



HOUSE OF REPRESENTATIVES

STANDING COMMITTEE ON INDUSTRY, SCIENCE AND TECHNOLOGY

Reference: Effects on research and development of certain public policy reforms

CANBERRA

Thursday, 4 June 1998

OFFICIAL HANSARD REPORT

CANBERRA

HOUSE OF REPRESENTATIVES
STANDING COMMITTEE ON INDUSTRY, SCIENCE AND TECHNOLOGY

Members:

Mr Bruce Reid (Chair)

Mr Beddall (Deputy Chair)

| | |
|------------------|-------------------|
| Mrs Bailey | Miss Jackie Kelly |
| Mr Martyn Evans | Mr Marek |
| Mr Richard Evans | Mr Allan Morris |
| Ms Gambaro | Mr Nugent |
| Mr Jenkins | Mr O'Connor |
| Mrs Johnston | Mr Zammit |

The committee will inquire into and report on the effect of public policy changes, over the last ten years, in the areas of corporatisation, privatisation, outsourcing and competition policy reform on the matters listed below:

the amount of R&D being carried out in Australia;

the nature of the R&D being undertaken (that is, basic or applied);

the relevance of the R&D to the commercial needs of industry;

the level of investment in research infrastructure and equipment;

the scientific and technological skills base and the demand for scientists, technologists and engineers; and

the education and training opportunities for future research staff.

WITNESSES

**JOHNSTON, Professor Ron, Convenor, Australian Science, Technology and
Engineering Council, c/- Department of Industry, Science and Tourism,
GPO Box 9839, Canberra, Australian Capital Territory 2601 209**

**SARGENT, Dr Michael, Working Party Member, Australian Science, Technol-
ogy and Engineering Council, c/- Department of Industry, Science and
Tourism, GPO Box 9839, Canberra, Australian Capital Territory 2601 . . 209**

HOUSE OF REPRESENTATIVES
STANDING COMMITTEE ON INDUSTRY, SCIENCE AND TECHNOLOGY

Effects on research and development of certain public policy reforms

CANBERRA

Thursday, 4 June 1998

Present

Mr Reid (Chair)

Mr Richard Evans

Mr Allan Morris

Ms Gambaro

Mr Zammit

Miss Jackie Kelly

Committee met at 1.09 p.m.

Mr Reid took the chair.

JOHNSTON, Professor Ron, Convenor, Australian Science, Technology and Engineering Council, c/- Department of Industry, Science and Tourism, GPO Box 9839, Canberra, Australian Capital Territory 2601

SARGENT, Dr Michael, Working Party Member, Australian Science, Technology and Engineering Council, c/- Department of Industry, Science and Tourism, GPO Box 9839, Canberra, Australian Capital Territory 2601

CHAIR—I declare open the seventh public hearing of the inquiry into the effects on research and development of public policy reform. We will be taking evidence today from the Australian Science, Technology and Engineering Council. Welcome to today's hearing and thank you very much for your attendance. I remind you that the proceedings here today are legal proceedings of the parliament and warrant the same respect as proceedings in the House. The deliberate misleading of the committee may be regarded as a contempt of the parliament. The committee prefers that all evidence be given in public but, should you at some stage wish to give any evidence in private, you may ask to do so and the committee will give consideration to your request. Would you like to make an opening statement before we move to questions?

Prof. Johnston—Thank you, Chairman. We have a brief opening statement. I express gratitude for the invitation to appear before the committee. If I can briefly rehearse the background to ASTEC's submission, the Australian Science, Technology and Engineering Council determined, as a result of a range of submissions and comments made to members of the council concerning a view that unintended harmful effects were emerging from the impact of competition policy on research and development, to make a preliminary investigation prior to the decision of this committee to embark on its study.

Subsequently, recognising the need to ensure there was no overlap or duplication in this area, ASTEC focused its study exclusively on the power, water and telecommunication utilities; essentially a case study of the impact of competition policy on research and development, with a prime objective of using that as a submission to this committee of inquiry, which has been placed before you.

