

The “missing infrastructure” and how to get it built Presented to 10th Energy in Western Australia Conference

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Getting infrastructure built at the right time and in the right places has been an issue since the settlement of Australia by Europeans in 1788, and has been possibly the preoccupying public policy question at least the last decade. Energy infrastructure in particular is seen by many observers as critical to continued economic growth: Australia’s major export-earning industry is extremely energy-intensive and scattered around the periphery and through the interior of the continent. Indeed, cheap energy has arguably underpinned Australia’s economic performance.

Various estimates put the size of Australia’s infrastructure challenge over the next 10 years at between \$450bn and 750bn. Of that, up to 120bn is expected to be comprised of energy infrastructure.

Our thesis is that the WA energy sector faces some major challenges, in that it could be argued that for certain users the existing models for getting infrastructure built are failing. While market conditions and Government policies unquestionably play a role, infrastructure users themselves will need to take a lead in meeting the challenge.

At present there are basically two ways energy infrastructure gets built – or rather, gets paid for – in Australia.

Under the Standard commercial model, the proponent gathers up a portfolio of contracts from would-be users, goes to capital markets for the money, and builds and operates the asset.

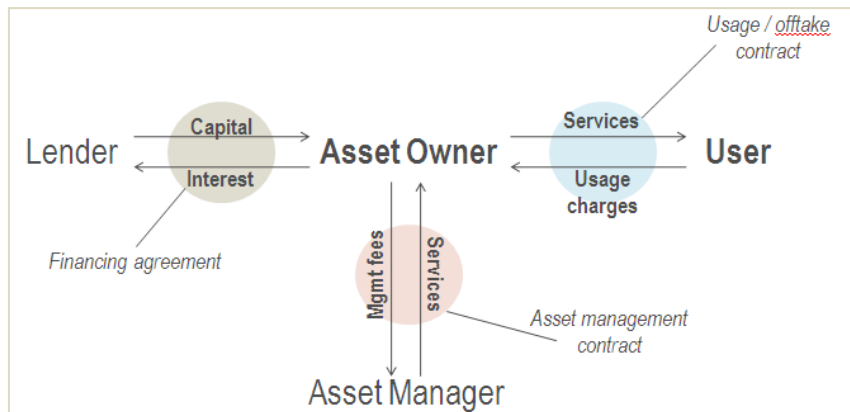


Figure 1: Standard Commercial Model

This basic, market-based approach has underwritten many Australian energy infrastructure projects, such as the Eastern Gas Pipeline and Milmerran power station, and in WA Bluewaters I and II, the Telfer Gas Pipeline and has underwritten a substantial expansion of capacity on the DBP in the past five years.

It seems to work pretty well where there is a single large user or a small number of large users, for ease of contracting. It depends – crucially – on the financial capacity of those users – a single large contract with a blue-chip customer can be enough to underwrite a project.

The main alternative model (we refer to it as the ‘regulated cost recovery model’) is for a Government agency to provide a franchise – or sole right to serve customers in the area served by the asset.

This model is in use in Australian electricity and gas distribution networks which serve large numbers of customers, none of whom is large relative to overall demand.

