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SKILLS SHORTAGES

Infrastructure is in the news a lot nowadays – we regularly have announcements of billions of dollars of intended spending, and just as regularly reports bemoaning the fact that the money promised isn't being spent. Are the two related? **(p.122)**

Skills Shortages are General



John Scott, UK energy regulator, argues that the situation in the UK and Europe will get worse and asks what can be done. His observations are equally valid for Australia. **(pp123-124)**

Infrastructure Demand



David Hellier, Energy Skills Council, UK, says many sectors are characterized by heavy capital investment. The picture is the same in Europe & Australia. **(p125)**

The Shape of Things to Come?



Can skill shortages married with higher demand lead to more cost blowouts like the South Australian 22 km Northern Expressway? From \$300M to \$550M! “There, but for the grace of God—and good asset management planning—go we all?” **(p.126)**

What can you do?



In the short term?
In the mid to longer- term?
(pp.127-128)

Consider and Enjoy!

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AUSTRALIA FACING INFRASTRUCTURE RELATED SKILLS SHORTAGES



INTRODUCTION TO SKILLS SHORTAGES

This has been evident and a concern for some time.

Partly it arises from **ageing – both of assets and of population** – which has increased demand for skills and reduced the supply.

Partly it arises from the **rapid rise in the Chinese and Indian economies** that is fuelling an economic boom in exports that is exerting even more strain on already limited skill resources.

Partly it arises from **a reduced willingness on the part of our young people to undertake the arduous process of engineering study** now that it costs more and no longer attracts high salaries and high public respect.

The problem is not unique to Australia

All developed countries are facing these same problems.

Also the problem is not unique to Infrastructure

Manufacturing is also complaining of skill shortages and so are the service areas, for example health and education.

Skills for Infrastructure Renewal are thus in competition with non-infrastructure needs

But renewal is also in competition with new and expansion infrastructure.

In all developed countries— UK, Europe, America, Canada as well as Australia—the demand for new infrastructure has never been higher!

Demand for skilled resources for renewal was foreseeable

20 years ago when I did the first asset renewal studies for the SA Parliament, I stressed that the problem was not merely one of finance—but a problem of having sufficient skilled resources available when needed.

So, 20 years ago, the future impact on skilled resources was already evident.

But then

- we did not know that at this time we would also be facing a resources boom fuelled by the rapid rise of India and China.
- And we did not foresee that this would also be a peak time of demand for new infrastructure worldwide

What can we learn from the UK?

In this issue

we look at two addresses to a recent members seminar that was held in Birmingham in June by The Institute of Asset Management, one by John Scott, the energy regulator in the UK, and one by David Hellier, Energy Sector Skills Council. (All of the presentations at this seminar can be accessed from the IAM website at www.iam-uk.org.)

THINK STRATEGY, THINK SKILLS, THINK BIG

John Scott, Ofgem Regulator, UK



In his presentation, John Scott, the UK energy regulator saw the following issues of concern:

Infrastructure investment is rapidly increasing

Great infrastructure complexity lies ahead (e.g. distributed generation, conversion to active networks, global warming, terrorist threats, World oil, new nuclear, ageing assets, etc.)

Skill shortages and manufacturing capacity concerns are being widely reported

Same problems are impacting Europe as a whole; China and India are already impacting energy sector

EU recognises fundamental problems in the innovations chain, delivering 'research' but not solutions. Are we doing enough?

"Corrective" actions have long lead times, assets, architecture, skills, R&D

Current activities are focussed on the near to mid-term (competencies, standards)

What about the beyond mid term issues?

"Capex chaos" through inability not intent
Inefficient and poorly co-ordinated spend
Delays threaten security of supply and markets
Smart homes/customers are a niche only
Systemic failure brings sector into disrepute

He sees the following threats under a high investment scenario

- Insufficient information available for effective market response to manufacturing capacity issues
- Major works programmes and innovation need the best staff; restrictions already arising
- EU and UK experience serious difficulties in achieving technology transfer – ie successful demonstration is not followed by wider deployment
- Skills shortages masked by poaching; no single company can respond alone.

And there is the risk of a major delivery shortfall.

Key Points

Great Complexity Ahead

Skill shortages general

Impacting Europe as a whole

Innovations Chain problems

Long lead times

Who is looking beyond the near to mid-term?

Who could?

Whose role is it to address the far term issues and risks?

