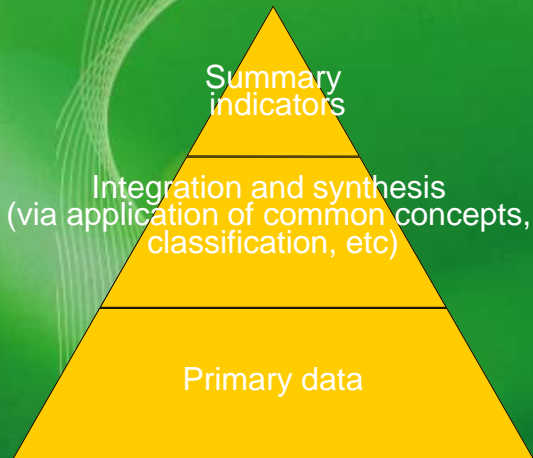
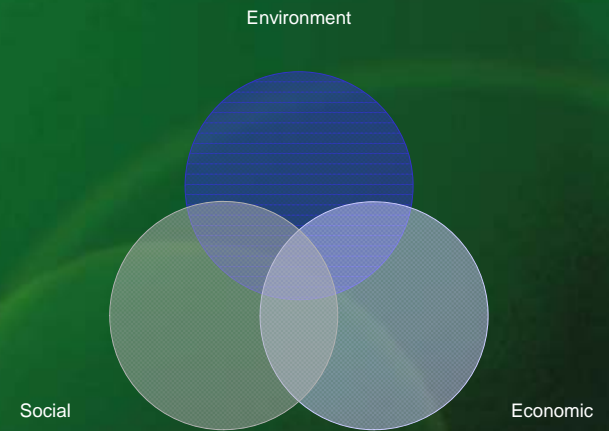


Considerations for developing integrated water information systems

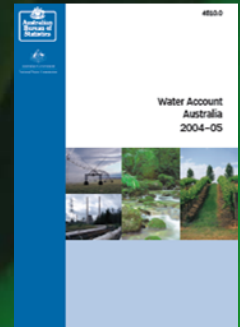
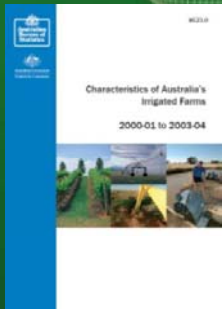


Water	Volume (m3)	Value (\$)
Stocks		
Flows		



statistics for informed

decision making



We know the problem

“Lack of *integrated* water data is a systematic impediment to informed decision making related to the sustainable use of water resources.

Data are needed to provide information not just about water quantity, both on the surface and underground, but also about its quality, social and economic relations as well as environmental dimensions”

(Conclusion from Session 6.4 “Data for All” of the 5th World Water Forum)

Why does the problem persist?

- The environmental, economic and social systems to be measured are very complex to describe and measure (but simple indicators are wanted)
- Data are needed at a range of spatial and temporal scales for a wide variety of purposes
- The users and producers of data are numerous and the data collection, data reporting, data analysis have in general been fragmented, poorly coordinated and under funded

Many users and producers of water data

Government agencies responsible for:

- Water, meteorology, hydrology, statistics, agriculture, environment, energy (especially hydro-power), planning, finance, geology
- National, state/provincial or local government

Water suppliers and wastewater treatment
(government and non-government)

Water research organisations

(e.g. government agencies, universities)

