

## Measuring the True Bottom Line



Dr Robert Humphries  
Sergey Volotovskiy  
Water Corporation

## Outline

- Defining Sustainability for business
- Bottomline<sup>3</sup> is a powerful tool to measure Ecological Footprint → dissect and quantify the components of an organisation's footprint.
- Bottomline<sup>3</sup> will be used by the Water Services Association of Australia (WSAA) to benchmark the footprints of Australian water utilities in 2010.
- Many applications to a business – supply chain analysis, environmental, economic and social impact etc..



## Defining Sustainability

### The Brundtland Definition:

*Sustainability is meeting the needs of the current and future generations through integration of environmental protection, social advancement and economic prosperity..."*

### The Marlow & Humphries Definition:

*For a business, sustainability is practically achieved when all its activities, both internal to the business and across its supply chain, achieve net added value when assessed across each of the triple bottom line outcomes (financial, social and environmental) over the medium to long timescales, considering all costs and benefits, including externalities.*



## But – How to Measure Nett Added Value in TBL Terms?

- Financial 'sustainability' is well understood, generally well-governed and reported.
- Social 'sustainability' is multi-dimensional, and has various metrics – e.g. human development index, economic, health & safety and others, but won't be discussed here.
- The need for environmental sustainability is poorly addressed by business and government, and lacks straightforward measurement frameworks and reporting measures. **Ecological Footprint** solves this problem. (see Wackernagel and Rees, 1996. *Our Ecological Footprint: Reducing Human Impact on the Earth*)



## What is Ecological Footprint?

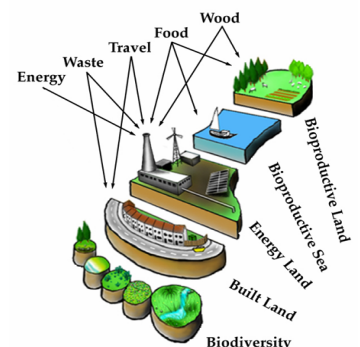
- **Ecological Footprint (EF)** is a measure of human demand on the Earth's ecosystems
- EF compares human demand with the planet's ecological capacity to regenerate. It represents the amount of biologically productive land and sea area needed to regenerate the resources a human population consumes and to absorb and render harmless the corresponding waste
- In 2006, humanity's total ecological footprint was estimated at 1.4 planet Earths



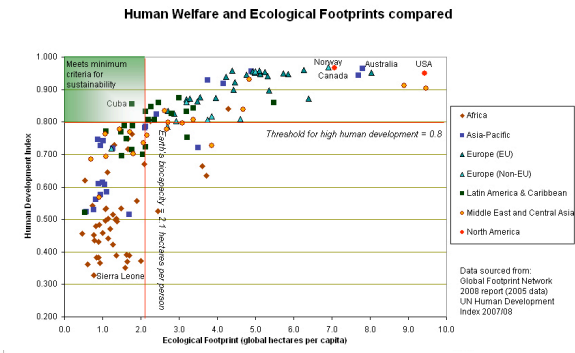
## The Concept of an Ecological Footprint

The Ecological Footprint is the amount of land and sea required to support all needs – it measures how fast we consume & generate waste compared with how quickly nature can absorb wastes and regenerate resources