- **Companies?** Problematic for companies to address individually
- **Ofgem, the Regulator?** Yes, but only part and focus tends to be short/mid term
- **Electricity Network Association?** In theory, but unlikely to gain unanimous member support
- **Institutes of Engineers, Electrical Engineers?** Supporting role but no authority to lead
- **Department of Trade and Industry (i.e. Government)?** Could it provide the capacity, skills and continuity?

He questions the current ramping up of capital expenditure

and suggests that new ways have to be found not simply more of the same
And he emphasises the need for **contingency planning!**

John Scott points out that

- Electricity industry staff down 60% since privatisation
- 30% of the workforce now aged between 45 and 59
- Apprentices account for only 4% of the workforce
- Dearth of power engineering undergraduates & researchers

Ageing Assets

This does not just apply to UK gas and electricity networks, but also to UK generation, water, rail, etc.

And not just to the UK but to the whole of Europe.

The biggest demand for new assets likely to be in China and India

This is the greatest influence on the manufacturers that UK buys from

But could both India and China also be potential providers of future equipment and skills?

The immediate question was “How do we gain business advantage (& avoid serious disadvantage)?”

Major infrastructure spending planned for Europe over the next two decades.

He instances the impact of Europe’s planned ‘smart grid’ and the 1 Trillion Euros planned spending on energy infrastructure over the next two decades

Networks are facing the most significant challenges & opportunities in 50 years.

- There is increased capital investment, and this
- Provides significant scope for new thinking

Success, he points out, will require—

- Convincing the regulator—so that it will be possible to raise the required funds. This will require demonstrating benefit not just asserting it!
- Securing the people & their skills
 - Managing delivery risks
 - Positioning for the Far term
 - Exploiting EU & global dimensions

Think Big! The Challenges Are!

INFRASTRUCTURE SKILLS DEMAND

David Hellier, Energy Sector Skills Council, UK



What is driving demand for Infrastructure Capital?

In his presentation 'Skills Development and its Impact on Asset Management', David Hellier draws attention to a number of issues, namely that many sectors are characterised by cycles of heavy capital investment, eg

Electricity - driven by the 'rewiring of Britain' and the Government's ambitious targets for renewable electricity, mainly from offshore windfarms

Gas - driven by the desire to accelerate the replacement of Transco's large legacy of metal gas mains, and to adapt the National Transmission System for Britain's growing dependence on imported gas

Water - to meet more demanding environmental standards and renovation of pipelines and sewers, PR04

Waste management - faced with declining landfill capacity and the costly, more skills-intensive requirement to shift from landfill to process solutions

But in the UK, as in Australia, there is also a large projected increase in spending on transport.

UK Occupational Change to 2020

Projected growth in job opportunities favours white collar and more highly skilled occupations as well as personal and customer service jobs

Looking ahead, he argues that by 2020, the proportion of jobs at Level 4 and above (the second highest level in a 5 level range) may reach 42% of the workforce, or 4.5 million more than today, while the proportion of jobs with no qualifications could be as low as 2%, or 2.5 million less than today.

(For comparison the British population is roughly three times that of Australia.)

But the most telling of his statistics is that 75% of the workforce in 2020 are already here!

Key Points

Heavy Infrastructure Demand

Electricity

Gas

Water

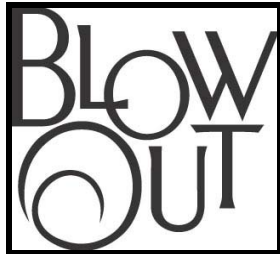
Waste Management

Transport

Projected Occupational Change

more demand for high skill level jobs

less demand for low skill level jobs



Fed Govt questions SA road project cost blow-out

"The Federal Government says it wants to know how the South Australian Government got its sums so wrong on construction of the Northern Expressway. The project will now cost an extra \$250 million.

SA Transport Minister Patrick Conlon indicated back in May the project would cost more than the \$300 million first estimated. He says the Government will put in another \$60 million but he is calling on the Commonwealth to put in an extra \$200 million.

"I'm very confident that the Commonwealth will be able to live with this," he said. But Federal Roads Minister Jim Lloyd disagrees.

"It's a massive amount of taxpayers' money so we can't just throw that on the table," he said. He says there no guarantee the Commonwealth will hand over the extra money.

"We can't just pluck another couple of hundred million dollars out of the air," he said. "The \$15 billion that we're spending around Australia for the next five years under Auslink is all committed to projects around Australia."

The 22-kilometre expressway will connect the Port River expressway with Port Wakefield and link up the Sturt Highway.

The cost blow-out comes on top of transport department problems, with the South Road tunnels and the Bakewell Bridge also costing tens of millions of dollars more than originally estimated.

