expert analysis not laundry/white board lists drawn from narrow issue promoters.

4.3 *Priority list*

The scheduled issuance of a Priority List of infrastructure projects in March 2009 provides an important opportunity to set in place the beginning of the type of broad contextual strategic framework of Sector Analysis.

4.4 *Financing*

The discussion in the Report is focused on new project investment funding when it should be broadened to cover all public infrastructure services funding from investment through operations and maintenance – and the source(s) of revenue to provide these funds. The proposed establishment of funding decision making framework hopefully heads in that broader direction. And unusually and importantly there is reference to the asset value of existing infrastructure which is another necessary element in considering finance.

As in all aspects of infrastructure service provision this section is limited by a naive view of what constitutes an efficient market and the role of competition in sustaining such markets. It is also limited by the simplistic categorization of control of supply as either coming from public or private sectors when the scale of many of the infrastructure service products (networks) calls for organizational designs that are somewhere in between pure public and pure private and which reflect aspects of co-operatives and mutual corporate structures, often involving the ownership of property

rights over land as the means of allocating discretion over the control of investment decision making.

To again emphasize the market/competition distinctions consider the following example. In a procurement process to select a consortium to provide service from a new link in an urban transport network, say we have three consortium members with one each from finance, design and construct, and operations and maintenance. Individual members operate in competitive markets with say five participants. Then, all else being equal the chance of any one member of the winning consortium being the “best” in efficiency for this market is one in five. The chance of the winning consortium having all three “best” members is one in one hundred and twenty five or 0.08%. If procurement had been divided into three processes focused on each of the competitive markets the in each case the probability of the “best” selection is one in one or 100%. Hence while current procurement processes leading to public private partnerships may be competitive, they do not constitute a competitive market and are a long way from optimal.

The solution again lies in a more accurate definition of products and sourcing inputs from competitive markets with connectivity (or management of inputs) between the different scales of service product achieved by new institutional arrangements based on SOHO principles.

In finance the development of a broader market, based on the creditworthiness of infrastructure service products in any say individual region, supported by the existing asset base would generate a much needed long term bond market in Australia to meet the needs and long term profile of both economic development and the superannuation industry.

In considering the level of government or existing administration of funding sources it is economically rational to consider the efficiency of each of the categories of supply of these sources namely taxes and user charges including congestion charges. Enough is known about the relationship (amount and timing) between users and supply to be able to establish the framework of an efficient market where pricing signals direct the demand/supply equation to an efficient relationship. The long term/short term variability of the cost of different inputs requires the use of financial engineering but the tools to do so are available and the benefits large. The challenge is significant with this issue as it overlaps the perennial problem of vertical financial imbalances between Commonwealth and States.

Again at the level of thinking addressed by the Report, the potential of the use of the link between financing instruments and changes in institutional arrangements should be discussed. Again from World Bank experience it can be politically advantageous to use an independent institution such as IA to shift blame/power from politically unacceptable to necessary to get finance for improved services and conditions of use.

The long term role of IA and Build Australia fund defines a need over the long term for financial arrangements that would cover construction maintenance and operations to ensure the efficient supply of infrastructure services. Hence the need to recycle investment finance through loan arrangements serviced by appropriate pricing (user charges) rather than tax funded grants for capital works should be discussed. This observation again highlights the shortcomings of the “project” approach compared to the long term “service” approach.

5 Looking ahead

5.1 World Bank approach to infrastructure development

As noted above the majority of the issues discussed above could effectively be consolidated using what the World Bank has called *Sector Analysis*. Such analysis provides a whole of government mechanism for formulating and monitoring relevant policies and strategies for the public infrastructure services discussed in the Report. It also provides a clear location of responsibility for such matters. To quote from a 1985 publication of the World Bank^{iv}:

“Sector analysis, broadly defined, is concerned with the examination and assessment of the resources, needs, problems, and opportunities in individual sectors of the economy, for the purposes of

- *Assisting consideration of economy wide policies and strategies*
- *Enabling judgments to be made on sector development policies and strategies that will enhance the contribution of the sector to the country’s (state’s) economic development*
- *Determining investment policies in the sector as a crucial step towards identifying specific projects and any additional pre-investment studies required*
- *Evaluating the capacity of principal institutions in the sector to implement desired policies, programs, and projects.”*

Much of the analysis that is required already exists in various guises and labels and at different scales in the States and Commonwealth. For example, a transport sector analysis would provide a clear strategic context for mechanisms such as New South Wales State Infrastructure Strategic Plan and Gateway Review under the authority of the infrastructure finance and cabinet budget committees, providing a clear and disciplined analytical foundation than is presently not evident.

Sector analysis includes collection of appropriate statistics including on assets, their capacities and usage. It should be set up as an ongoing process of focused concise studies aimed at improving decision making processes and to build sectoral understanding for senior decision makers with considerable knowledge of the sector.

Equally, responsibility for sector analysis should be located organizationally at the level with the leverage and power that comes with control of resource allocation to implement decisions on resource allocation to deliver service products. Again the use of SOHO structure in each sector, e.g. in water from catchment through regional river basin to national, is required to achieve this.

Experience has shown that it is the process and learning approach in sector analysis that is important to improving decision making rather than a massive one off effort the results of which are usually ignored.

6 Conclusion

The opportunity presented to IA by the confluence of economic challenges and relatively large accumulations of savings by the Commonwealth and the mandatory superannuation savings of the general public needs to be grasped. The Report to COAG is a good start and the primacy of references to improving decision making most encouraging. As commented throughout this paper extension of the thinking behind the

report to a concern with the institutional arrangements that guide the decision making processes in the provision of public infrastructure services would provide the foundations for moving ahead.

ⁱ Stone A "Institutional Reform: A Decision-making Process View" Elsevier Research in Transport Economics XXX (2008) 1-15.

ⁱⁱ Lovins A "Small is Profitable: The hidden economic benefits of making energy resources the right size" 2002

ⁱⁱⁱ A broad introduction to the issues of comparative costs and capacity for similar level of service in urban areas can be found in Hensher D A "Sustainable Transport Systems: moving towards a value for money and network based approach and away from blind commitment". Transport Policy 14, 2007, 98-102

^{iv} One of the better general descriptions of the World Bank's approach is to be found in Baum, Warren C. Investing in Development (1985) Ch 5, 11, 12. A more recent perspective that shares some of the problems discussed in this paper can be seen in the World Bank publication (2002): Cities on the Move: A world Bank Urban Transport Strategy Review; IBSN 0-8213-5148-6 Ch 2, 10 & 11.