

National Water Reform 2024

<https://www.pc.gov.au/inquiries/current/water-reform-2024/terms-of-reference>

Submission from

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About the Author

David Shearman is Emeritus Professor of Medicine at Adelaide University and previously held senior positions at Edinburgh and Yale Universities. He is author of many books relating to climate change, its science, consequences and democratic and other solutions; he served on the IPCC for two terms on health and scientific sections. He has been President of the Conservation Council of South Australia and with the late Professor Tony McMichael he founded Doctors for the Environment Australia in 2001 and was the Hon Secretary 2001-2017. He is author and co-author of several hundred scientific and medical papers and writes frequently for the media. He was awarded an AM for service to medicine and climate change.

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Introduction

This submission relates mainly to one topic – the health and survival of ecosystem services which, with the availability of water, produce our food and many other essential services to life

“The Productivity Commission is the Australian Government's independent research and advisory body on a range of economic, social and environmental issues affecting the welfare of Australians”

The survival of civilisation in its present form is suddenly under question with accumulating evidence that climate change is advancing faster than predicted. <http://www.climatecodedred.org/2024/01/humanitys-new-era-of-global-boiling.html> In addition six of the nine world Planetary Boundaries, safeguards for the future needs of humanity have been crossed including that for freshwater.

“The minister advises you that the Inquiry should advise on the progress of all Australian governments in achieving the objectives, outcomes and timelines anticipated under the *2004 Intergovernmental Agreement on a National Water Initiative* (NWI) and where practicable on key aspects of water security for Australia”.

When one considers administrative progress of the Murray Darling River, despite deliberation of 20 years most water scientists believe the river is dying. This will be discussed further later in this submission. Progress is also lacking on many other aspects of water policy

Reviewing the 2004 NWI, I note the words, human health and sustainability are in the text but are not explained nor is their message utilised.

The 1987 World Commission on Environment and Development must be adhered to:

“Sustainable development is development that meets the needs of the present, without compromising the ability of future generations to meet their own needs”

Progress in water policy measured against sound scientific evidence is poor and deterioration of water resources is faster than remediation. The situation is similar to climate change where government announces great progress with renewable energy but overall Australia has made no progress with mitigation whilst exporting huge amounts of LNG. As is the case of water, deterioration is occurring faster than alleviation.

In your deliberations priority must be for stabilisation of life support systems; a stable and unpolluted climate, water sufficient for human and all other forms of life and for growing food, in concert with ecological services provided by sufficient biodiversity.

This was described in my submission to National Water Reform Draft Report March 2021 and my interview by the PC Committee
https://www.pc.gov.au/data/assets/pdf_file/0011/273989/subdr126-water-reform-2020.pdf

My submission had little impact- which I expected. Water for the economy is still regarded almost as a right to progress and 'development' Damage to the environment is often disregarded and overridden by the perceived economic needs by states and government; there are many reasons for this; lack of self education by governments and citizens on the necessity for healthy ecological services, and the electoral reluctance to consider curtailing economic progress for political and electoral reasons.

The nexus of climate change, ecological service and water

The urgent need for more environmental water must be considered in all situations, for increasing temperatures and evaporation will require more environmental water for ecological services to grow food. Indeed more environmental water will be required for all other services for example the purification of water by forests. The nation's entire vegetation will require more water. The main reason why the Murray River is now near to death is lack of environmental water to maintain its ecological services within the river and in the adjacent vegetation and flood plains- this issue will be covered in the next section of this submission.

What are ecological services? The fundamental problem is that Governments, commerce, media and much of humanity fail to understand the complexity of ecosystems, their increasing fragility and the impacts of their decimation.

Soil our ecological life support system for food production consists of countless species of the worms, fungi and bacteria to maintain its ecological structure and by the pollinators, birds and animals which control pests and enhance productivity i.e. the biodiversity. If listening systems are placed in the soil one can hear the constant cacophony of noise made by these creatures as they break down organic material to components which can be absorbed through the roots of growing plants.

Clearly soil needs to retain its health by receiving organic matter to break down to service the needs of plants but in much farming today it is replaced by fertiliser to maintain and increase crop yields. The living soil deteriorates

and is more easily blown or washed away by the increasing extreme storms of climate change.

