

SOIL SCIENCE AUSTRALIA

WA STATE SOIL CONFERENCE 2015

CELEBRATING SOILS

CONFERENCE CLOSING ADDRESS

by

THE HONOURABLE PENNY WENSLEY AC

PATRON, SOIL SCIENCE AUSTRALIA

The Atrium

Mandurah

Wednesday, 9 September, 2015

Federal President, Soil Science Australia, **Mr Tim Overheu, (Overhoy);**

SSA Western Australia Branch President, **Dr Deb Pritchard;**

Soil Science Australia members;

Conference Delegates, Presenters and Sponsors Ladies and Gentlemen

A very good afternoon to you all. It's a pleasure to be here and to have the opportunity to speak at this final, closing session of the WA State Soil Conference-and I thank the WA SSA Branch for the invitation to me to do so.

I know you have had a packed agenda, and that-as always- a great deal of thought and effort went into the Conference planning, to ensure a stimulating and satisfying experience for all participants.

That's obviously the goal for any conference, on any subject- but there was an incentive to make this 2015 conference extra special- 2015 being the International Year of Soils-as well as the diamond jubilee-the 60th anniversary-of Soil Science Australia.

This convergence, of course, was serendipitous. When the UN members voted to declare 2015 the Year of Soils....the longevity of the Australian Society of Soil Science wasn't on their mind- not at all-but the coincidence seems to me a felicitous one-because both events are- (or should be)-serious 'reflection triggers'. They challenge us- or rather you-the soil science community of Australia-to self-examination: to consideration of where soils 'sit' nationally as well as internationally; and of how the peak body-your professional association, established to promote the advancement of soil science and studies in Australia and to build links between Australian soil scientists and their counterparts overseas-has functioned- and is working today- to achieve those goals-and also where it might best direct its energies in the future.

This "taking stock" process and strategizing for the future is vitally important, for any organisation....and I would like to use my time today, to contribute to that process for SSA, SSA members- and potential members-mindful that there are many students at this conference, whose journey as soil scientists is just beginning.

I do so from several perspectives:

Firstly, as SSA's Patron and a committed advocate for soils and soil science, deeply convinced of the importance of what you all do-and concerned that, despite some advances, soil is still not getting the attention it deserves (and Australia- and the world-needs) ;

Secondly, I speak as a former long-serving commonwealth public servant, well familiar with government and public policy formulation processes-keen to see some recent important policy pronouncements in relation to soil followed up by Australia's soil science community-and thinking about how that might best be done;

And linked to that thought, I speak from the perspective of two other positions I currently hold, as Chairman of the Australian Institute of Marine Science, and of the recently-established Reef 2050 Advisory Council-making comparisons with the attention being given

to water and marine matters over soils, wondering about the reasons for the difference, and, more importantly, what can be done to “close the gap’- for significant gap there is.

(And finally, as an internationalist, with long experience of and a deep interest in Australian engagement with international issues and our capacity as a nation to contribute to addressing global challenges; and mindful of the growing importance of international collaborations, I would like to consider, (but only if there is time, which I suspect there won’t be), whether more can be done to pursue that SSA goal of building links between Australian soil scientists and their counterparts overseas.)

So there’s a modest agenda for thirty-now twenty-five minutes! And having raised a number of questions, I ask two more:

at this nine month point in the International Year of Soils, how successful has the year been to date?

and if we agree that gains have been made, how can we sustain the momentum in the future?

The International Year set many goals, (including a celebration of soils, hence the happy theme of your conference), but its core purpose was to raise awareness of the importance of soil for human life-to persuade the public and decision makers that more attention needs to be directed to the protection and management of our soil resources, and more effort and money invested into building capability to address soil challenges.

I believe some gains have been made, but not enough.

The biggest, in strategic and policy terms, was the decision of the Federal Government, announced in May 2015, that soil be included in its new list of national Science and Research Priorities. Michael Jeffery talked about this in his Opening Address- but it’s important for my purpose today, to recall the key elements of this important development:

Following the publication of its *Industry, Innovation and Competitiveness Agenda* and of an associated paper, on *Boosting the Commercial Returns from Research*-the Government gave Australia’s Chief Scientist, Professor Ian Chubb, the task of establishing a set of Science and Research priorities and corresponding practical research challenges.

The driving purpose was “*to increase investment in areas of immediate and critical importance to Australia and its place in the world*”.

In consultation with researchers, industry leaders and government representatives, the Chief Scientist produced a list of eight priority areas. Soil claimed a place- but not as a stand-alone area of focus. The first on the list was *Food Security* and the second *Soil and Water*. (The others were: *Transport, Cybersecurity, Energy and Resources, Advanced Manufacturing, Environmental Change and Health*).