If I can summarise briefly the big picture results, what we find is that with regard to the level of R&D it is difficult to make a conclusive finding. The data are simply not available or not available in a form which would allow us with confidence to state strongly that there had been an increase or a decrease. What we do find, though, is that there is no evidence of a dramatic decrease in research and development being performed by these utilities post-corporatisation.

However, what we do find is that there has been a significant shift in the direction of R&D and in the way in which it is managed. With regard to the direction, the shift of the utilities under corporatisation towards a much stronger customer orientation has led them away from their previously more technology driven strategy. Technology is increas-

ingly something being viewed as a commodity to be bought where it is best available and at an appropriate price.

The business focus is on value-added services and customer services and that has led to a new type of R&D, addressing specific local environmental health and safety regulatory and customer—

CHAIR—It looks like we might be going to have another division. We are in the committee stage of a fairly controversial bill. Please excuse us.

Proceedings suspended from 1.13 p.m. to 1.23 p.m.

CHAIR—You can proceed.

Prof. Johnston—Thank you, Chairman, I have nearly completed. I mentioned we have no clear evidence that there is a dramatic decline in R&D in these areas but it has significantly changed in direction. Two further features have emerged from the study. The first is a significant shift in how the utilities view their R&D function which we see essentially as positive.

Decisions about R&D investments have moved from being made at the operational level of organisations with various parcels of investment money that were available, to a much more strategic approach. They are being made by the board or by the CEO with a very strong view of linking the R&D quite strongly into the strategy of the organisation. On that view you can see that as they move further through the cycle of adjustment to the new situation of competition policy, they may then choose to invest in R&D increasingly again.

The final matter, and perhaps the one of greatest concern to us, is that the evidence we have is that in some areas the public good research—research which is primarily designed to provide general value to the public in areas of, for example, collecting data on environmental flows or environmental changes; functions which were once carried out by these corporations as part of their role—clearly no longer falls directly within the charter of responsibilities and is tending to be dropped.

It is very hard to determine precisely the consequences of this. However, you could certainly argue that lack of data about water flows in particular rivers over some period of time will deprive the organisations of the information on which to make judgments about effects, particularly about environmental change. We draw to the attention of this committee—it would appear that nobody else at the moment is in a position to take this up—that it may be worth emphasising that there may be some loss in terms of public good R&D and that responsibility for that should be attached somewhere.

CHAIR—Thank you. Dr Sargent, do you wish to make any comment?

Dr Sargent—No, Chairman.

CHAIR—Thank you very much. It was interesting that you chose to examine the water, electricity and telecommunications areas as they are probably ones that have been subject to most of the dramatic changes during the past 10 years. You mentioned the significant changes in the pattern of their R&D and you alluded to that in your opening remarks. I just wonder if in looking at them—you talked about the public good part of it—you were able to form an opinion which could be based on any sound evidence that the public good part of it had been neglected? Were you able to form an opinion about that which could be backed up with any information?

Prof. Johnston—We acknowledge it is partial and we are not in a position to determine whether it has been balanced by spill-over effects in some other areas. But I think the clear evidence is that there are some degrees of public good research which are no longer being performed which were performed before and it is conceivable that this could have some harmful consequences.

CHAIR—Was it identifiable in any one of those areas or was it over the three areas—the water industry, the electricity industry and the telecommunications industry?

Prof. Johnston—It was less clear in the telecommunications case where of course we were only dealing with Telstra. Perhaps in the water authorities—and I will turn to Dr Sargent in a moment—the example that came out most strongly was a collection of data on river flows and the state of the river systems.

Dr Sargent—The three utilities were chosen because they represent different entities, both in their international context and in the maturity of competition within those industries. The telecommunications industry is very international. Its research has been somewhat international and technological. It is an industry that is large enough to have done all of its research itself, so it was chosen for that. There is not a great lot of evidence of community good or public good research in that type of utility, either 10 years ago or right now. It tended to be very commercial, technological research.

The electricity industry has increasingly become a commercial entity over the last 20 or 30 years so the public good research that would have been conducted was relatively constrained in terms of being specifically for the good of the public as a whole. The industry did provide a certain amount of research that might be called basic research; research that was done for the pursuit of knowledge rather than for the pursuit of public good.

