Water Governance and climate change adaptation- the role of sustainability water policy entrepreneurs in Australia
governance of adaptation
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Global dependence on groundwater

- Groundwater is a critical component of supply for cities, industries, and agriculture.
- Groundwater is the only source of drinking water for at least 1.5 billion people worldwide.
- Global population growth = growing stress on groundwater
- Sustainable groundwater management will require looking at alternative water supplies to augment freshwater supplies
- Australia has a high dependence on groundwater

Dependence on groundwater Cont…

- The challenge : *providing the water needed to feed a growing population and balancing this with all the other demands on water.*
- Adaptation is required to improve the resilience of groundwater dependent communities
- Adaptations are essentially management responses to risks associated with change – policy and/or climate change.

Australian context

- National Groundwater Action Plan (NGAP)
  - The National Groundwater Assessment Initiative : investigations to help overcome critical groundwater knowledge gaps
  - National Centre for Groundwater Research and Training : joint venture between the NWC and ARC to build capacity in groundwater knowledge
  - Knowledge and Capacity Building component : improve understanding and sustainable management of groundwater resources
- National Water Initiative (NWI) sets the framework for urban water reform - *"encourage innovation in water supply sourcing, treatment, storage and discharge"* (Clause 90 NWI, 2004).

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Australian context of federalism

- Twin yet rival ideas of self rule and shared rule.
- Australia has a centralised grant process for horizontal fiscal equalisation to take into account fiscal capacity and expenditure needs of States (tax revenue)
- Commonwealth Grants Commission 1933 an arms length body administers this

Australian context

- Under the NGAP, the NWC is investing in projects to improve groundwater knowledge & progress the groundwater reforms agreed to under the NWI.
- There are eight priority investment themes:
  - *Harmonisation of groundwater definitions and standards, and improved governance and management practices*
  - *Northern Australia Groundwater Stocktake*
  - *National assessment of sites suitable for managed aquifer recharge and recovery*
  - *Vulnerability of groundwater dependent ecosystems*
  - *Investigation of groundwater-surface water inter-connectivity*
  - *Strategic aquifer characterisation to quantify sustainable yields*
  - *National review of groundwater potential for deep fresh, saline and brackish waters*
  - *Managing risks to groundwater quality*
- *Facilitating recycling of stormwater and reclaimed water via aquifers in Australia*

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Managed Aquifer Recharge (MAR)

- MAR is the purposeful recharge of water to aquifers for subsequent recovery or environmental benefit.
- MAR can play a role in increasing storage capacity, assist in harvesting abundant water in urban areas that is currently unused.
- The methods currently in use in Australia are (NWC, 2009):
  - *Aquifer storage and recovery (ASR):*
  - *Aquifer storage, transfer and recovery (ASTR):*
  - *Infiltration ponds*
  - *Infiltration galleries*
  - *Soil aquifer treatment (SAT):*
  - *Percolation tanks or recharge weirs*
  - *Rainwater harvesting for aquifer storage*
  - *Recharge releases*

Using stormwater treated through MAR

- To what extent are we willing to recycle stormwater and where are we happy to reuse it?
- NCGRT funded project
- Online survey in 3 Australian cities
- People were asked:
  - how they felt about using treated stormwater for things other than drinking water and
  - how willing they were to undertake measures to help keep waterways clean if stormwater use was going to be put in practice.