In the Soil and Water section, soil is recognised as a ‘*national strategic asset*’- along with vegetation, biodiversity, water and our marine resources. The report makes the important point that all of these are “*fundamentally interconnected components of our ecosystems*”, that need to be effectively managed-but from my perspective, as an advocate for soils and soil science, the even more important point that they should be highly valued.

'Managing Australia's soil and water resources is vital to the productivity of our agricultural, resources, manufacturing, fisheries, forestry and energy industries.

Australia faces many challenges to soil and water management, including population growth encroaching on arable agricultural lands, old soil that has been further degraded, impact of irrigation on aquifers and salt degradation and over-exploited river systems.

(The report made specific mention of the problem of soil acidity-but interestingly, the figures that this 2015 report quoted were from 2001 (why so out of date-are we not measuring these now?):

"In 2001, soil acidity was estimated to be costing \$1.58 billion per year in lost agricultural productivity, almost eight times the costs of soil salinity at that time."

'Threats to soil productivity will increasingly affect Australia's productivity unless they are better understood and carefully managed'.

So: close to the mid way point in the International Year of Soils, we have the Australian Government-the Australian Chief Scientist, the Commonwealth Science Council-the top source of advice to the Government on science and technology issues facing Australia-making some emphatically clear statements about the importance of soil:

- Soil is a national strategic asset
- Soil should be highly valued
- Managing Australia's soil resources is vital not only for agricultural productivity but for the productivity of many other major industries

And just as importantly as this acknowledgement, for this audience of students, soil scientists and researchers, there were equally clear messages about the need for more research, better understanding and better management of soils:

- *Threats to soil productivity will increasingly affect Australia's productivity **unless they are better understood and carefully managed***
- *Research will develop a **better understanding** of the importance of our soil and water resources in improving the productivity and health of the landscape while maximising the large scale efficiency of our soil and water usage to meet Australia's needs.*
- *Sustainable use of these resources (i.e. soil and water), **is dependent on understanding** complex interactions between the natural and human environments*
- *And between the fundamentally interconnected components of our ecosystems- **we don't know enough about the ways they interact and respond to change***

Having established this new set of strategic science and research priorities, the Commonwealth government has now directed departments and agencies to give priority-in the case of soil and water- to research that will lead to:

- ❖ *New and integrated national observing systems, techniques and modelling frameworks across the soil-atmosphere-water-marine systems*
- ❖ *Better understanding of sustainable limits for productive use of soil (fresh and potable water, urban catchments and marine systems)*
- ❖ *Minimising damage to and developing solutions for restoration and remediation of soil (fresh and potable water, urban catchments and marine systems)*

Former Prime Minister Paul Keating once memorably said-(speaking about the national accounts-) *“That’s a beautiful set of numbers”*. Well, I think it’s fair to say, for anyone interested in soils, that’s a beautiful set of words. They provide an affirmation of the importance of soils; they commit the Commonwealth Government to making soil science and research a priority investment area, within the total Commonwealth investment in science, research and innovation; and they set clear directions for future work.

But there’s the rub: with eight priority areas- all large, all important, all complex, all presenting significant challenges, all requiring the building of capabilities in key areas if those challenges are to be met -and government resources already stretched- funding from Government investment alone won’t be enough- will be nowhere near enough.

The strategic direction set by the Commonwealth government will need to be followed and supported by State Governments, by industry, by our universities and academic institutions, by peak bodies and professional associations, by the public and N.G.O’S so that there is a national commitment – a collective will to implement this new, strategic, prioritised science and research agenda. We need everyone to understand and accept that this really is fundamentally important for securing Australia’s future. –and that soils are a vital part of the science and research priorities equation.

Easier said than done.

As the 18th century cookbook writer, Hannah Glasse, in her classic book *“The Art of Cookery made Plain and Easy”* is famously supposed to have said, at the beginning of a recipe for Jugged Hare-*“First catch your hare!”*

Well- frankly, I don’t think the hare has yet been caught. Despite all the efforts made throughout this IYS, and in recent years to gain greater attention for soils (the appointment and activities of the Prime Minister’s Advocate for Soil Health, who spoke at the Opening of this conference; the formulation in March, 2014 of the National Soil Research, Development and Extension Strategy- *“Securing Australia’s soils for profitable industries and healthy landscapes”*) and despite the first-class, (in some areas-world-class) work by Australian scientists on a significant number of interesting and important subjects to do with soils, this subject has not engaged the interest and support of the broader community-or of

what might be called the science communication industry- in the same way that other areas and branches of science and scientific research have.