About 70% of the Water Corporation's footprint is from power consumption



## Human Welfare is Closely Related to Ecological Footprints

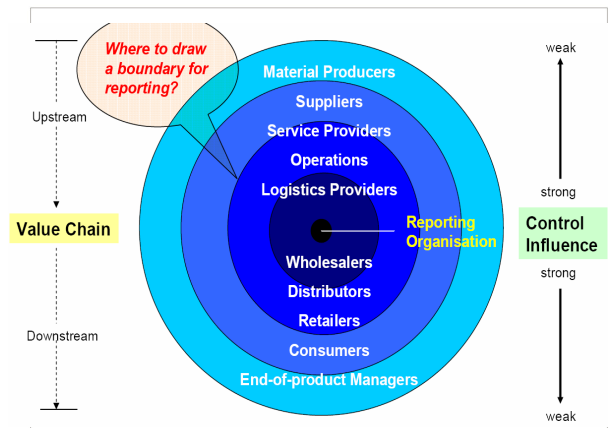
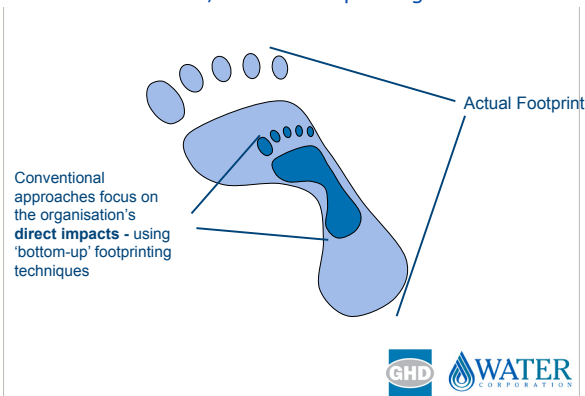


## Why Measure Ecological Footprint (EF)?

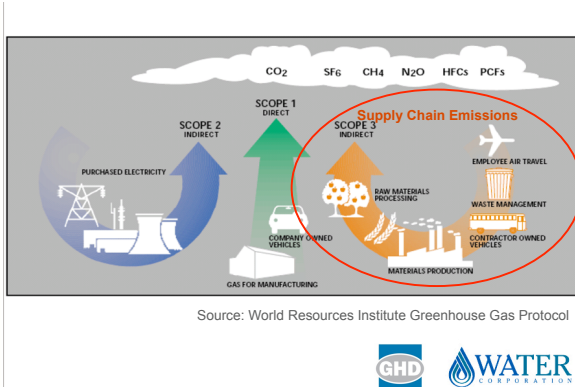
- Ecological Footprint (EF) is an integrated measure of the effects of human activity on the natural environment, which is a fundamental element of sustainability
- EF helps businesses understand the 'flow through' effects of their suppliers' footprints, e.g.:
  - Impact of increasing input costs (energy, water, etc)
  - Carbon costs of commodities
- Measuring EF helps identify opportunities for supply chain efficiencies and cost reductions, and to understand supply chain risks and liabilities... identifying TBL 'hot spots' in the supply chain
- Helps address the disclosure demands from external stakeholders - government, customers, community; & demonstrates responsibility, avoids "greenwash"
- Responds to Extended Producer Responsibility / Product Stewardship expectations