The water industry is characterised by high elements of public good research because it is a resource management type research; a research that enables the community at large to manage a water resource. The move towards making it a more commercial entity has meant that there has been no proponent for that research in the construct of the

utility in its operating environment. The industries were chosen for those different aspects. I think the water industry probably is the best example of where the implementation of various reforms in the utilities business has allowed that research to fall between the cracks in the implementation; there has been no home for that type of research.

CHAIR—Which electricity companies or corporatised structures did you actually look at?

Dr Sargent—We have listed those there.

Prof. Johnston—In appendix D we mention Austa Energy, Electricity Supply Association of Australia, Hunter Water Corporation, Integral Energy, United Water Corporation of South Australia, Water Authority of WA, Water Services Association of Australia, Western Power in WA and Yarra Valley Water in Victoria. So we got a reasonable geographical spread and a small number of companies in each sector.

CHAIR—The reason I wanted to pursue that is that I understand Dr Sargent had a close involvement with ACT Electricity and Water, both of which would have been drawn from the Snowy scheme?

Dr Sargent—Yes, electricity was drawn from both the New South Wales power stations and the Snowy scheme and the water was drawn from the catchments within the ACT, plus a catchment that had been acquired a number of years ago in New South Wales.

CHAIR—I wondered about the background of the ACT Electricity and Water Authority. Would they have done any of their own R&D?

Dr Sargent—Yes. It is fairly typical of utilities—on the electricity side in the 1970s and 1980s, when we were on an infrastructure development phase of our existence. The research that was done by them and done for the ACT Electricity Authority, as it was at the time, related to improvement of the technological base of the infrastructure development. In the last decade that focus would have shifted to improved asset management because it became a mature industry with lower growth, so it developed asset management, business management and people management skills. We did research on sociological topics and community response, things like that. On the water side—

CHAIR—Just before we leave that part of it, did you have in-house facilities for R&D?

Dr Sargent—My hesitation in answering is that I think it depends on where you stop the definition of R&D.

CHAIR—The reason I ask that is because basically it is a distribution water

company, not a generator of power.

Dr Sargent—Yes. We had a small number of people—maybe only two or three—in a staff of 1,200 and they tended to be research managers rather than researchers in their own right, in the electricity business.

CHAIR—Have you had the opportunity to look since the changes have been made at the way the service is delivered? Has there been a shift to, say, getting R&D done by universities or is it still done in-house?

Dr Sargent—No. Could we talk about the electricity side for the moment?

CHAIR—Yes.

Dr Sargent—What we saw and what we were a part of was the shift of emphasis from conducting research oneself to conducting research on an agency basis: that is because research became very resource intensive and there were economies of scale. So instead of us conducting research in our own right we started to contribute money to have cooperative research done within other frameworks, through either research funds administered by the electricity industry or through the cooperative research centre program. ACTEW was a member of perhaps four or five cooperative research centres and we channelled our research activities into those. That was about achieving economy of scale and economy of resource.

CHAIR—Thank you for those comments. They are very helpful.

Mr RICHARD EVANS—One of the issues regarding R&D that we have been looking at right through is the issue of the approach of management to R&D. It seems to me from some of the evidence we have taken that management do not seem to have a high knowledge of the benefits of R&D in Australia, hence their reluctance to engage in it in any great degree. Have you got a view on that? If you have got the same view as others who have appeared before us, how do we address that? Do we address that through management training in universities and incorporate R&D as a unit structure?

Prof. Johnston—I will offer a view on that. It has long been argued that one of the reasons for the poor level of industrial R&D in Australia and perhaps the poor performance of certain technology based exports has been a lack of understanding of the importance of R&D. I think the available evidence, at least now, suggests that it has changed quite significantly. If we go as far as the broader term of innovation, there is a much wider awareness of innovation; a much wider awareness among companies of the importance of innovation and being internationally competitive and that is part of the way that they drive their business.

Perhaps the biggest challenge has been to narrow the gap that had existed previous-

ly between those who saw their business primarily as research—the universities and CSIRO—and those whose business was directly in commerce. Through the Cooperative Research Centre and other schemes it is very clear that the gap has very substantially narrowed. I should mention in passing that a number of authorities have moved to form very strong links with cooperative research centres and saw that as one of their prime mechanisms for engaging in the necessary R&D. That gap has narrowed but it still has a way to go.

