Australian Government

AUSTRALIA'S CHIEF SCIENTIST

PROFESSOR IAN CHUBB

THE IMPACT OF R&D IN CONSTRUCTION

10 MINUTE SPEECH + PANEL DISCUSSION

BRISBANE

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********** CHECK AGAINST DELIVERY **********

- Few appreciate the role of science in our everyday lives.

- But nowhere is the impact of science more obvious than in the development of our cities and suburbs.

- The construction industry affects every Australian – our homes, our workplaces, our schools, our hospitals, our water supplies.

- The industry is also the fourth largest contributor to our GDP and employs almost 10% of Australia's workforce.

- And all of this is dependent on the strength of our construction industry and the science that underpins it.

- It is physicists, engineers and chemists that have contributed so many of the advances in construction that we take for granted today:

    - The ability to erect sky scrapers, 150+ stories high
    - The development of buildings resilient to natural disasters like earthquakes and flooding
    - The ability to conjure computer visualisations of buildings and plans

    - The ability to build over water, or on soft surfaces, even in space

- And it is not just applied research in typical construction disciplines that contributes to the industry.

- Increasingly, more obscure areas of basic research are being found to have applications in construction:
    - Bullet trains in Japan are designed on an understanding of the hummingbirds aerodynamics to reduce noise.
    - The incredible water repellence of lotus leaves has been applied to airplane coatings and exterior paints to repel rain and keep surfaces clean.
    - Even studies on the bumps on the fins of the humpback whale, when applied to planes and submarines, have shown to reduce drag by 32% and improve life by 8%.[1]

- But R&D isn't always directed to new technologies or materials – innovation in organisation, operations and processes can have just as much impact.

[1] MIT Technology Review, 2008 http://www.technologyreview.com/news/409710/whale-inspired-wind-turbines/?nlid=918

- It is estimated that even a small productivity increase of 0.3% would result in an improvement in GDP of $6.5 billion – these numbers are double that of any other industry[2].

- It came as a surprise then, when total public spending on construction R&D took a hard hit in the early 90s – falling from 2.2% in 1992 to 0.5% of total government R&D in 2010[3].

- When the funding began to evaporate, at first the sector was shocked – rightly so.

- But it showed resilience, and during the same period business expenditure on R&D increased almost exponentially, more than compensating for the decline in public investment, injecting five times the amount of government investment[4].

- Now, since the closure of the CRC in 2010, the sector faces a new challenge.

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[2] CRC Construction Innovation, 2006. Building our Future. http://www.construction-innovation.info/images/pdfs/Brochures/CRC_BOF_06_final_ver.pdf

[3] Barlow, 2012. The Built Environment Sector in Australia. http://www.sbenrc.com.au/images/stories/BUILT_ENVIRONMENT_RD_2012_latest_report.pdf

[4] SBENRC, 2012. Leveraging R&D Investment for the Australian Built Industry. http://eprints.qut.edu.au/59085/1/Leveraging_RD_investment_industry_report_Final_4_13.pdf

- They key question is: How do we leverage the significant investment and achievements made through a CRC once it has closed?

- This centre is one of the few examples of success.

- Strong R&D is dependent on nationwide collaboration between all parties – of industry, of government and of academia.

- The CRC, and the strength the sector has shown in the face of such significant funding changes, have developed a strong foundation for such collaboration.

- But it is a difficult transition once funding for a CRC has run its course.

- And unfortunately, regardless of the level of investment and collaboration, still less than 1% of construction businesses in Australia conduct their own R&D[5].

[5] BRITE, 2005. Construction Innovation Survey http://www.construction-innovation.info/images/pdfs/PublicPublication/BRITE_Survey_Executive_Summary_for_release.pdf

- Since 94% of our industry is comprised of business with 5 or fewer people, this can be expected[6].

- But by neglecting to conduct our own R&D, we not only reduce the chances that we will discover new ideas and develop new inventions before our competitors, we also limit our abilities to accept and use those new inventions that are developed elsewhere.

- To be internationally competitive requires technology, development, innovation.

- It is research and development that will create smarter construction operations, processes, techniques.

- And it is research and development that will help ensure Australia's place in a competitive global economy.

- With this in mind we need to ensure that we have a national approach to our R&D system, which is why I am preparing a National Science and Technology Strategy.

- A core part of this strategy will be fostering collaboration between industry, government and academia.

- Specifically, the strategy will:

[6] CRC Construction Innovation, 2006. Construction 2020 http://www.sbenrc.com.au/images/stories/01-Construction2020-ExecutiveSummary.pdf

    - Forge new and reinforced links across publicly funded science and industry to catalyse innovation, particularly in areas of research strength and commercial potential,
    - Increase the sharing of knowledge through two-way staff mobility between business and academia; and
    - Explore creative public-private partnerships to bridge the gap between research and development.

- Our advances in construction would not be possible without science.