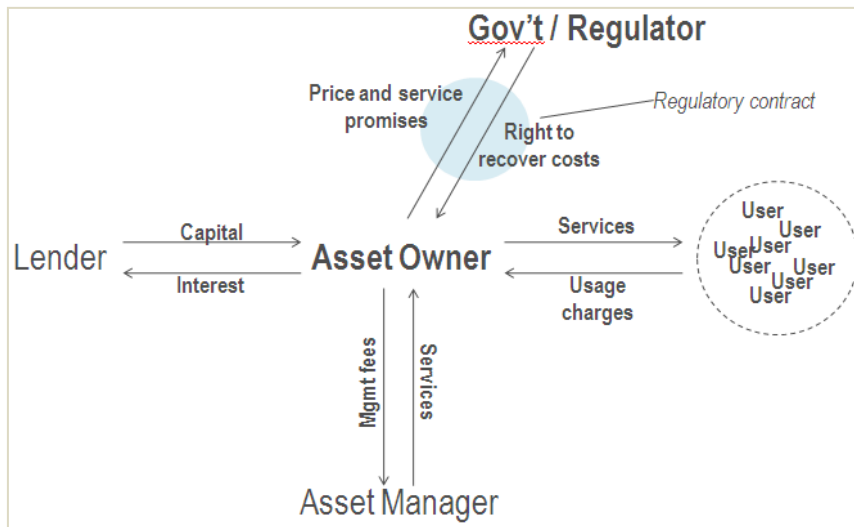


Figure 2: Regulated Cost Recovery Model

The creditworthiness of individual end-users is not generally an issue – portfolio effects among the large number of users, plus the right of the asset owner to periodically adjust tariffs, provide the financial safety-net that makes the assets a bankable proposition.

Practically speaking, those models can be blended – transmission customers for example generally pay a negotiated connection charge and a smeared charge for their use of the network as a whole.

So, what if you're a would-be energy infrastructure user who fits neither of those types? If you're mid-sized – big enough to be considered a 'proper' business but not big enough to underwrite a new gas pipeline or meet the costs of a lengthy extension of the transmission system? If you're not operating in an area blessed with legacy infrastructure that can be upgraded or enhanced to meet your needs at marginal cost?

We think it's these users that are 'in the middle' – neither numerous enough to provide a strong portfolio effect, nor large enough to underwrite most or all of the development of new infrastructure in their own right – that test the workability of the existing models.

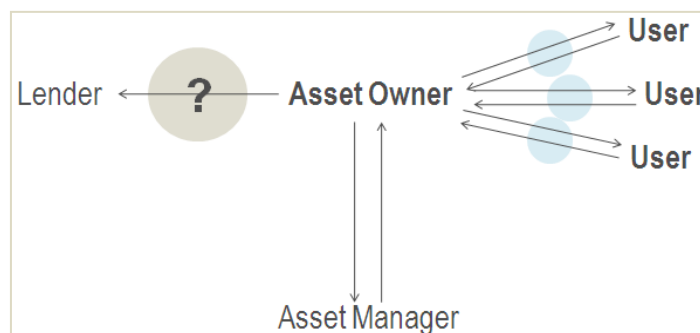


Figure 3: Problems for 'mid-sized' users?

Probably the best-known example of this problem – because they have been quite vocal about it – is renewable energy developers in the NEM. The average wind farm project in Australia is under 100 MW, which is simply insufficient to underwrite the development of much transmission infrastructure. Consequently the possibility is being discussed that the

next tranche of wind power to come to market may be b-grade wind resource areas that happen to be close to existing transmission lines. We'll talk a little later about the proposed Scale-Efficient Network Extensions rule that is intended to address that situation in the NEM.

Closer to home, Infrastructure Australia identified grid extensions to support minerals developments in the Pilbara and mid-west as critical to Australia's economic development.

In both those regions, numerous developers are working to bring literally hundreds of projects to fruition.