There are still views among some people whose business is research that industry has not come far enough. I would suggest that solving it is deeper than simply introducing R&D or, more broadly, innovation into management courses, although I believe that is essential. It really needs to be addressed as part of a broader culture which is technology, innovation, new ideas and knowledge as part of the process of doing business; a wider approach to business and being commercially competitive are probably the changes that are required. I think it needs to be addressed more at that level than through a specific mechanism.

Mr RICHARD EVANS—You see improvements happening but how does the international globalisation, if you like, the breaking down of national boundaries and the rage on the Internet and all this sort of thing affect this? Do you see a position for Australia in the world of research?

Prof. Johnston—Absolutely. One of our international assets invested in over a long time was our strength in international research. We outperform our weight in research about as well as we do in swimming in the Olympics. We perform much more highly than you would expect by any comparable performance of a country of our size.

We have not always recognised that we have a very important asset which we can trade and use to build much stronger economic links and trade links. I think we are starting to move towards using it more effectively with changes through the Cooperative Research Centres, with changes in the views of CSIRO. These are, of course, my personal views.

The challenge is whether under the pressure of globalisation Australian companies will be able to keep moving in that direction. Our technology based exports are expanding remarkably but we do not know whether they will keep going or whether a pattern of mergers and takeovers will cause decline.

Mr RICHARD EVANS—I have a final question on that. In regard to finance and the venture capital requirement, do you see Australia as a market to attract that sort of funding or do you see the other trend happening where we are going to have to take our technology offshore to attract the funds?

Prof. Johnston—I would suggest the balanced judgment, from most of the

evidence, is that at last there is a growing venture capital market and interest in Australia. But the strength of the US dominance of the venture capital market and the years of Australian companies obtaining funds in the US and the number of Australian or international brokers who are set up to help Australian companies to get US funds are so well established that we are probably going to remain a fairly small player.

Miss JACKIE KELLY—For a long time I think the boffins or bearded lunatics ran around in a realm of their own which was cross-subsidised within the utilities. Now I think they are being increasingly isolated and customer driven. This means that, rather than researching what they like and pushing back the frontiers of science, which may not be relevant to anyone, they are going to be looking at what their customers want and going down that track. Will new opportunities for R&D result from this kind of cooperation and could such new R&D be attributed to a more commercial outlook brought about by the reforms we are investigating?

Prof. Johnston—It is clear and we make it clear in our submission that we consider as very positive the fact that companies are now viewing R&D much more strategically than in the past and that is part of the business of getting R&D to work for your business objective. So we see that as a positive outcome. Under the conditions of privatisation it may have been linked with, at least in the short term, a reduction in the funds available. But for a company, if it has the positioning to be able to compete internationally—that is an issue we touch on—then it is very likely it will want to invest in new types of R&D in the future. We are seeing a change in the type of R&D undertaken. There is a scenario where you could see a very positive outcome for new types of R&D returning through a company, now that they know how to manage it much more effectively.

The other scenario is that scale and competition in fact lead companies to the view, at least in perception, that they cannot afford R&D. They drop out of it and therefore perhaps lose competitiveness.

Miss JACKIE KELLY—Does that apply if you are just buying services from an R&D company?

Dr Sargent—I think it is essentially a bit more interactive than that. My view about what is happening in the general ex-government utility type businesses is that they have gone through a period in which they have tried to reposition themselves in the commercial environment. It is a bit like being thrown out of the nest; they have lost their comfort area. They have said, ‘Well, is this research that we have been doing really relevant for our business framework?’, and quite often the answer is no because businesses have changed.

They are starting to recognise that there are several elements of research they must pursue, one of which is the research that enables them to have knowledge about the

environment in which they are operating. If I take the water business, what is the competitive environment that we are going to operate in; how much do we understand about extracting water from the hills or putting treated water back into the ocean or into creeks? What sort of knowledge do we need to have to make sure we have a sustainable business in the future? That is the type of knowledge we need.