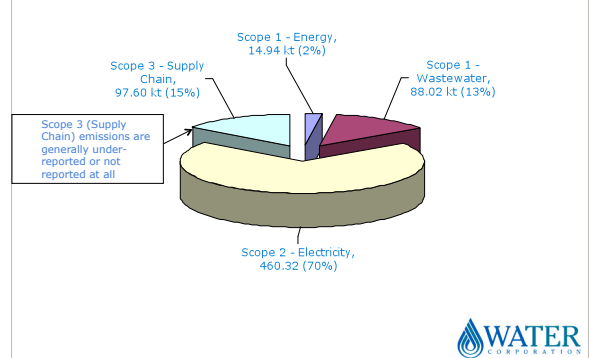
## TBL/Carbon Footprinting



## Carbon Footprinting



## Water Corporation Carbon Footprint 2007-08 (ktonnes CO<sub>2</sub>-e)



# The University of Sydney

## ISA Approach

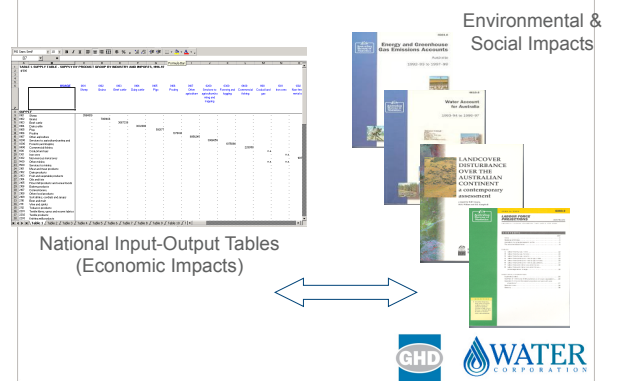


### The ISA TBL Assessment Tool (Currently known as Bottomline<sup>3</sup>)

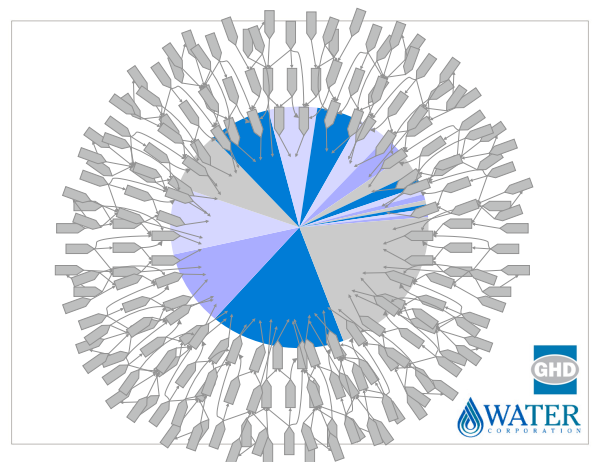
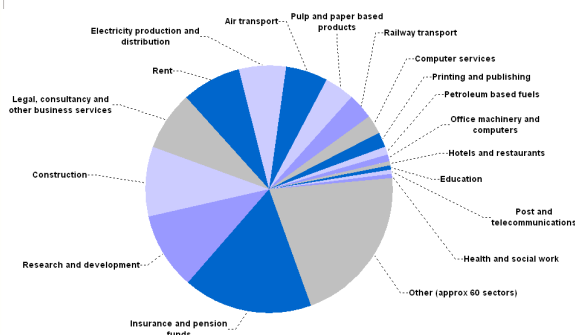
- Builds upon, and adds depth to existing methods for calculating supply chain footprints
- Uses a hybrid approach, with straightforward data inputs:
  - Simply measured spatial data for on-site impacts
  - Expenditure data to determine supply chain impacts
- Overcomes the 'Boundary Problem' – see later



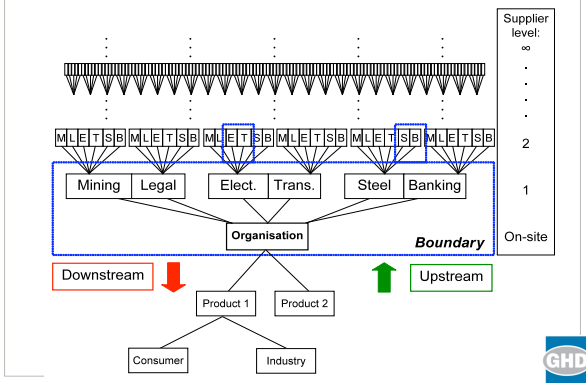
### An Integrated Assessment



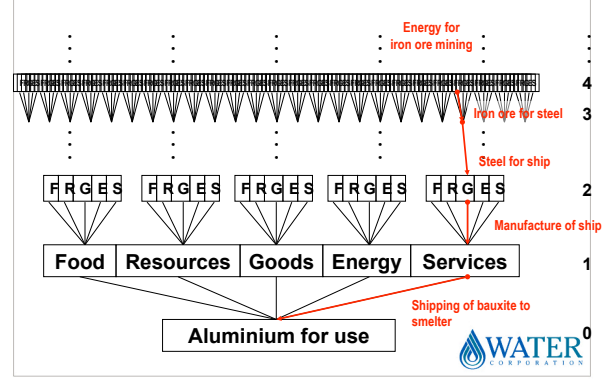
### Generic Organisational Expenditure Profile