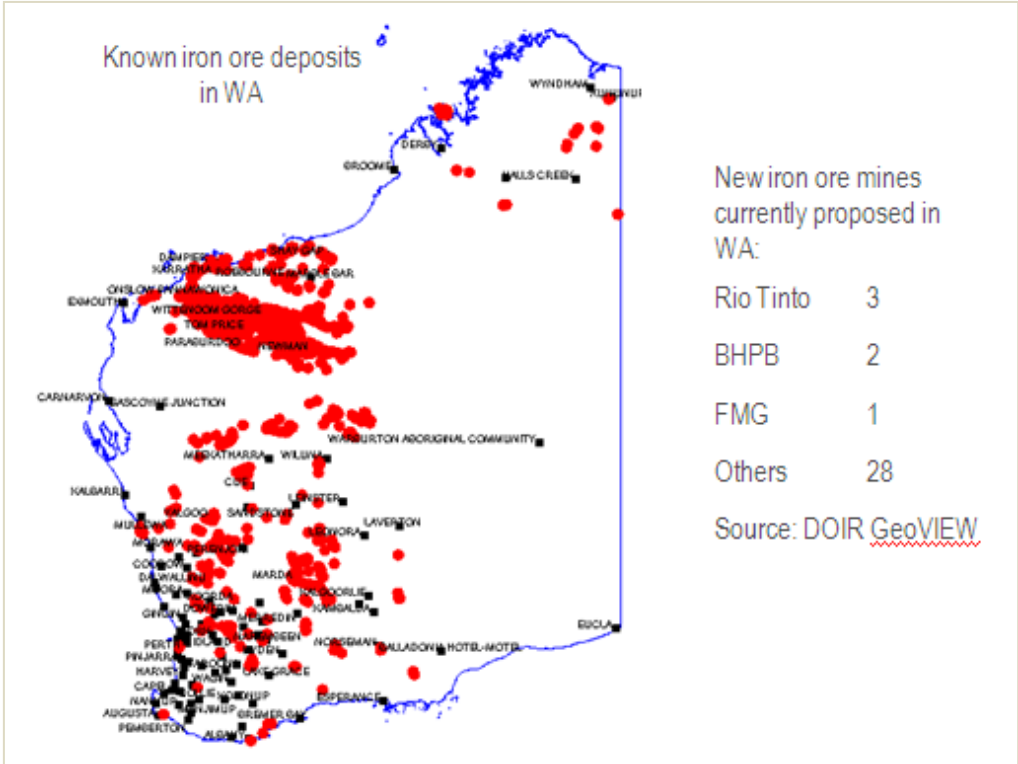


Figure 4: Iron ore deposits in WA

The drop-out rate will undoubtedly be very high and for all sorts of good reasons, but both regions clearly have the assets in the ground to have a very bright future.

The Building Australia Fund recognised this in their decision to help fund the Oakajee Shared Services project, but both regions are crying out for new energy infrastructure to make that bright future a reality.

The Key Question: Who takes the risk on new infrastructure?

So, why do the things we might expect to get built, that we might argue are needed for the continued economic growth of Western Australia, not always get built?

What might be done about it? And who ought to do it?

We think it has a lot to do with risk – with differing perceptions of risk; with imperfect markets for risk; with risks inherent in regulatory relationships; and with the fickleness of risk appetite.

Infrastructure is inherently risky. It is capital-intensive, with high initial sunk costs, exposing infrastructure owners to opportunism by would be users seeking access at marginal cost, and with whom they have asymmetrical information about true demand.

It is long-lived, exposing owners to the risks of technological obsolescence and bypass.

And it involves making a set of assumptions about the regulatory environment that can be overturned with the stroke of a pen. That's without considering refinancing or day-to-day operating risks.

A stable regulatory environment and long-term financial certainty – either via contracts or a franchise – ultimately underpin the viability of a piece of infrastructure.

Consider these two examples.

I have a gas distribution network, with customers whose usage patterns I know pretty well. I have a franchise for the area I operate in, certainty on my pricing for the next five years and a reasonable working relationship with my economic regulator (sound too good to be true)? The risks of an expansion to my network are pretty small. No single customer is in a position to make or break me.

On the other hand, now I'm considering building a Greenfield pipeline to supply a cluster of small mines in various stages of development. The risk picture is looking very different. Rather than negotiating with the Regulator, I'm negotiating with a number of customers separately. Their needs are all slightly different – one wants their capacity yesterday, the next not for three years. Even if I can sign up enough of those customers, what are the contracts worth? Suppose commodity prices tank. Projects get delayed, developers go broke. I'm left holding the bag. Would you lend to me?

And that's the problem for our middle scenario – the one with a small number of mid-sized users. No portfolio effect and no blue-chip customer means high stranding risk, no financing and hence ultimately no asset.

So where can we put that stranded asset risk to help the investment to happen?

We see basically three possibilities, each with its own complications and unanswered questions.

The public can take the risk, inviting the questions of: why should they? Is there some reason to think that a market-based response will be insufficient? And are the risks of under-investment and over-investment symmetrical?

