

# AUSTRALIAN WATER ASSOCIATION NSW HEADS OF WATER GALA DINNER

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## WATER AND THE FUTURE OF WATER IN AUSTRALIA

### KEYNOTE ADDRESS – Dr JOHN WILLIAMS

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- Thank you for the welcome and that absolutely amazing introduction.
- **Introduction:** I want first to talk about water in a global sense. Then I want to talk about how we will be challenged to think about it differently in Australia. Little of the original thinking is mine. The story I want to tell is derived from the work of the World Economic Forum, PMSEIC and from the thinking of my colleague Mike Raupach of CSIRO.
- The water nexus with:
  - Energy;
  - Food;
  - Climate change; and
  - Economic development.
- *“In 1911, John Muir observed how, ‘When we try to pick out anything by itself in nature, we find it hitched to everything else in the Universe.’ A century later, a gathering of the World Economic Forum discovered the same phenomenon. Four hundred top decision-makers listed the myriad looming threats to global stability, including famine, terrorism, inequality, disease, poverty, and climate change. Yet when we tried to address each diverse force, we found them all attached to one universal security risk: fresh water.” – MARGARET CATLEY-CARLSON, Patron, Global Water Partnership, 2008-2010 Chair of World Economic Forum Global Agenda Council on Water Security<sup>1</sup>.*
- *“Water sits at the nexus of so many global issues... including health, hunger and economic growth. And sadly, water scarcity takes its greatest toll on society’s least fortunate. I am absolutely convinced that the only way to measurably and sustainably improve this dire situation is through broad-scale collaborative efforts between government, industry, academia and other stakeholders around the world.” – INDRA NOOYI, Chairman and CEO of PepsiCo, Inc., Member of International Business Council, World Economic Forum<sup>1</sup>.*
- Water also lies at the heart of a nexus of social, economic, and political issues – agriculture, energy, cities, trade, finance, national security, and human livelihoods, within rich and poor countries alike. Water is not only the indispensable ingredient

for life, seen by many as a right, but also indisputably an economic and social good unlike any other. It is a commodity in its own right with no substitute and no alternative, but it is also a crucial connector between humans, our environment and all aspects of our economic system<sup>1</sup>.

- If we are to ensure sustained economic growth, human security, and political stability over the next two decades, how we manage water is fast becoming an urgent political issue. While businesses and non-governmental organizations do what they can, water has potent social, cultural, and religious dimensions; it can never be viewed only as a pure economic good. Water requires government engagement in its management and reform. An unfettered reliance on markets will not deliver the social, economic, and environmental outcomes needed. Good regulation in water is indispensable<sup>1</sup>.

- **Rapid growth will intensify global demands for food, water, and energy in the next twenty years<sup>1,3</sup>.**

In the coming decades, several significant global trends will intensify demand for food, water, and energy resources. These demand drivers include the following:

- Population growth: World population is expected to rise from the current 6.83 billion to 8 billion in the next two decades, largely in the developing world. By 2050, the combined population of Europe, the United States, and Canada will account for only 12 per cent of the global total<sup>1</sup>.
  - Economic growth: This will be driven largely by emerging markets – the World Bank estimates 6 per cent growth in developing countries in the medium term, compared to up to 2.7 per cent in higher-income countries<sup>1</sup>.
  - If historic trends continue, the proportion of global GDP produced by Europe, the United States, and Canada will be less than 30 per cent by 2050, compared to 68 per cent in 1950<sup>1</sup>.
  - Urbanization: More than half the world's population now lives in an urban environment. There are twenty-four megacities with more than ten million people, seventeen of which are in developing countries. China already has more than one hundred cities with more than one million inhabitants; India has thirty-five; and the United States has nine. By 2050, China's cities will house 73 per cent of its population (up from 46 per cent today), and Indian cities will encompass 55 per cent of its people (up from 30 per cent today)<sup>1</sup>.
- The world has a huge appetite for energy, water and food. The ecosystems and the natural resource base that provide all three are woven together and linked in a way that means we cannot manage one without impact on one of the others. Each of

energy, water and food operate as threads in the fabric of life on this finite planet. While water can be seen as the gossamer that links together the web of food, energy, climate, economic growth and human well-being, energy and the capture of carbon in food production are similarly important. All three are strongly interdependent.