## Unraveling the Supply Chain



## Example: Aluminium Manufacturing

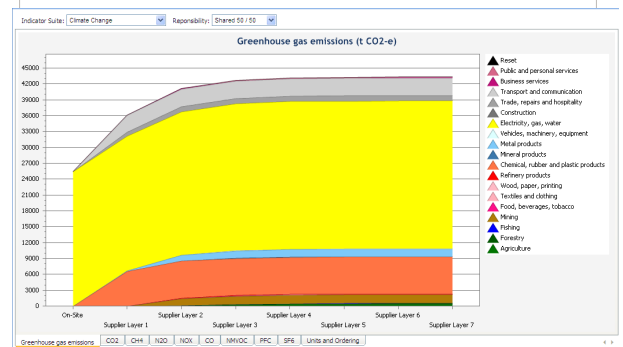


## Benefits of the ISA Approach

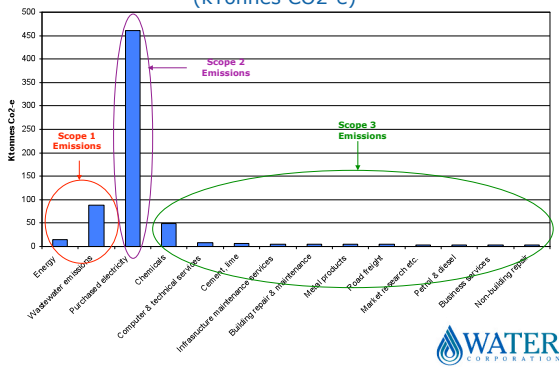
- Assesses on-site and supply chain impacts, other measures
- Can be applied at all levels, e.g.:
  - An individual project, product or service
  - A single entity in the supply chain
  - A strand in the supply chain
  - A sector in the supply chain
- Provides enhanced disclosure to the organisation's stakeholders, e.g.:
  - Customers and interest groups, including regulators
  - Investors, Government and financial institutions
- Enables scenario testing of supply chain decisions
- ISA - the **only** method that measures the Triple Bottom Line of any entity in an integrated, boundary free manner



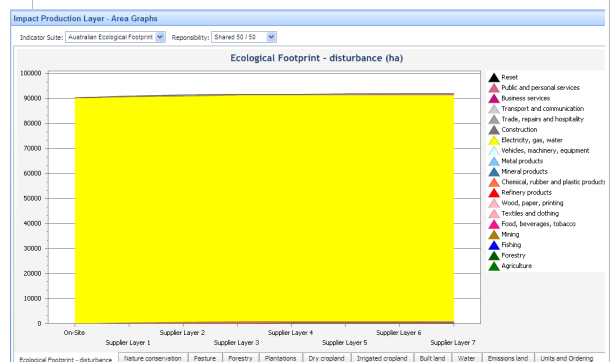
## Production Layers – Greenhouse Gas Emissions CO<sub>2</sub>-e



## Water Corporation's Greenhouse Gas Profile, 2007-08 (kTonnes CO<sub>2</sub>-e)



## Production Layers – Ecological Footprint (ha)



### ISA Tool – Summary of its Sustainability Assessment Capability

- ❑ Over 100 TBL indicators to choose from (energy, employment, government revenue, water use, toxicity and many more)
- ❑ Efficient and cost effective – suitable for organisations of all sizes
- ❑ Can be applied at various levels, e.g.:
  - An individual project, product or service
  - A single entity in the supply chain
  - A strand in the supply chain
  - A sector in the supply chain
- ❑ The **only** method that measures the Triple Bottom Line of an entity in an integrated, boundary free manner



### Acknowledgements

- Dr Chris Dey and Dr Joy Murray, Integrated Sustainability Analysis, Physics, University of Sydney
- Sally-Anne Rowlands and Bill Grace, GHD
- Adam Lovell and Nathan Smith, WSAA
- Sergey Volotovskiy, Natalie Roe, Geoff Down, Tony Carlino, Alan Carter, David Luketina – Water Corporation