Non-government organisations

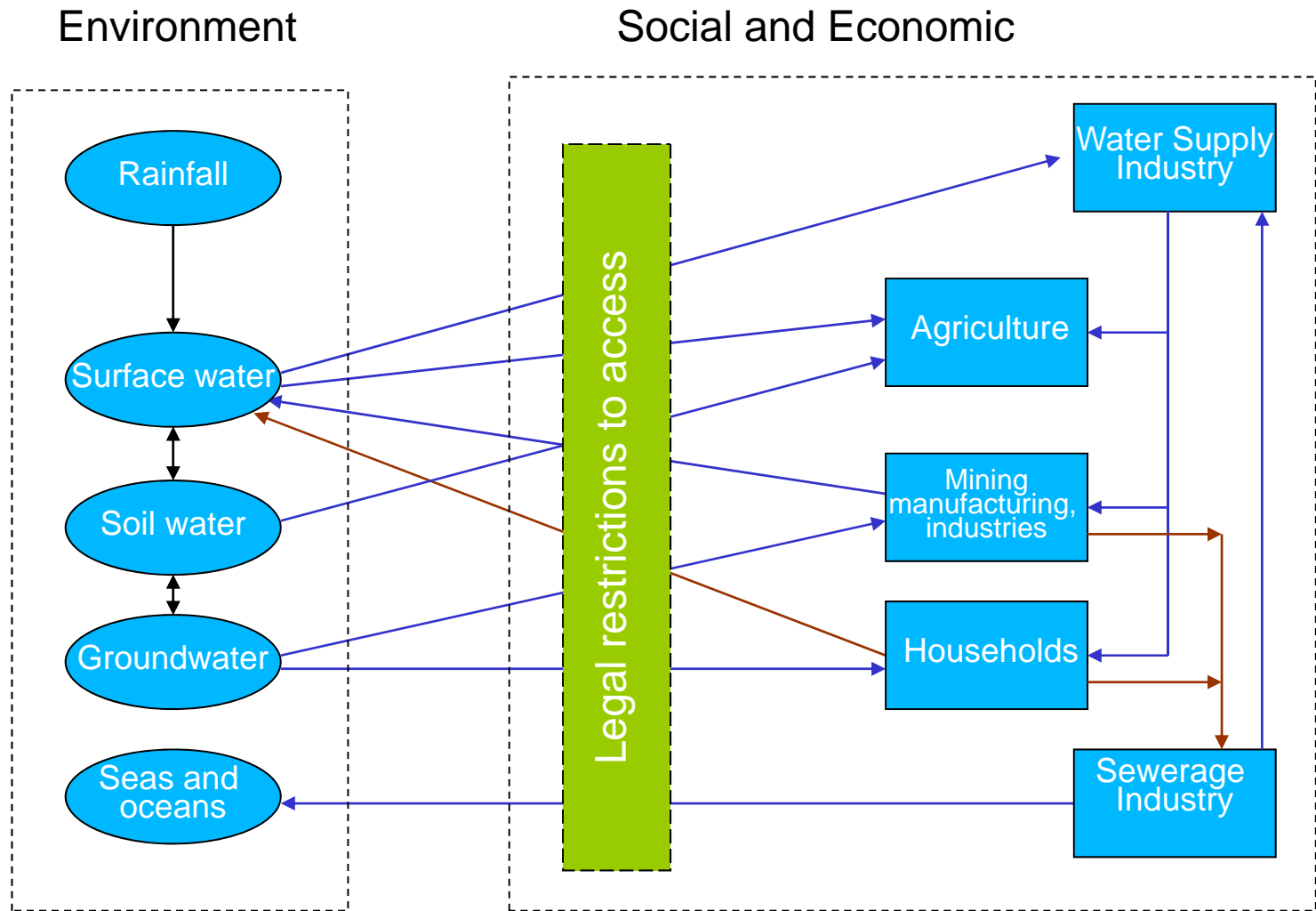
(e.g. water industry associations, farmer associations, conservation groups, etc)

Investors (individual, public and private)

Need for coordination of activity and institutional arrangements

Data producers and the water system – a simple view

Many more boxes, agencies and arrows can be added



E.g. Water, hydrological, meteorological, geological, and water agencies

E.g. Water, environment (including protection agencies), economic, regulatory, and statistical agencies

Terminology, concepts, definitions and classifications

Water data are used or produced by a wide range of professions and disciplines. For example: scientists (including hydrologists, meteorologists, geologists, remote sensing, etc), statisticians, engineers, policy-makers, social scientists, economists, lawyers, accountants, managers, law enforcement

Each profession/discipline uses their own terminology, concepts and classifications and brings a particular world view. These have developed over long periods of time.

Great potential for misunderstanding

Need to work together to reach a common understanding

Established terminology, concepts, definitions, classifications and systems are not easily changed

