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Submission to the House of Representatives Standing Committee on Agriculture, Fisheries and Forestry

Inquiry into future water supplies for Australia's rural industries and communities

Robin F. Gaskell * PO Box 21, Cabramatta NSW 2166
(02)9726 0952 * 0438 296 797

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Introduction

The water supply to Australia, inside the coastal strip, has always been precarious - both in the input, with periodic droughts, and in the drainage, with sluggish rivers and periodic flooding. This fluctuation in water availability can be regularised, considerably, through the application of known technology and engineering methods, as well as of the lesser-known science of weather creation.

The twin problems, of weather change (e.g. El Nino) and the rising of salty groundwater, can be counteracted by enlightened water management on this continent. However, the scope of the problems is national; and hence, the Federal Government is the responsible body best positioned to implement the necessary innovations.

Increasing Water Input

While the australian continent, by contrast with much of the Americas, Europe and Africa, is very dry; and, despite plans to bring water into the more southerly plains from the Northern Rivers systems, adding more water to the surface of the land cannot be the sinecure for agriculture.

Considering rising salty water-tables in the irrigation areas, and also increasing salinity in dryland farming, the addition of more water to the surface of the soil - on its own - can only exacerbate the the problem of water quality in Australian agriculture.

The addition of more fresh water to Australian farms will only serve to dilute the salty groundwater, while it brings saline water-tables to the surface, more quickly than before.

Northern Rivers water: from the Clarence and Macleay into the Murray-Darling System; from Northern Queensland rivers into the hinterland (Bradfield Scheme); and from the Victoria, Ord and Fitzroy into North-Western deserts, would contribute greatly to Australia's agricultural, and would flush the southern rivers of salt - for a time.

However, increased water input into dryland areas, would gradually bring water-tables to the surface, as it has done before. By simply irrigating new areas of desert, we would repeat the mistake of past generations of agriculturalists, and bring more pre-historic salt from the rock strata to the surface. Thus, we would broaden the problem of salinity, so that the whole nation was afflicted with it.

At present, arable farming and deforestation in pastoral land have caused salinity to threaten only areas where natural rain, and irrigation from riverways, have allowed agriculture: but, by delivering water to areas, as yet unfarmed, we risk bringing salinity problems to these new areas - generalising the problem, to make it nation-wide.

Only when combined with the introduction of suitable new water management methods, will the redirection of coastal river-water, inland, prove a boon to Australia's agriculture.

Re-introduction of Forests

We are all aware, now, that trees' deep rooting systems kept naturally saline groundwater far below the roots of natural herbiage. It was only with the removal of this tree cover, and the gradual rising of groundwater into the rooting zones of field crops, that we discovered the vital function of natural forests in maintaining the health of the upper layers of Australia's soils. Thus, re-aforestation with salt-tolerant trees especially mallee) has been proposed as the solution to salinity and, consequently, the way to return health to dryland soils. Such a move would return dryland ares to their pristine state, but would do little to promote agriculture in Australia.

That is, unless trees and crops are grown in alternating strips, and the trees grown are of economic, timber varieties.

The growing of crops and forests in strip-farming formation - using a long rotation leading to the harvesting of mature trees - perhaps on a fifteen year alternation, does appear to be part of the overall story of water management in Australia.

However, such farming calls for the growth of commercially viable forests that require irrigation: this is needed to water fast-growing, profitable, non-sclerophyll timber. Such an economically viable forestry system is not possible using the dryland farming pattern, because this would rely on the planting of salt-tolerant species only.

Water Usage System

At present, agriculturalists in Australia consider the watering of crops to be, essentially, a 'once-only' usage system. This is extremely wasteful. Water enters the soil surface as rain, or irrigation water, and filters past the the plant roots, with only a small part of it being absorbed by the palants: the remainder of the water percolates into the grondwater, and drains into a river system; and this drainage water in rivers is possibly not used again, agriculturally, prior to being lost to the sea.

Certainly, artesian water is recovered and re-used, and water is pumped out of rivers,

and re-used for irrigation. However, during this process, the quality of the water changes from fresh water, upstream, to increasingly saltier water, downstream, and each subsequent usage is from one property to the next, with each farm usually making only a single use of the water before returning it to the river system.

This wasteful flow to the sea can be interrupted through the recycling of water on individual farms: such recycling can be achieved by using deep, wide drainage wells, which, as well as providing a source of re-usable water, also lower the water-table.

Naturally, the groundwater that drains into the wells is saltier than the water, which originally entering the soil. Were the water that is pumped out of these wells to be desalinated before being used again for irrigation, it could be used over, and over again, on one farm - before ultimately making its way into the river system.

Desalination

Desalination of groundwater is the missing link in Australia's water story. The main reason that groundwater, and often riverwater, is not used for irrigation, and also, why rising dryland water-tables kill crops, is the high salt content of this water. The common denominator making water unsuitable for use in agriculture is salt: the obvious solution to this problem is desalination.