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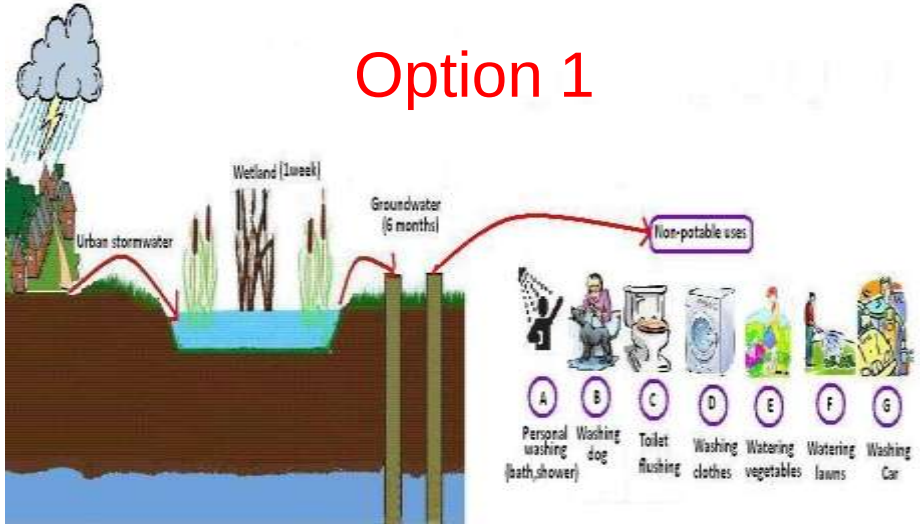
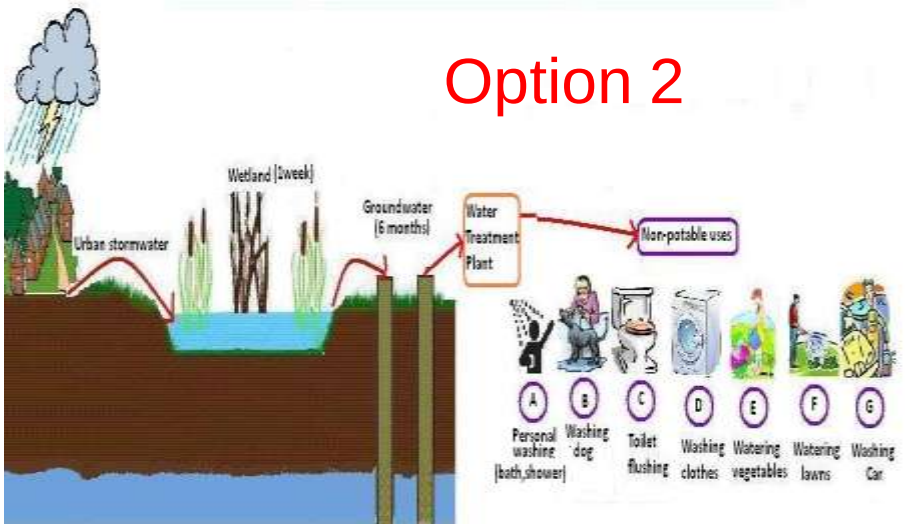
Treatment options and end uses

Option 1



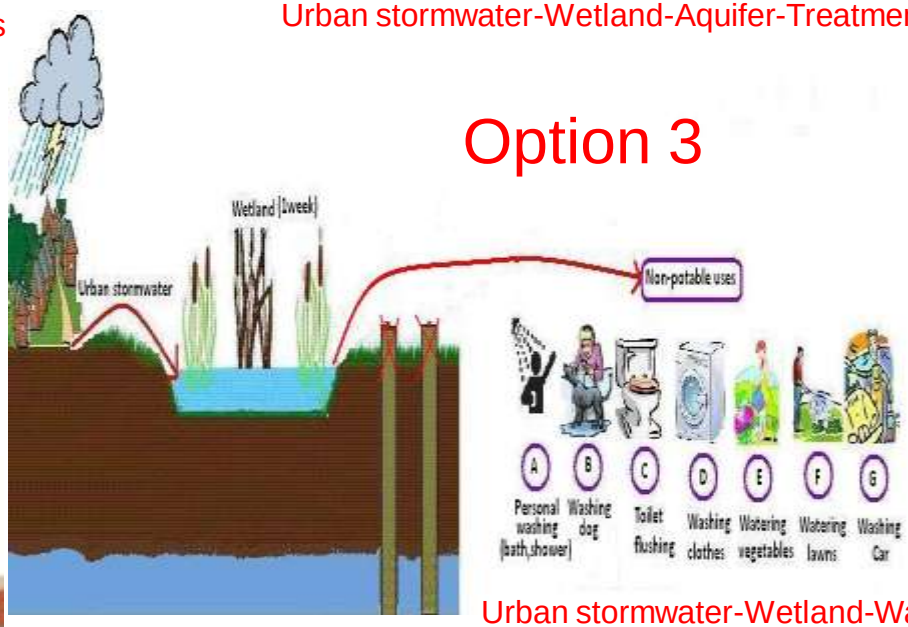
Urban stormwater-Wetland-Aquifer-Water users

Option 2



Urban stormwater-Wetland-Aquifer-Treatment Plant-Water users

Option 3



Urban stormwater-Wetland-Water users

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Results

- Should treated stormwater be used for non-potable uses? Majority in all three cities replied “yes”.
- Older respondents (>45 years) were more likely to agree with the statement “*stormwater reuse is essential to help manage future water shortages”*.
- Options which have close human contact (drinking, cooking and kitchen use)were least preferred; options without close human contacts (such as flushing toilets, watering lawns, parks and gardens, and washing cars) were the most preferred uses.

Results Cont…

- People were asked about how willing they were to change their behaviour (take up various non-structural measures) to help prevent stormwater pollution?
- Most were already doing, and were related to general waste management and recycling practices (collecting rubbish/litter) and management of hazardous and liquid wastes (disposing of paint and oil).
- About 27% of respondents were already reusing wastewateron their gardens, while another 25% wanted to take this up in the future.