There are a host of informal ways to test that claim: count the number of universities still offering soil studies as a stand-alone specialisation, look at recent copies of the excellent publication "Stories of Australian Science". In the 2014 edition, there was one story on soil; and in the 2015 one, published in this, the International Year of Soils, (surely a time to feature soil stories ahead of others) there were none. Similarly, in the 2015 special edition of "Partners"- the excellent publication of the Australian Centre for International Agricultural Research (ACIAR), on "Australian Research Leaders", nary a glimpse of a soil pit, soil scientist or a reference to soil research....(but, to follow up my earlier point, there WAS a feature article on water management-with a dramatic picture of parched soils....and a telling quote: *"Australian culture is defined around water and water scarcity"*.)

Check out the recipients of State Science awards, the Academy of Science Medals, the Eureka Prizes, the Women in Science Awards in the last three years-how many soil scientists? Analyse the recipients of awards within our national honours system- the Order of Australia- and see who has been honoured for service to the community and our nation in an area related to soil science. Take a sample of press articles, significant science publications-or even non-science ones that reach a large audience, such as the Qantas in-flight magazine. See how many articles you can find on soil science- and then, by comparison, how many stories and articles on marine science, oceans or fisheries? Or for that matter on astronomy and aerospace, neurology, human and plant genetics, molecular bioscience. Look at press releases issued by major government agencies- CSIRO, for example, by universities and institutes dealing with 'big picture' issues, like climate change (where soil clearly has a major role to play). How often does soil get a mention? Answer: not often enough.

I should note that this situation is not unique to Australia.

Combing through back issues of "Partners", looking for Soil stories, I finally hit "pay dirt"- (sorry, couldn't resist), and found a large article about an ACIAR project in the Pacific, focused on soils.

And what was the headline?

In large letters: RESOLVING THE SOIL PARADOX

And underneath, the comment:

"Healthy Soil is an essential foundation for Pacific Island agriculture and linked economic development, yet soil health is often completely overlooked"

The body of the article quotes the head of crop production and extension at the Secretariat of the Pacific Community- and leader of the ACIAR soil project, Dr Siosuia Halavatau, as saying:

"Soil is our most neglected natural asset".

That's in the Pacific. Further afield, in Europe, just two weeks ago, in the Netherlands, at the second Wageningen Conference on applied soil science-"Soil Science in a Changing World", attended by SSA members, I'm told that there was much discussion about the challenges facing, not soils, but soil science in the future- and about the lack of attention to soil issues

compared with other subjects. The overarching message, summed up by the Dutch Ambassador to the FAO, Chairman of the Food Security Panel, Gerda Verburg, was that there has been a lack of concrete action on soil issues, from both a global and regional perspective. She asked the obvious question-the one I keep asking myself- *why?*” When soil is so obviously important- and knowledge about soils so relevant, so pivotal-so connected to our ability to address local, national and global challenges in so many vital areas-it IS a paradox that it isn't more of a priority.

Those of you who attended the National Soil Conference in Melbourne , at the beginning of IYS, will recall that I spoke then about the significant achievements of Australian soil science and soil scientists- the way we were world leaders in so many different areas- and suggested that SSA adopt a strategy, during IYS, to promote our soil stars and success stories, to help achieve that core IYS goal of raising awareness of the importance of soil for human life- of engaging the attention of politicians, of decision-makers, of the media and the public- of helping them to get “switched on” to soils. So I was interested to hear that at this recent European Soil Conference, there was a similar call- Ambassador Verberg identifying the need, above all, for better communication about soils.

She said we need a good strategy that includes:

finding good soil stories to demonstrate how soil science can help deliver solutions to human problems e.g. food, disease, water, nutrition.

She said that these stories exist, but we need to identify them and write them in a digestible manner which convinces family and neighbours that they can-and want to- contribute to improving soils.

We should develop a strategy for this narrative and a plan of action, which includes clear objectives, time frames and measurement indicators, and we should use this plan to lobby policy makers. We need to market the idea that this plan- i.e. focusing on soil- will lead to desirable outcomes.

Arguing that the top down approach has been shown not to work, she added- we need a multi-stakeholder approach to generate change from the community and up, including education of children at schools, farmer engagement to prove solutions and industry engagement.

All of this makes eminent sense-although I am not convinced that a top down approach doesn't have its place also. I believe we need both- and frankly, I am encouraged that Australia is in a better position than others in this regard, for various reasons.

At the top, we have a government that has declared soil a national asset and directed that it should be a top priority.

We have a community that, even if it's not as knowledgeable and informed about the importance of soils as it should be-(as we here would like it to be)- is nonetheless, very environmentally aware: environmental awareness-concerns about the environment and sustainability- is increasingly part of our national consciousness;

We were among the global pioneers of grass roots, bottom-up approaches-with movements like Landcare. I know this directly, having introduced our landcare model to the international community, during the negotiation of the UN Convention on Drought and

Desertification- and seen many of its principles adopted into international legislation- and its community- engagement practices replicated around the world. And of course, we have seen it proliferate all around Australia-with coast care, bush care, river care, dune care, junior landcare, indigenous landcare...and more.