Investors can take the risk. But what happens when those investors lose their risk appetite? Might there be an expectation emerging that Governments will fill the breach?

Or users of the infrastructure, either jointly or individually, can take the risk. We see well-backed owners of resources projects in WA contemplating vertical integration into energy infrastructure and ultimately fuel. But then we ask ourselves, is this the working of a well-functioning market? Does this solve the problems of those mid-sized users we mentioned?

Let's look first at the public taking the risk. The removal of the public from this role has for a long time been a rationale for restructuring energy markets and privatisation of energy assets in many parts of the world. Apparently now however, some people are seriously considering the possibility that direct Government intervention might be the only way to deal with major market discontinuities.

Example: following the global financial crisis, the UK established what amounted to an 'infrastructure bank' to co-lend, on commercial terms, to infrastructure projects that were unable to secure financing in the market.

In their 2010 Annual Statement on Energy, the UK Government flagged its intention to create a Green Investment Bank to help meet the financing needs of low-carbon energy infrastructure. Ross Garnaut envisaged something similar for Australia in the recommendations of the Climate Change Review.

It's interesting to draw the distinction between, on the one hand, the projects financed by the Building Australia Fund and on the other, the National Broadband Network. The BAF projects - a large portion of them roading projects were exactly the sort of things you expect to see funded directly by Government - infrastructure whose services are not directly priced, or not

priced fully. The decision to have public involvement in the NBN, comparable services to which are available, fully and transparently priced, in the market, is huge and hugely controversial.

Again, the idea surfaces that at a discontinuity – this time, a technological one – direct intervention by the Government is the best route to a socially optimal outcome.

The Great Depression and the end of the Second World War were discontinuities that provoked similar responses. You can be sure that at the time it was embarked upon, the business case for the Snowy Hydro Scheme would have been weak or non-existent. Victoria's Great Ocean Road would have been the same. Yet these are now examples of critical national infrastructure and icons in their own right.

Granted, the scale of direct Government financing seen during the depression or after the Second World War in Australia is probably a thing of the past. The UK infrastructure bank envisages being a co-lender with private financiers doing the heavy lifting. But the re-entry of Governments into this sphere is nonetheless significant.

We think the central point here is this: Whether prompted by the GFC, the threat of climate change, or something different, Governments are increasingly taking the attitude that markets are means, not ends and that ultimately it falls to Governments to determine the ends that are desirable, evaluate whether they are being achieved, and take appropriate action if they are not.

Next, let's consider the possibility that all the risks attendant on building new infrastructure might be borne by investors – that is to say, there might be investors who could be paid to accept those risks. There are, as I alluded to at the start, countless examples of this mechanism working in an extremely satisfactory fashion. And in principle it might be applied to the problematic class of cases we discussed above. It could look something like this.

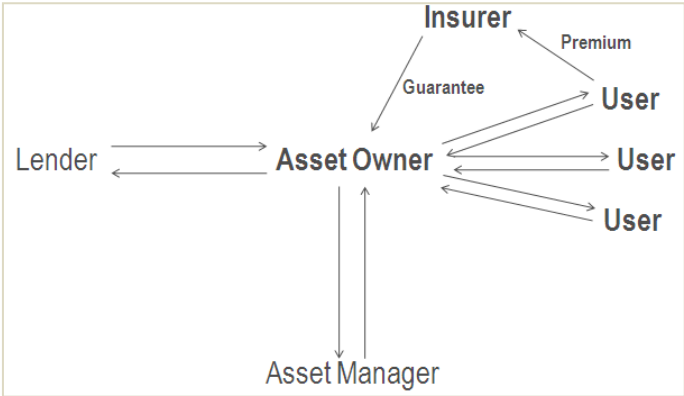


Figure 5: Investors take the risk

The stranding risks here are covered by insurance. A third party insures the infrastructure provider against default by its customers. The insurance premium is passed back to the customers in the pricing of the services they purchase. In all other respects this is a stock standard commercial arrangement for new infrastructure.