Geologically - long before European settlement - in warm shallow seas, this salt was deposited in with the solid products of weathering and erosion: this mixture formed what are now the underlying sedimentary rock strata of the continent. Thus, most of Australia's sedimentary rock has a high salt content.

Whilest European settlement has not been the source of the salt in our soils, the farming methods of irrigation in wetter areas, and tree-clearing in dryland farming regions have allowed the deep groundwater to rise, imperceptably, until, nowadays, salty water-tables have started entering the rootzones of farm crops. Without desalination, and with a continuation of present methods, groundwater levels cannot do otherwise, than continue to rise.

Through a combination of building deep drainage wells in salt-liable farming areas, and desalination of the water collected by these wells, the salt, which otherwise endangers agriculture, is harvested as an industrial resource; and, the fresh water, which is produced, is available for irrigation, aquaculture and hydroponics.

At present, because such a scheme is based on large-scale implementation, which takes at least a decade to become economically self-supporting, no example of such a totally sustainable, desalinating farm exists. However, all of the elements of this proposed system of water management, can be found, separately, in different location around the world. In Australia, we have both the capacity, and the need, to synthesise such a comprehensive water management system.

So far, venture capitalists have not recognised the potential of this scheme to bring value to currently non-productive areas, both here and in the rest of the world. Were, however, the Federal Government to research this system, and install it in Australia's failing farmlands, not only would it renovate Australia's agriculture, but the Government, having demonstrated the viability of the scheme, could then franchise it overseas. There remains the question of the method of desalination to be used: while the osmotic method of separating salt from water might suit an industrial implementation, it requires an input of electrical energy; on the other hand, solar stills, which rely only on the power of the

Sun, would make a pilot installation profitable more quickly, and could also prove more saleable as a franchised scheme.

A 'Water Grid'

With the establishment of a desalination unit in the midst of a well-watered, well-drained farming complex, there will be a need to redistribute the fresh water, created by the unit, into the forests and irrigated fields of that complex.
And, subsequently, as more areas - contiguous with the first - are developed, to have their own deep drainage wells and strip forests, there will be even greater need for drainage water to be pumped to the desalination unit, and, as resulting fresh water, back again to its source areas.

The concept of a 'water grid,' similar, in many ways, to the idea of the electrical power grid, becomes necessary to shunt water, both salty and fresh, to and from the desalination units - and, also, between desalinated farming areas. Such a grid would work independently of the river system, and would allow two-way flows, using a pumping system - permitting the redistribution of water, based on agricultural requirements.

The technology for such a system exists, and would work best with shallow- laid PVC, flexible piping in fenced easements. Pumping stations and deep drainage wells would be located where water grid lines crossed. However,
desalination units would service a number of farms, and would be distributed sparsely throughout a grid system: ultimately, grid systems serviced by different desalination units would be linked up to form larger water grid patterns.

Specifications for the wells, for the equipment to dig them, and also for the pumping stations and the layout of grids, are all in the Water For Australia presentation, which is appended to this submission.

Weather Change Science

While the WFA ideas of deslination and a water grid cater for water maximisation in times that water input is adequate, there is the downside of drought, which will deplete the water supply of even the deepest wells. For this reason, I suggest that the Standing Committee look into the opportunities provided by the fairly recently developed science of "Weather Change." Needless to say, this is not an appeal for 'cloud seeding,' because, in drought times, there are no clouds. The 'rain making' proposed here, instead, suggests that physical methods - of changing the energy relationships within the upper air - will permit the movement of fresh, moisture-bearing air, into drought areas, into which, previously, it could not enter.

One reason that members of the Committee may not have heard of the science of Weather Change, is that in both the US and Russia, the information is usually restricted for defence/offence purposes. This has not stopped the Orgone Biophysical Research Laboratory, Inc. from providing a non-profit, weather change service to governments and other legitimate bodies.

Included, as attachments, are the press release I sent to the Prime Minister, of the day, in 1994, plus the reply from his letter-writer in 1995. The substance of the release is still valid, as is the offer from the director of the OBRL, to visit Australia to treat this present drought. Members of the Committee are encouraged to contact the Director, James DeMeo, or members of his support team listed in the Press release.

Innovation

Considering the seriousness of the water quality problem to Australia's agriculture, and also the fact that no effective new methods have been introduced within the water management field since this problem was recognised, despite the obvious threat to agricultural production, it seems that quite new thinking is needed, and serious innovation is called for.

Your Committee is probably the best-placed group to promote the necessary innovation; and this particular inquiry, into water availability for agriculture, is possibly the only vehicle that will bring to light, and give official sanction to, methods that can resurrect agriculture in this country.

I commend you to consider the possibilities for Australia from adoption of the WFA proposal, and also from the periodic use of Weather Change Science to reduce the effects of drought.