- As with water and food, global primary energy consumption is expected to increase by 39 per cent over the twenty years to 2030. While the vast majority of this expanded energy demand will continue to be met from fossil fuels, it is expected that natural gas extracted from shale and coal measure, using rapidly developing technology, will be a major energy source of modern society. Natural gas already accounts for 25 per cent of energy use in the United States, and 21 per cent of global total primary energy supply.
- To produce natural gas from unconventional means has immediate and significant impacts on both surface and groundwater resources. In Australia, which has a rapidly expanding coal seam gas industry, this water demand is often in direct competition for the land and water resources currently used for food production. Yet it is the same natural gas that is widely used to power the production of fertiliser for the same food production in modern agriculture.
- Can you see how the threads of the cloth are hitched to other threads in the fabric of our civilization? In past times we could pull threads and it did not seem to matter. *Now it does.* We have lived as if our planet is infinite and now we see that it is finite and for the first time we see our impact on the properties and function of the Planet Earth.
- Our frame of thinking has to change.
- **The role of narrative in shaping energy-water-climate futures<sup>2</sup>.** The two centuries since the start of the industrial era has been a period of rapid and almost unbroken economic growth in much of the world, based upon exponentially increasing use of energy and water resources and the atmospheric commons<sup>2</sup>. It is axiomatic that exponential growth cannot continue forever on a finite planet, leading to an emerging collision between the presently irresistible force of economic growth and the immovable reality of the finitude of Planet Earth<sup>2</sup>.
- This collision takes many forms and will occur over many decades, but its effects on water resources and climate are already plainly evident. The inevitability of the collision has led to a contest between two broad narratives about energy, water and climate in the 21st century - one framed around the paramount need for economic growth and the other around the paramount need to protect an increasingly fragile natural world<sup>2</sup>.

- Many features of recent public discourse (including the acceleration of the news cycle and the echo-chamber effect of interactive social media) have driven these narratives to become progressively more mutually antagonistic and incompatible<sup>2</sup>.
- In shaping our shared energy-water-climate future, the evolutionary contest between growth and finite-planet narratives is just as important as the dynamics of the natural world<sup>2</sup>.
- The future therefore depends upon the evolution of more subtle and resilient narratives about human-earth interactions, in which energy, water and climate are central<sup>2</sup>.
- The evolutionary fitness test for these narratives is to empower a transition to a society that lives within the means of a finite planet and improves global wellbeing at the same time<sup>2</sup>.
- That is the challenge with water for you and me.
- **PMSEIC REPORT 2010<sup>3</sup>:** A very significant report that has yet to exert its influence.
- **Intersections between energy, water and carbon**
  - Water pricing;
  - Water trading; and
  - Healthy working rivers.
- The PMSEIC Expert Working Group<sup>3</sup> recommends enhancing the development of integrative perspectives across the Australian knowledge system, by:
  - (1) establishing a core research effort in integrative systems analysis, to understand and map the connections between energy, water, carbon, climate, agriculture, ecosystems, the economy and society<sup>3</sup>;
  - (2) including incentives for integrative analysis in existing academic, government and sectoral innovation investment structures<sup>3</sup>; and
  - (3) enhancing support for stable, ongoing delivery of essential information<sup>3</sup>.
- **Water Futures in AUSTRALIA**
  - Australians inhabit built environments from great cities to the Red Centre. Meeting the combined energy, water and carbon challenges in our cities and towns will require technological innovation for energy and water supply<sup>3</sup>;
  - development of systems that are resilient to shocks;

- overall reduction in demand for constrained natural resources, particularly water and greenhouse gas (GHG) emissions; and
- astute investment in infrastructure. These developments need to occur together.

To address these needs PMSEIC The Expert Working Group<sup>3</sup> recommends the development of a:

- national Resilient Cities and Towns Initiative, to foster resilient, low-emission energy systems, water systems and built environments by focusing jointly on technological developments in supply, and on adaptation in demand, as Australia's urban populations grow<sup>3</sup>.
- The Initiative will operate through a set of demonstration projects, united in a national approach<sup>3</sup>.

The PMSEIC Expert Working Group<sup>3</sup> recommends that consistent principles for finite resource use be developed and implemented for energy, water and carbon.

- These principles will ensure that:
  - (1) markets transmit full, linked, long-term costs to society<sup>3</sup>;
  - (2) accounting is comprehensive and consistent with natural constraints and processes<sup>3</sup>; and
  - (3) markets work together with non-market strategies, including implementation of robust governance arrangements, promotion of behavioural change and effective regulation of use<sup>3</sup>.

**Conclusion:** The bottom line is that we must change our two incompatible stories about energy, water, food and climate. We cannot continue to foster one story that assumes an infinite planet and is framed around the paramount need for economic growth while maintaining the other story around the paramount need to protect an increasingly fragile natural world. The future therefore depends upon the evolution of a more subtle and resilient story about human-earth interactions, in which energy, water and climate are central and where a new story evolves to empower a transition to a society that lives within the means of a finite planet and improves global wellbeing at the same time.

That is the new story for water into the 21<sup>st</sup> century.

Thank you.

John Williams

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3. Australian Government (2010) PMSEIC **Impact Statement**, Challenges at Energy-Water-Carbon intersections, Preparing for the Future with Foresight. <http://www.chiefscientist.gov.au/wp-content/uploads/PMSEIC-EWC-Impact-Statement.pdf>