Provision of the insurance for a deal like this is a minor variation on what was, for a long time, a very big business – insuring bond issues against default by the issuer. The sub-prime mortgage crisis in the US, however, badly affected the credit ratings of the major insurers themselves, with disastrous consequences for many so-called credit-wrapped bonds. As the insurers themselves became distressed, the bonds they insured were downgraded. Many bond investors lost a lot of money and their appetite for credit-wrapped debt, along with the ratings of the insurers, have yet to recover. The credit-wrapped

bond market didn't have as far to fall in Australia, but Infrastructure Partnerships Australia nonetheless pronounced it dead in March 2009.

In theory, insuring credit risks looks like a neat solution to the problem of credit risk in the middle-sized customer scenario. The problems, rather, are practical: markets are not as perfect as we might wish. They may not be accessible for smaller transactions. They may not provide efficient pricing. And they may disappear entirely for extended periods of time.

This invites the question of whether Governments should step into the breach in some circumstances – helping markets along when they seize up. Are Governments in a position to evaluate and price those risks? Will their presence prevent the re-emergence of private-sector solutions? When and how should Governments exit their positions?

In contrast to the UK, in the wake of the GFC the French Government have taken the route of providing loan guarantees, rather than lending directly, for infrastructure projects. Those guarantees are no free lunch – they are paid for by the borrower – but as with the insurers, this is a mechanism that only has something to offer if the balance sheet of the guaranteeing Government will bear it.

A third possibility is that users might share the infrastructure stranding risk among themselves – that is to say, users other than the ones whose financial distress threatens to strand the asset, might become guarantors of the cash flows to that asset.

This is effectively what happens in the regulated cost recovery model, on a small and incremental scale. But the smearing of costs across a larger pool of users is being contemplated on a much larger scale.

We mentioned earlier the Scale Efficient Network Extensions rule currently under consideration in the NEM. The rule had its genesis in a study into the market implications of a carbon price and renewable energy target, and some immediate and well-publicised concerns about the difficulties of connecting proposed wind farms in Victoria and South Australia to the grid.

The intention was to cut through the problems associated with getting efficiently-sized common-use infrastructure built. Essentially the rule allows the first user to connect at less than the full cost, if there is sufficient reason to believe that other users will follow suit. If those users don't materialise, then the unrecovered cost is effectively spread over the broader community of network users.

At present the SENE rule is on the back burner until the middle of next year, the Australian Energy Market Commission citing "issues of sufficient complexity and difficulty such that an extension of time is necessary". The SENE rule certainly provoked a lot of comment, being variously criticised as unnecessary given existing mechanisms to deal with the issue; insufficiently rigorous; and overly complex.

What most respondents did agree on however was that a serious economic issue – achieving efficient connection of new network users – was at stake.

One much-commented-on aspect of the SENE proposal was the issue of how many of the supposed beneficiaries needed to be on board before it would get built. Under existing rules, beneficiaries could in principle agree of their own accord to jointly fund an asset. Under the SENE rule as proposed, a single signed-up user, provided the asset met the prescribed criteria, would be sufficient to trigger the investment.

In essence the SENE rule placed asset stranding risk with the broader community of network users, safeguarded by an administrative test. It relies, as such, on there being such a larger user group and there being a mechanism to tax them. Hence where a franchise with regulated cost recovery is in force, it's a possibility. It's harder to envisage for something like a gas pipeline, which sits much more in the commercial model.

So, is there a better solution than the compulsory socialisation of these costs? Is it necessary to wait for something like the SENE rule? Why could wind farm proponents not, themselves, agree on mutually acceptable arrangements for the construction of the assets the SENE rule sought to address?