And we have also become increasingly adept at using and managing multi stake holder processes for policy development purposes. The National Primary Industries Research, Development and Extension Framework was developed with input from 380 stakeholders. The National Marine Science Plan-mapping out a strategy for marine science for the next 10 years- had a similar genesis-as did the Desert Science Plan; and the Long Term Strategic Plan for the Great Barrier Reef- a multi-year plan- was also formulated on the basis of extensive stakeholder and partnership engagement with the process. The new committee I am chairing- the Reef 2050 Advisory Committee- will involve all stakeholders with the next phase- of implementing the plan.

And of course, that's what we all need to focus on now. Plans and strategies are only as good as their implementation- so for SSA and Australia's soils science community, if soil has been declared a national strategic asset and better understanding and management of soils identified as VITAL for national productivity, where do we go from here?

Well- the government has again provided a direction. A Working Group on Soil and Water has been tasked with preparing a paper for the Commonwealth Science Council on soil and water science-a capability snapshot. I'm not sure when this is to be produced-but soon I believe, and I understand also that SSA members are contributing to its preparation- which is terrific.

Although not so terrific for some readers will be the facts that emerge from this capability snapshot, (if the early indications that I have been made aware of, of the discussions taking place and the paper's possible content, do emerge in the report). It is my understanding that this paper, will pull no punches about the challenges and difficulties currently confronting soil science in Australia, and concerns about the future.(And nor should it. Policy and decision-makers need to be made clearly aware of what is happening). Among its key points:

- Australia lacks a strategic and coordinated approach to the planning and funding of environmental soil and water science; and also lacks a robust approach to make decisions on the use and protection of our soil and water estate.
- Soil research is a particularly disadvantaged area- underfunded and fragmented. (According to DAFF figures, In 2011, it was estimated that the annual investment in soil research, development and extension was \$124 million per year (compared, I note, with \$450 million per year for marine research i.e. approximately one quarter).
- There has previously been no mechanism to identify, coordinate and address national soil RD and E, across industries.
- Lack of national coordination has resulted in inefficiencies, limited effectiveness and poor return on investment.

Pleasingly-the report will acknowledge that The quality of our soil (and water) research is high and in some disciplines is world leading, but, then, like the frog in the well-going up,

then sliding back down-it will warn that the skills base of capability into the future is not being adequately developed in many sectors, asserting that:

- Institutional capacity in soil and water research-mainly through CSIRO and our universities- hasn't been sustained-although there are pockets of capability in these places-and that there are significant challenges in generating a pipeline of researchers. ("we have excellent researchers but no one to replace them"). Those working on the report are pointing to the decline of funding of soil science (and ag. science) in our universities-attributing this in part to the fact that there are very few funding grants available for fundamental soil research each year; and also the difficulties involved in generating local students interest in soils and agricultural science- noting that more than half of the students in these disciplines are overseas students.

These concerns are no surprise to this audience or to the SSA-nor do I think they should be cause for pessimism. On the contrary, I think it's very important to have a clear appreciation of the current situation, to be realistic about difficulties- and present them realistically-and dispassionately-as facts to our politicians, decisions makers, business and university leaders, together with an analysis of the consequences of not acting to address the situation, and making this "capability and consequence" report, the basis for taking action in the future; for getting us to the next stage- of turning that beautiful set of words into a beautiful set of numbers i.e. achieving the goal of securing increased investment into soil science and soil research. I am by nature an optimist, and believe it can be done; I am also a realist- and know it will take a lot of hard work to close the gaps and respond to the challenges I have chosen to talk about today-- but from my close involvement with the Australian soil science community over the past several years, seeing and hearing first-hand, at conferences like this, the passion, commitment and determination that soil scientists bring to their work,--I believe you are up' to this task that the time is right for a new effort to claim for soils their rightful place in our national consciousness-so that instead of reading articles that say our culture is defined by water and water scarcity, with no mention of soil, soil will have equal billing and soil science properly valued and accepted as one of THE keys for addressing a range of critical national and global challenges. I have many ideas about how this can be done, including through greater international collaboration- the subject I raised at the outset of my remarks- but they'll have to wait for another presentation. In the meantime, I take Bill Crabtree's words this morning as the affirmation and inspiration we all need to "keep the faith" and remain committed champions of soil and soil science. Dealing with the difficulties with his farm, you may recall that he said he reached a point where he asked himself

' give up or keep fighting?'

and the answer?

" it was worth fighting for".