In the same way that the OBRL decided to offer its weather change services only to sovereign states and other legitimate bodies - removing the offer from capitalist exploitation, it would seem that a government sponsored Water Grid, in Australia, would also need research done into finding its egalitarian implementation - so that existing farmers are not dispossessed.

For much the same reasons that the OBRL decided to stop offering its services for private exploitation, and now only offer its weather change services to sovereign states and other legitimate bodies, it would seem that a government sponsored Water Grid, in Australia, would also call for serious thinking - to ensure it was implemented fairly - so that existing farmers were not dispossessed.

Sustainability

The two innovations mentioned in this submission, if adopted, will bring the continent's water management closer to regularity. However, the responsibility that would come with a more reliable water supply would be to use it wisely, neither over-exploiting the soil with an excess of heavy-water-utilisation crops, nor changing the ecosystem drastically, at the expense of natural flora and fauna.

Farms that are brought into a Water Grid system would need to do so on a contractural basis, such that their newfound productive capacity was not used to deplete soil fertility, and their responsibilities to the land were proscribed.

A balance between the water used within a Water Grid and that provided to ensure effective river-flows, would need to be worked out. In general, with less tension in their lives - over the question of water availability - farmers would both be capable of, and required to, maintain sensetive ecosystems on their properties.

Conclusion

Having left the pioneering phase, when soils were fertile and water, though scarce, was of good quality, Australia now must develop a sustainable system of agricultural. The alternative, if present methods of farming and water use are continued, is that the country is in danger of filling up with salty water.

Problems of salinity and the uncertainty of rainfall are liable to spin out of control, causing disater for both small family farmers and the large agribusiness corporations.

Research and the introduction of its findings are needed urgently; and this, in turn, calls for effective leadership from government, in prioritising such innovation.

The two measures outlined in this submission: development of a water grid based on the active desalination of groundwater; and the periodic use of Weather Change Science to reduce the severity of droughts, will 'make the desert bloom.' However, such measures, of national scope and urgency, are not available through private endeavour, and would require co-ordination at the Federal Governmental level for their implementation. Such proposals are of a similar scale and potential, for Australia, as was the Tennessee Valley Authority scheme for the United States: both vast schemes involve regularisation of water for agriculture. Is the time right for the introduction of such measures as described here; and, if so, is there sufficient political will, to do so?

Inclusions:-

Letters re 1993 - 95 Drought
- James DeMeo - September 1994
- James DeMeo - December 1994

Weather Change Reports
- OROP Israel 1991 - 1992
- Eritrea Desert Greening 1994

Ph.D. Thesis in Geography, James DeMeo
- OROP Arizona 1989: A Cloudbusting Experiment to Bring Rains in the Desert Southwest

Water Grid and Desalination
- Water For Australia - in brief
- Water Plan
- Salination - Profitability

Covering Letter & Contents List

Robin Gaskell

To : House of Representatives Standing Committee on Agriculture
Fisheries & Forestry
Re: Inquiry into Future Availability of water for Agriculture and
Communities

I send my submission and supporting documents as hardcopy, here.

While some of the attached documents are from illustrated articles, it was not possible to put them, in their original form, onto floppy disk. So I separated the text, which I scanned into word documents, from the pictures, which I made into graphics files, mainly in .JPG format but with one .TIF file.

I will send the submission as an email, with attachments, before the closing date, but will only send the shorter text files plus a few selected illustrations through the internet. All supporting information will be included with the printed pages – in the form of two floppy disks and one CD-ROM. There is one document, recently prepared on Water For Australia, that I will have to send on Thursday, 29th, as a supplementary item.

Contents

Harcopy:-

- Submission
- Water Plan – from "Water For Australia," 2001 (13pp)
- Two letters from James DeMeo – re possible visit to Australia to conduct a 'Weather Change' intervention to end drought
- OBRL Advisary Board – supporting James DeMeo
- Israel –OROP - Droughtbreaking in the Eastern Mediterranean
- Sahel Map + Report - Droughtbreaking in Eritrea
- DeMeo Thesis – Early work in the US developing 'Weather Change Science' (Reprinted pages placed in plastic folder)
- Covering Letter – this file

Electronic Media:-

- CD from Water For Australia (Use Word or HTML versions)
- Disk 1
  - . Submission
  - . Covering Letter

. Water Plan (WFA)
. DeMeo Letter September 1994
. DeMeo Letter December 1994
. OBRL Board
. Israel Drought-breaking
. Israel Figs 1 & 2
. Israel Figs 3, 4 & 5
. Sahel Report
. Sahel Weathermap

- Disk 2
  . JDM Thesis (text)
  . Icarus [cloudbuster device]
  . Fig1 Intro
  . Figs2,3 Intro
  . Fig1 #22,23
  . Figs2,3 #22,23
  . Figs4,5 #22,23
  . Figs6,7 #22,23
  . Figs8,9 #22,23