Just as we are now deeply concerned about tipping points in climate change which will make climate change impossible to control, ecological tipping points are being described in some of the world's regions, The consequences mirror the 1930's dust bowl disaster in the US prairies where drought overuse of soil and poverty led to soil blowing away and the regions becoming barren.

According to Professor Lindenmayer <https://theconversation.com/its-not-just-victorias-iconic-mountain-ash-trees-at-risk-its-every-species-in-their-community-214582> about 100 Australian ecological communities defined as assemblages of species in a particular habitat are listed as threatened, endangered or critically endangered or are currently at risk. But this is likely to be a massive underestimate. One of them is the Mountain Ash Forrest of Victoria which provides drinking water to Melbourne and their demise will lead to an expensive desalination future.

Each of us possesses our own ecological system in our bowel, the bacteria and enzymes in our small intestine- split apart ingested foods so the constituents can be absorbed into your body. The system is known as your microbiome. Some patients with inflammatory bowel diseases resistant to conventional treatment can be treated successfully with a "poo-transplant"- the patient takes an oral dose of faecal material from healthy patient. Some soils lacking ecological life because of overcropping can only be restored by soil transplant when healthy soil is spread over dead soil.

The healthy natural world and health humans depend on healthy ecological services for both health and survival and this recognition must replace the primacy of economic thinking in many topics considered by the Productivity Commission. Ecological systems operate like circular economies and are therefore sustainable but as yet we don't have circular economies, humans each have their own ecological service but that's as far as they fit into the natural balance of the world!

The Murray Darling River System

It would be difficult to find a water or biological scientist who did not believe that the river is dying and should be in intensive care managed only on a scientific basis. I review the problems because they epitomise all other current national problems with water management.

<https://johnmenadue.com/climate-adaptation-government-action-on-life-support-systems-is-lamentable/>

After decades, the battle for environmental water to restore the natural ecological environment continues. Water remains considered primarily as an economic resource. Richard Beasley, former senior counsel assisting the

Murray-Darling Royal Commission in "Dead in the Water" (2021), Margaret Simons in "Cry Me a River" (2020) and scientific studies detail mismanagement, disagreement between states, incompetence, corruption, water theft and political malfeasance. Without correction, death of the river and loss of \$20 billion in agricultural produce is extremely likely. The information is shocking.

I will quote a study from The Wentworth Group of scientists who ask "Are Murray-Darling Basin rivers getting the water they need to stay healthy?" https://wentworthgroup.org/2023/09/safeguarding_health_mdb/https://wentworthgroup.org/2023/09/safeguarding_health_mdb/

"The Commonwealth Water Act 2007 requires governments to ensure water extraction does not compromise ecosystems that depend on freshwater flows. The Wentworth Group has assessed the extent to which the Murray-Darling Basin's rivers have received the flows they need to stay healthy.

Environmental flow requirements represent the minimum flows needed at particular places and times to sustain important environmental assets and functions. They were defined by Basin governments as part of their commitment to the Murray-Darling Basin Plan, based on best available scientific evidence. Achieving these flow requirements are a pre-requisite for the health of the Basin's river systems. The Wentworth Group evaluated environmental water requirements against actual river flows measured at stream gauges in rivers. We assessed achievement of 72 science-based environmental flow requirements at 23 strategically located stream gauges spread across the Basin over a period of 43 years from 1979 to 2022.

Our study found that less than a third (31%) of the Basin's environmental water requirements assessed were achieved in the past 43 years. In the decade since the Basin Plan 2012 was enacted, we found only about a quarter (26%) of all environmental flow requirements assessed were achieved, demonstrating an overall declining trend".

Crucial national water reforms required

Many reforms are needed, but I mention only four

1 Statutory management based on climate, water, ecological and agricultural science

Australia must change its national management system for water to a science and technology based system with the power to deliver decisions that will keep the rivers and other surface and ground water systems as healthy as possible in the face in rising temperature, increased evaporation and decreasing rainwater and the increased needs of all ecosystems and life

forms. Yes, this means that environmental water must be increased progressively to a greater proportion of the total.