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Summary of community responses

- Stormwater harvesting is likely to play a significant role in future climate change adaptation strategies.
- Public perceptions of stormwater recycling range from ‘unsure’ to ‘supportive’, but are rarely negative.
- Clearly, respondents preferred using stormwater treated through the wetlands and/or through MAR for uses that had limited human contact.
- Increasing public acceptance to use treated stormwater for drinking requires effective collaboration and extensive consultation with the community and government authorities, to ensure that drinking water quality is met reliably on an ongoing basis.
- Local councils have to play a major role in educating the community about stormwater capture and use.

Community attitudes to governance

- the urban community in Australia want a change of governance. Nb 10% water use 75% population
- most of them want more federal intervention
- see WU ,McKay and Keremane Governance of urban freshwater some views in Water ,March 2012 Australian Water Association, P 88 -92

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The broader context

- water policy entrepreneurs in Australia
- We identified 27 water planners from State governments who had devised regional water plans over the past few years.
- these are bureaucratic entrepreneurs(King 1989) or policy advocates boundary spanners Hiutema and Meijerink 2009
- We asked them to identify local individuals who were outside government.

Water planners

- we have a panel of them
- we asked them to identify key individuals or a group who facilitated a water policy transition such as MAR, or use of recycled water.
- we found that the water planners themselves as public servants, often did much more than their job required
- they had a pre existing personal interest in sustainability

Water planners

- these people often went above and beyond their duty
- as a consequence they become fatigued and often retire early.
- we have several case studies under way of the actions of the water planners above their duty (3 presented below)
- We have others on the policy entrepreneurs underway

Case study Bureaucratic

- **Colin Pitman – General Manager, City Projects Department, City of Salisbury, SA**
- ***'We want a sustainable city in every aspect, economically, ecologically and socially.'***
- Colin Pitman has a background in Agriculture and Engineering and has been a leader locally and internationally in Water Management. He has won numerous awards including the World Water Association Award in Beijing in 2006. More notably, he is a leading advocate of stormwater recycling in Australia and gives up lot of his time to go out and talk to public around stormwater recycling. He is well known internationally for this as well. As water policy entrepreneur he has changed the way South Australia sees its water resources and how it has gone about investing in water resources thereby making South Australia the leading state for stormwater recycling. He has changed the way South Australia sees its water resources and couple of his innovations are discussed below.

Stormwater reuse

- ***Salisbury wetlands project- a project to solve some of Adelaide water problems***
- Pitman took over as chief engineer at Salisbury in 1988 and first started the project in 1989 when the council had built a number of wetlands. When the council wanted to water nearby ovals, Pitman became interested in using the water that was collected in the wetlands. The idea was initially practiced as a research project and then received supports by experts and NGOs. Pitman's team worked with the elected council members which in turn called out community's support to the project.

16,000 homes

- Salisbury Council has linked up about 16,000 homes in the council area with stormwater to use the water on their gardens. The water is collected in 53 wetlands across the council to stop it flowing out to sea and pumped underground to prevent it from evaporating. This water is currently transported to local businesses, reserves and schools through bores and a network of underground pipes. Pitman's project is the first project of its kind in Australia and would take about 15 billion litres of stormwater a year to households and businesses equivalent to 18 per cent of Adelaide's water supply

new governance structure to manage the stormwater recycling project

- As the project or the business was growing big there were lot of political interference w.r.t supply of water to the customers. This resulted in frequent tensions between Colin and the Council. So as a solution Salisbury Water Board and Salisbury Water Company (a subsidiary company under the SA *Local Government Act*) was formed. This is unique and also the first of its kind across Australia. The Board is an independent body and even though the Board reports to the Council, it can make policy decision on certain issues independently such as the pricing policy or deciding on the application for a connection. More importantly, because of this Board important policy decisions could be made without referring to the politicians.

Breeding community advocates- to create political resilience

a new aspect …

- Colin has been a leading advocate of stormwater recycling in Australia and gives up a lot of his time to go out and talk to the public. As a result of his public speaking engagements and community consultations overs the years he has been able to raise a group of people within the community who support his vision and work. He calls them as ‘community advocates’. He says “these community advocates are technicians, scientists, retired public servants who are excited by the work he and his team are doing and want to be part of it.” By doing so he says “this creates resilience in relation to what we do politically because these people become our advocates in the community through the press”.

UniSA

Breeding community advocates- to create political resilience

Breeding community advocates- to create political resilience

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Thank you

- *Thanks to all the survey participants*
- *Salisbury, Charles Sturt & Gold Coast City Councils*
- *NCGRT*
- *School of Commerce, UniSA*
- Source: Face-to-face interview with Colin Pitman, Mar 8, 2012; *The Daily Telegraph*, Feb 20, 2009; *news review Messenger*, Mar 20, 2009.