

# ASIAN EXPERTS SHARE SA'S GROUNDWATER EXPERTISE

Straddling the Victorian border in South Australia's south-east, Terry Buckley's properties produce some of the biggest potato crops in Australia.

The third-generation Limestone Coast farmer also grazes prime lamb and cattle, and grows "other bits and pieces" over hundreds of hectares. Dotted in the background are vast tracts of pine and blue gum plantations. Up the road a few dozen country miles, there are row after row of grapevines - cabernet sauvignon, shiraz, merlot and a host of white grape varieties - some 100 years old, growing in the Coonawarra's famed rich terra rossa.

It's a rural setting familiar to many Australians. Whether it's SA's south-east, Victoria's Gippsland, the New South Wales Riverina or Queensland's Darling Downs, these regions all share the same defining qualities - they are sparsely populated, are carved up by expansive land holdings, and host a mix of agricultural activities.

But standing on Terry Buckley's farm in January, a group of 10 high level academics and senior government officials from Bangladesh, India, China, Pakistan and Nepal couldn't have helped but notice how different this setting was to farming regions at home where the scale of farming is very different with average farm sizes of less than one hectare. However, what was similar was the issue of water sharing processes, plans, policies and laws where the same problems occur.

The delegation was in South Australia as part of the International Water Management Institute's (IWMI) Groundwater Governance in Asia program. It aims to build capacity in the Indo-Gangetic and Yellow River Basins through a research-based training program for professionals and senior managers actively involved in groundwater management. The professionals were here to see a sophisticated system of groundwater planning which considers the economic environmental and social sustainability aspects in future water allocation decision-making.

Coming from countries where private land holdings might be limited to 10 acres, where access to groundwater - let alone a pump or the energy to power it - is no guaranteed thing, where the livelihood of



up to 86 per cent of the population depends on agriculture, and where collectively more than one billion people rely on groundwater for irrigation, the Buckley farm might have seemed a world away.

And yet there are many similarities, too - increasing and competing demands for groundwater, rising salinity, falling water tables and the expectations of farmers.

Professor Jennifer McKay, Director of the Centre for Comparative Water Policies and Laws at the University of South Australia (UniSA) has hosted visitors for two years now under the IWMI program.

She said the aim of the visit was to share information about current groundwater law policy and practice in South Australia, which is advanced by international standards.

A key issue in many parts of regional Australia is the sharing of water between agricultural users and other users such as city water supply, industry and the environment - that is, the economic, environmental and social sustainability aspects of water sharing.

This issue is one that has been addressed by all State governments in a water sharing process which results in water plans being created by the local community. In all cases to date in Australia the water planning processes have resulted in revised water allocations to all sectors of the community. The most severely affected have been broad acre growers in agribusinesses.

The water planning processes of late have been fostered by Commonwealth government initiatives called the COAG reforms (1994) and the National Water Initiative (2004) which were a response to international calls coming from the Rio and Johannesburg summits for sustainable development laws and policies.

In South Australia the water planning process is part of the Natural Resources Management Act (2004) and the creation of eight NRM Boards in the State. There are 56 such regions in the whole of Australia.

"South Australia not only has the most coherent approach to water management in Australia," Prof McKay said, "we also lead the way globally when it comes to groundwater management."

The two-week visit included presentations by UniSA water experts, representatives from the SA Department of Water, Land and Biodiversity Conservation and farmers such as Terry Buckley who totally rely on groundwater. As well as the State's South East, the visit took in the Coorong and the Virginia market gardens north of Adelaide.

Director of the IWMI in Delhi, Dr Bharat Sharma said the importance of the program should not be underestimated. The groundwater used for agriculture in these the Indo-Gangetic and Yellow River Basin states is worth around US\$20 billion per year and sustains an agricultural output of between US\$50-64 billion annually. Around 50 per cent of the populations of these basin countries directly benefit from

this output and with proper targeting, groundwater offers big opportunities for poverty reduction in many areas. Groundwater use in these areas had spawned a “colossal anarchy”, with millions of small and scattered groundwater users operating in an unregulated environment. “What is lacking is a proper institutional structure and capacity to manage groundwater.”

South Australia, particularly the State’s south-east, is well advanced in this area. The community there has been consulted by the local NRM Board and the impacts of the policy is being evaluated in a study funded by the CRC Irrigation Futures as part of the system harmonisation project. This project has produced a photographic exhibition called Picturing water use and justice which was shown at ArtLab Australia last month as part of the Adelaide Fringe Festival and will tour other parts of Australia.

The visitors - **Mr Anwar Zahid**, Deputy Director, Groundwater Hydrology, Bangladesh Water Development Board; **Mr Mahbub Ul Alam**, Joint Secretary, Ministry of Water Resources, Government of Bangladesh; **Mr Fengxin Kang**, Professor of Hydrogeology, Deputy Director of Hydrogeology Division, Shandong Provincial Bureau of Geology and Mineral Resources, China; **Mr Jiqun Zhang**, Deputy Section Director, Water Resources Management Center, Ministry of Water Resources, Beijing, China; **Dr Shakeel Ahmed**, Deputy Director, National Geophysical Research Institute, Indo-French Centre for Groundwater Research, India; **Kishore Chandra Naik**, Superintending Hydrogeologist/Central Ground Water Board, Central Ground Water Board, Orissa, India; **Balwinder Singh Sidhu**, Director of Agriculture, Government of Punjab, India; **Avinash Mishra**, Deputy Adviser, Planning Commission, New Delhi, India; **Mr Jeevan Lal Shrestha**, Deputy Director General, Ministry of Water Resources, Government of Nepal, Groundwater Resources Development Project; and **Dr Allah Ditta Khan**, Director (Hydrology), Pakistan Council of Research in Water Resource – were certainly impressed by the regulation of groundwater in South Australia.

As Dr Sidhu, from the Punjab, explained, regulation of groundwater in parts of India – where only one in four farming households owns an irrigation well and the remaining three pay for pump irrigation – has a very practical dimension.



The wonders of irrigation.

The government has agreed to supply electricity for free to farmers in order to operate pumps. This way, the authorities can control where and how much water is pumped simply by switching off the electricity.

Dr Ahmed said that while the scale of problems in India is very different from Australia, there are lessons to be learned. India, of course, has a much greater population. The land holdings per farmer are much smaller, and the geological formation is also very different – limestone is predominant in SA’s south-east, whereas two-thirds of India is covered in hard rock, which makes it geologically more complex. Nevertheless, he was very impressed to see how groundwater is managed, taking into account stakeholder input and scientific input.

“In India, we need more of the scientific modelling that is done in Australia”.

Professor Kang, from Shandong Province, China, where the aquifer is similar to that in South Australia’s south-east, said that with many sources of surface water polluted beyond use, China will increasingly rely on groundwater. Water law in China relates to surface water only. “We need government-managed law for sustainable use of groundwater”.