The Institute for Water Futures ANU [believes](#) the final report should recommend an Independent Statutory Authority, properly resourced, that would be responsible for strategic leadership and to support Australian governments to drive national water reform under a refreshed NWI. This was first proposed in 2017

Government must face the fact that for decades the current administrative structure has failed and a new system has to be centralised and solutions based on science and not on the power of states and some politicians

2 Environmental water (for ecosystems)

As explained in earlier sections the first priority of the Statutory Authority will be to review and implement the necessities for preserving the ecological services by defining the need for environmental water for the Murray river and all other rivers. Environmental water will have to be increased progressively in many parts of Australia

Discussed in <https://johnmenadue.com/the-importance-of-environmental-water-is-the-national-water-initiative-up-to-the-job/>

3 Water trading

The current system of trading water rights aims to allocate water to its most productive and profitable uses while reducing extractions to sustainable levels as detailed in <https://johnmenadue.com/the-murray-darling-basin-plan-has-fundamental-problems-and-needs-replacing/> . Some would see water markets as the delivery of a neoliberal fantasy to manage a life support system for humans and all species. Financial markets operate on a philosophy of greed is good, on clever manipulations. Banks and Hedge funds trade water in the same way as commodities and financial products with market manipulation, profiteering and conflicts of interest.

The extended Plan fails to address trading rights, reform or replacement to ensure environmental sustainability and human survival.

<https://johnmenadue.com/revolution-is-needed-to-save-the-dying-river-murray/>

4 Agricultural reform

Many changes are needed to ensure sustainability of land and the river system. A sustainable choice of crops must be related to health of ecosystems. For example cotton and rice use a considerable amount of flood plain and irrigation water but are more profitable than many other crops.

Both have the advantage of being annual crops which can be sown according to current rainfall predictions whereas fruit cropping needs water every year, but many other criteria must be considered. The huge contiguous acreage of these crops damages biodiversity essential for all crops, and lack of tree breaks increases run off and erosion in storms. Run off of nitrogen fertiliser causes frequent growth of algae which poisons fish and other water life.

Cotton raises \$2 billion p.a. from exports. If Australia is to retain a functional river, flood plain water needs to be increasingly returned to the river and the industry allowed to contract. The returned water will help the river and some could be deployed for crops more important to Australian consumption.

Contamination and overuse of water

This is a major issue which seems neglected in national water policy

For example we have recently published an extensive review of water, air, land contamination and human health impacts caused by chemicals used and produced by the hydraulic fracking industry. We need to be reminded that many European countries including France banned the procedure many years ago after scientific investigation.

Australia has become one of the largest world exporters of LNG and that produced on land has yet to have the benefit of advice from the IESC

Water contamination from fracking in the USA is widespread at huge environmental cost which the US government chooses to ignore in favour to its desire for export income.

Our review "The risks of oil and gas development for human health and wellbeing: a synthesis of evidence and implications for Australia" <https://apo.org.au/node/324169> is likely to be of deep concern to members of the Productivity Commission

It is essential that these issues be urgently brought into the aegis of a new Water Authority for advice and action for some fracking chemicals may contaminate aquifers for decades.

I will leave the judgement to you

Summary from the report

Hydraulic Fracking

Threats to water: Besides climate damage, the industry uses vast quantities of fresh water, often much greater than anticipated, posing water security threats to arid areas. Furthermore, each step of the gas production creates multiple opportunities for chemical contamination of surface and ground

water. There is extensive documentation of contamination via spilling, leaking, flooding, overflows and deliberate environmental application through so-called 'beneficial uses', especially in handling the vast quantities of toxic wastewater. This wastewater contains hundreds of naturally occurring and added drilling and hydraulic fracturing chemicals. These can include heavy metals, phenols, barium, volatile organic compounds including benzene, toluene, ethylene and xylene, radioactive materials, fluoride, polyaromatic hydrocarbons, salt and many chemicals of unknown toxicity.

For the full water section go to Section 4, page 37

Of relevance to the human microbiome and the life support system of eco-services, The Public Health Association Australia has recently given me an award for Lifetime Service to Human Health and Ecology

My physical disabilities now result in difficulties to use my hands for computer work and this submission should be longer and more comprehensive, I apologise. However I can be available by telephone or Zoom to answer questions

David Shearman