Mr Conlon says the blow-out was unavoidable given high commodities prices and the fact the project is not starting for another three years."

ABC News Online 05-08-2006.

To Think About

Skills Shortage

Note that skills shortages are *not* listed in the causes of the cost blow-out. Does this suggest that yet more cost rises are to come?

Business Case

Was a rigorous Business Case prepared for the Expressway? And, if so, in the face of an almost doubling of the price—and with no assurance that the final cost is yet reached as land costs are yet to be negotiated—has that Business Case been revisited?

In times of change, Business Case documentation needs to be able to be revisited! What about your major projects? Are you able to revisit? Easily?

Re-scoping

The Expressway has been reduced from 6 lanes to 4 lanes (with some additional lanes at certain spots). The Federal Minister is now inquiring about the possibility of re-routing. Re-scoping and revisiting the Business Case needs to go hand in hand.

Vulnerability

Has downsizing in the public sector over many years left the State short of the skills needed to determine, examine and evaluate project proposals, both those that are carried out in house and those that are prepared for it externally? What is your situation?

A "Residual" Customer?

Like the smallest, and weakest player on the school team, South Australia may be in the position of being the last to be chosen. If companies would prefer to be engaged in the constantly more active East Coast and the currently booming Western Australian economy, then the impact of resource scarcity will be magnified. The same may be argued for rural and regional versus city customers

SKILLS SHORTAGES

WHAT CAN YOU DO?



In the short term

Accept the state of the world as it is.

Factor in to all projects

- higher and rising **labour** costs
- higher and rising **energy** costs
- higher and rising **material** costs

What else?

Reduce your infrastructure demands to those that you can afford with the incomes you are likely to get and after coping with increased prices on all operational and administrative spheres,

(remembering that rate payers and customers will also be facing increased pricing demands on all fronts so that simply increasing prices to enable you to carry on doing what you are currently doing is probably not top of *their* priority lists.)

Develop rigorous business case justifications for all and any projects with which you wish to proceed.

Find ways to do with less and to do without.

Prioritise your new and renewal spending, recognizing that certain factors impacting the need for infrastructure are already in motion, namely

1. population is ageing and ageing populations have different demands
2. population growth is slowing, and for certain states and for many rural and regional areas, is stabilizing or turning down reducing the need for, justification of, and support for further infrastructure
3. oil prices are very likely to continue to rise and to effect increases in oil based products and competing energy resources
4. rising energy prices will have a marked impact on inflation. The longer you deny reality, the harder it will be to adjust.

Key Points

Short Term – Accept facts

Adjust costing
Reduce demand
Do with less
Do without
Business cases
Prioritise spending

Mid Term—Change your Organisation

Train your people
Encourage staying
Efficient usage

Longer-Term—Change the country! The longer term starts now

In the medium term

Change your organisation's reaction

Train your own people. Poaching from others is not a sustainable option.

In the UK, the Institute of Asset Management is developing competencies for engineering asset management. In Australia, this role is being taken by the newly formed Asset Management Council.

There is an increase in the number of courses available, ranging from short courses provided by the Institute of Public Works Engineering Australia, to longer, accredited courses at the University.

Skills development is available at the field operative level through to strategic management.

Encourage older workers to continue by making their work life more attractive

Recent changes to tax and superannuation make working beyond the age of 60 potentially tax free and this should provide a great incentive for your experienced older workers to stay in the work force, but

Deal with the non-financial negatives

Namely the anxiety, worry, perplexity, frustration, or just plain boredom experienced by many in the older workforce. Active training for these people, often ignored because of their age, could go a long way to cope with these issues and produce a more effective workforce.

Develop more efficient asset usage

By changing the services you provide, the level at which you provide, or the way you provide them.

Support innovation and development.

What else?

In the longer term

Change the country's reaction!

How?

Can we find a way through combined discussion, debate, research and development by many individuals, organisations and associations? Here, we could probably echo John Scott's concerns for the UK energy sector—will Government alone have the 'capacity, skills and continuity'? If not, then it will need to be up to the country as a whole. A considerable challenge!

Actions for the mid and longer term *need to start now!*

STRATEGIC ASSET MANAGEMENT

Is prepared to play its part in such development. As a forum for multi-disciplinary ideas for restructuring and innovation. I will be travelling across the country speaking to many people about these issues. Your ideas will also be very much welcomed. No idea is too 'off the wall' to be given attention, so give it a go!

Penny Burns