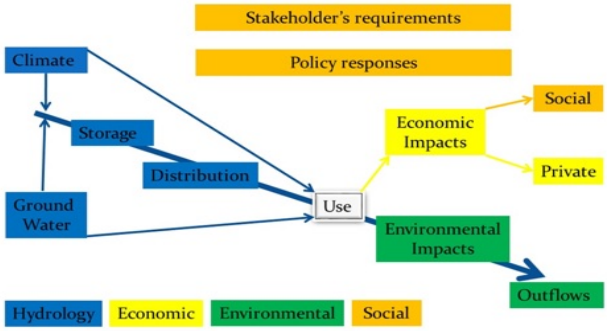
LECTURE 1: WHAT IS THIS ALL ABOUT

So what is 'water for sustainable futures' all about?

- Subject objectives, boundaries and where we are going
- **Water** is a transparent, odourless, tasteless liquid, a compound of hydrogen and oxygen, H_2O.
- **Sustainability** an ability or capacity of something to be maintained or to sustain itself. It's about taking what we need to live now, without jeopardising the potential for people in the future to meet their needs.

Figure 2: Organising the Evidence in a Catchment Context



What is the general approach to the subject matter?

- We use the '*integrated catchment management*'
  - What is this?
    - Old style – management of physical flows, where the water can come from and what it could be used for.
    - New style – management including the environment, people, economic outcomes, etc.
- The best definable body that is used in water is a '*catchment*'
  - An area of land where water collects when it rains, often bounded by hills.
  - Sometimes known as a watershed, (it should be noted that a catchment is different to a groundwater aquifer).
    - Source of water
    - Port
    - Sewer
    - Source of power
    - Industrialised
    - Used for irrigation (largest form), recreation, fishing, transport, mining, etc
  - Consequently catchments have:
    - Been lived on and lived off
    - Subjected to abstraction (dealing with ideas rather than events)
    - Had their courses changed (i.e changing the natural flow/layout to suit a bridge)
    - Been polluted
    - Used as a political tool for bargaining and discussions, etc.

Why do we need to look at the subject matter in a consistent manner?

- The nature of wicked problems
- Wicked problems involve people and defy simple optimal solutions.
  - They require continual management.
  - Any proposed solution has risks and all come at some political cost.
  - They typically do not have an equilibrium, meaning a solution that is ultimate; unsolvable
- The solution to a wicked problem lies in negotiating with affected people, to minimise the risks.
  - Remember, doing nothing is always an option.
- Wicked problems are social or cultural problems that can not be optimally solved because of:
  - incomplete or contradictory knowledge,
  - the number of people and opinions involved,
  - the large economic burden, and
  - the interconnected nature of these problems.

Learn the process

Simple process, apply to other catchments. Work out what happening, ask people affected

1. **Ask the stakeholders**
    - Stakeholder analysis
2. **Source the water**
    - Follow the flow, to environment
    - Analysis of climate, groundwater, in and out of the catchment
3. **Follow the flow to users**
    - Consumption analysis and environmental assessment
    - Calculate the values (+ costs and environment)
4. **Calculate the net value of the water (only) to users (inc. environment)**
    - BCA, Benefits minus costs (demand minus supply)
5. **Simulate any changes in (1 to 4) from this point of reference**
    - Document and respond to stakeholders

Tutorial Week 12

- Resource limitations;
    - As demand goes up, price would increase
    - But as supply is going up, price is staying about the same

- Enormous amounts of waste water are discharged!

- No differential between drinking/potable water, storm water, waste water and groundwater

- With analysis, we have more than enough water if we include waste water

- Putting together assessment, clear checklist and yes/no. the simplicity limits the accuracy
    - Prioritise things based on subjective assessments

- Report notes
    - Why will they cost so much to fix
    - What do you do to save them?
    - Cover 4 sections of the report, don't just describe things, identify areas that are lacking, argue why some areas are more important than others.
    - Justify spending the money on certain areas
    - Catchment is important water supply for Melbourne!

Know the social governance:

- **The history of water development in Australia?**
- **What changed in the 1980s?**
- **Why you undertake assessments of stakeholders?**
- **The wider energy and food sector implications associated with the water sector?**

Water for Sustainable Futures
Physical Elements REVIEW

1A. EXPLAIN THE USE OF A CATCHMENT.

B. HOW DOES ONE SOLVE A WICKED PROBLEM? FOR EXAMPLE, WATER RESOURCE MANAGEMENT?

2A. EXPLAIN HOW THE VARIABLE ASPECTS OF THE CLIMATIC SYSTEM OF EARTH AFFECTS US