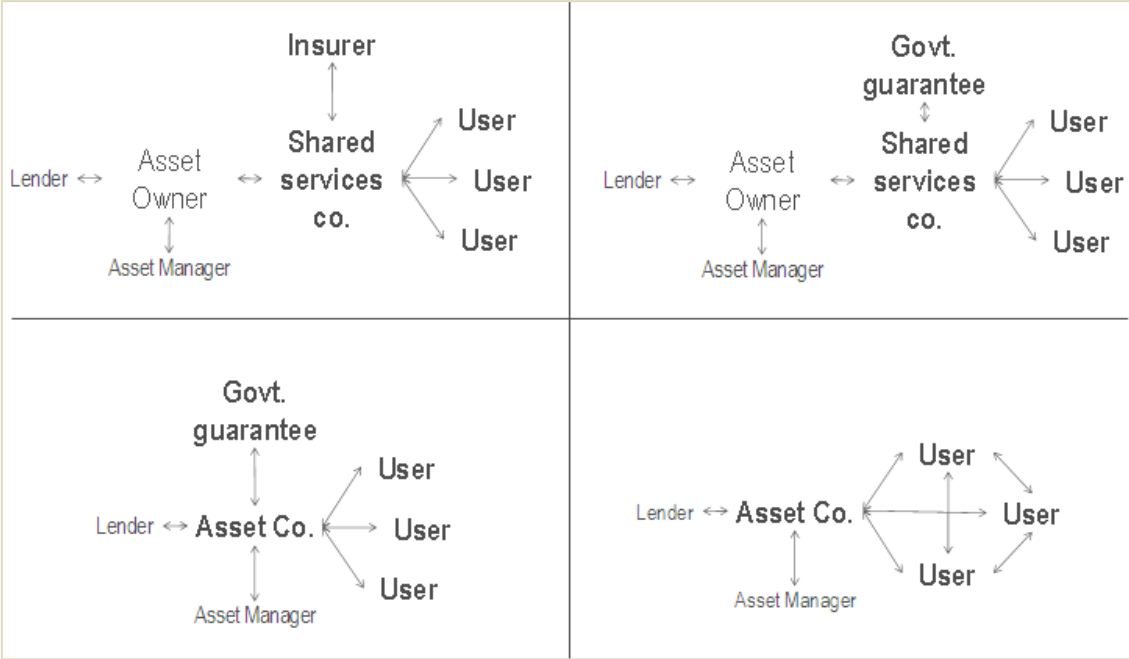


Figure 6: Users take the risk? Some possible models...

The negotiation itself would be formidably complex given that various proponents would want to connect at different points, at different times. They would be in most cases commercial competitors. And each might think that they had more to gain by sitting on the sidelines and connecting at marginal cost once the asset was built.

And yet, maybe there are within this construct the seeds of a solution to some of the issues we have talked about here. A consortium of medium-sized users without the balance sheet of a BHP or an ALCOA could in principle share the stranding risk, standing ready to pick up the tab for any capacity that became available through default by one of the members. The risks could be pooled, structured, and insured or retained in whatever way made the project bankable the least overall cost – whether that was equity ownership by the users, provision of credit support, insurance against credit risk, or, for that matter, Government participation or guarantees, or any of these in combination.

Could it work? Perhaps. The negotiation aspects would be difficult, to be sure, but difficult negotiations are undertaken every day. And businesses increasingly grasp the idea that they might as well cooperate for mutual gain in areas where they can derive no competitive advantage. A negotiated user consortium wouldn't have to wait for the right market conditions to emerge, or the right rules to be written.

But it invites the question: why hasn't it happened to date? Why have mid-tier miners not banded together to build transmission – or even, for that matter, local generation? Why have wind farm proponents been unable to come up with their own solutions to the first-mover impasse? Are there after all insurmountable obstacles?

Governments, whether they would choose to be or not, are inextricably involved in energy infrastructure. Perhaps more in Western Australia than anywhere else, the economic welfare of the state is at stake in the investment decisions that will be

made in the coming years. And yet, it is not enough for would-be users of the new energy infrastructure to wait for a beneficent Government, or indeed, a perfect market, for its provision.

Users need to take the initiative – but when they do, they should find a receptive, supportive, albeit critical and cautious Government that is prepared to take some risks itself if it needs to. Getting infrastructure built will undoubtedly continue to be a challenge, but let's hope that a decade from now we're talking about a different set of problems to the ones we currently face.

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