The second part of the knowledge is: what sort of knowledge can we acquire in order to make us more competitive in our business and gain competitive advantage? We are starting to see that sort of question being asked at a higher level in the organisation. It used to be asked down at the chief engineer level, who said, 'What is the next gizmo we can have that is going to make us better?' But now we are starting to see businesses say, 'What knowledge do we need to acquire that will lead to R&D in order to make our businesses sustainable and give us competitive advantages?'

I think they are finding now that they need to deal with an agency, with the cooperative research centres or a group like CSIRO, and these groups are responding to that by rethinking the way in which they interact with business. So it is not actually buying a service; it is negotiating an arrangement. The water industry, for example, is a large supporter of a cooperative research centre based here in Canberra, the University of Canberra fresh water ecology. The outcomes of that research are related to the future. They are setting what environment they are going to be in in the future. A comparable one they are involved with is waste management at the University of New South Wales, which is about how we can improve the competitive advantage. It is a very commercial type of research.

Neither of those arrangements were put out to tender. They were negotiated on the basis of who has got the intellectual resources to do this work for us and they get paid for it, rather than just having a fund where you call tenders for somebody who wants to do whatever research they want. That is the real difference, where the businesses I think are directing the research they want done rather than just providing a fund for people to do the research that they may not want to do themselves. I think that is where you see the tensions arise. The questions you are trying to address arise because the nature of research has changed and the people who are being asked to do the research are changing; it is much more business, social and environmental research and far less science and technology research.

CHAIR—Due to the time constraints, Teresa Gambaro has a question and we will have to conclude it after that question.

Ms GAMBARO—Thank you, Mr Chairman. I am not sure who I should address this to. Recently in Queensland we had a series of electricity strikes and at the time we were not on the broadband. I note that a number of companies, including CitiPower, Energex and Energy Australia, are coming together to be part of that broadband. Do you see an increase in research and development when companies become corporatised

because they work collectively? From an industrial relations point of view, would that reduce the level of industrial strikes? I would like your thoughts on that part of it.

Prof. Johnston—I think I will leave it to Dr Sargent on that one.

Dr Sargent—Yes, I think many of the utilities are starting to understand that they can operate in a competitive environment but do things together cooperatively. Down Town Utilities, which I think is the one you are talking about, had an issue where they said, ‘Well, we can be in business together in order to make money and to be successful in our own right but we need to be together because we cannot do it ourselves.’ I think in that respect they are shifting the nature of the businesses from being a traditional statutory authority, industrial relations dominated businesses, to being commercial businesses where all of the people in the business, from management down, actually see the commercial outcomes.

I think that broadband technology is many things to a business. It is the excitement of a new business; it is innovative research; it gives an innate worth to the business; it creates jobs for the people who are in the business at the moment; and it creates a different environment within the organisation. I have worked in a public service department, the utility business, a statutory authority and a corporation; and as you move along that chain there is a progressively increased engagement of the individuals in the organisation with the outcomes of the organisation. So I think those new business ventures will provide a positive reinforcement.

CHAIR—Thank you very much. I am sorry that we did have so many interruptions. Please pass on my best wishes to Professor John Stocker for the fine work that you are doing in this area. The committee will take the opportunity to peruse your submission more fully and have a look at the work that you have been doing, which is providing us with a valuable range of inputs that the committee obviously have not had time to look at. Thank you for that and thank you very much for your attendance.

Prof. Johnston—Chair, could I just record that this is the last public act of the Australian Science, Technology and Engineering Council, which has now been replaced by a new body. The Prime Minister’s Science, Engineering and Innovation Council in part will take over these responsibilities.

CHAIR—Will you two gentlemen be involved?

Dr Sargent—Not directly.

CHAIR—I thank you very much for your submission, and pass on my best wishes to John Stocker.

Prof. Johnston—Certainly. Thank you.

Resolved (on motion by **Miss Jackie Kelly**):

That this committee authorises publication, including publication on the parliamentary database, of the proof transcript of the evidence given before it at the public hearing this day.

CHAIR—I declare the hearing closed. Thank you very much for your attendance.

Committee adjourned at 1.48 p.m.