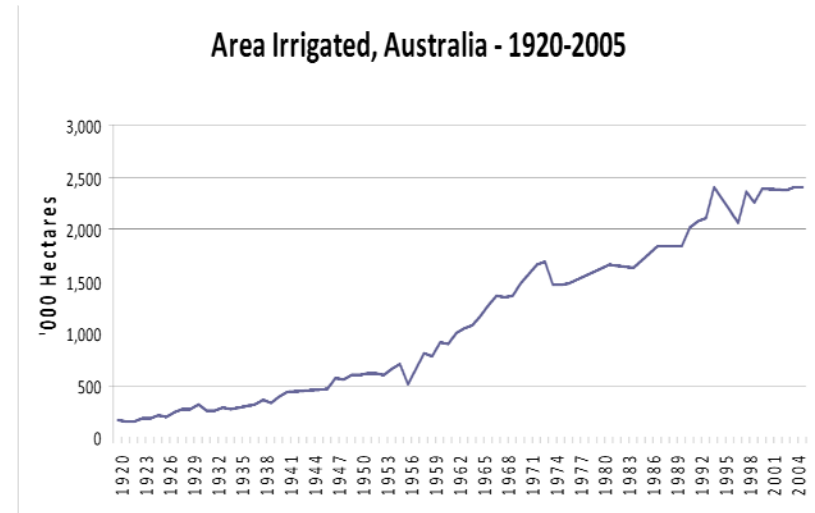
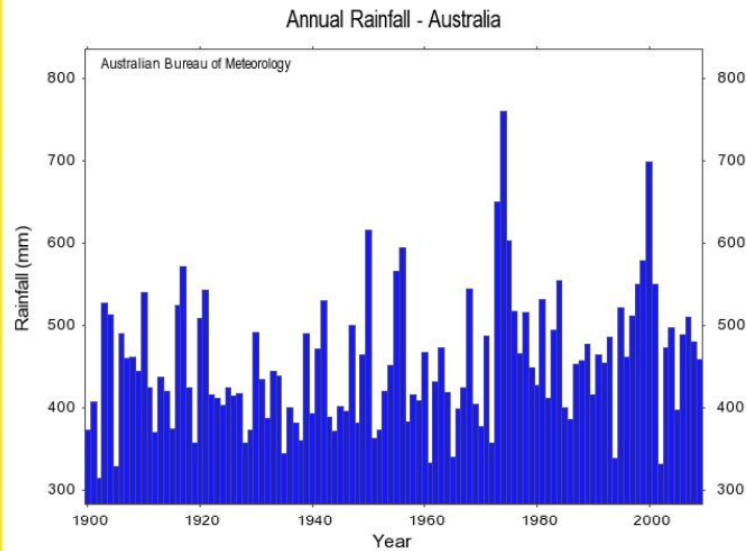
Use of common standards
assists integration at national
and international level

Guidelines, standards and classifications for water data

There are many of these. For example:

- Guide to Meteorological Instruments and Methods of Observation
- Guidelines on the Role, Operation and Management of National Hydrological Services
- System of Environmental and Economic Accounting for Water
- International Recommendations for Water Statistics
- International Benchmarking Network for Water and Sanitation Utilities
- A System of Integrated Agricultural Censuses and Surveys
- ISO (e.g. ISO 19115 for geographic information)
- Statistical Data and Metadata Exchange (or SDMX)
- World Meteorological Organisation Core Metadata Standard
- Infrastructure for Spatial Information in the European Community (INSPIRE)
- Global Annual Assessment of Sanitation and Drinking Water
- MDG reporting standards (for water supply and sanitation)

It is not the first time you produce data that is important



- It is the 10th time (or better still the 100th)
- The water data landscape is littered with “one-off” case studies

Data quality

- **Relevance** – does the data answer the questions
- **Accuracy** – how closely does the data represent the real world
- **Accessibility** – how are the data accessed
- **Coherence** – how does the data relate to other data
- **Interpretability** – e.g. does the data have an unambiguous good direction
- **Timeliness** – is that data available in time for decision making

Data quality is always constrained by resources

Different elements of data quality may be prioritised

Data quality assessment frameworks are important

Metadata and data quality assessment

Metadata includes information on:

- Each of the dimensions of data quality
- Definitions of data items, including any exceptions to international standards
- The classifications and frameworks used to organise data
- Data sources and methods
- The characteristics of the statistical units for which data have been collected and compiled
- The spatial coverage of the data, including any gaps
- The temporal coverage of the data, including any gaps
- Publication details (e.g. publication date, the agency or agencies publishing the data, etc)
- Acknowledgements, especially with regards to any cooperation or collaboration on water statistics with other organisations or individuals
- Contact details for enquiries

Summary

- Enduring systems of integrated water data, covering social, economic and environmental aspects of water, are needed for improved decision making
- Data integration is enhanced by the use of common standards and classifications
- Cooperation between agencies is essential. The different roles and responsibilities of agencies need to be understood and respected
- Data quality, data quality control and metadata are critical

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