



# Review of non-market values of water sensitive systems and practices

Water sensitive systems and practices provide multiple intangible benefits, such as improved liveability, climate change mitigation, and ecological value. The benefits of these services are often not considered when making investment decisions due to a lack of monetised values for these services.

## Introduction

The adoption of water sensitive systems and practices can provide tangible benefits that are easily quantifiable, such as additional water supply, and intangible benefits that are difficult to quantify, such as amenity value. As a result, intangible benefits are often ignored in the formal investment decision framework. The CRC for Water Sensitive Cities' (CRCWSC) [Integrated Research Project 2](#) (IRP2) aims to identify and quantify these intangible benefits, and produce accepted and well-aligned tools that can be used to inform decision making at multiple levels in public and private sector organisations.

## Non-Market Valuation (NMV) Methods

Economists have developed a range of specific valuation tools that can be used to estimate the monetary values that people place on such intangible benefits. These tools are called NMV methods (see Figure 1).

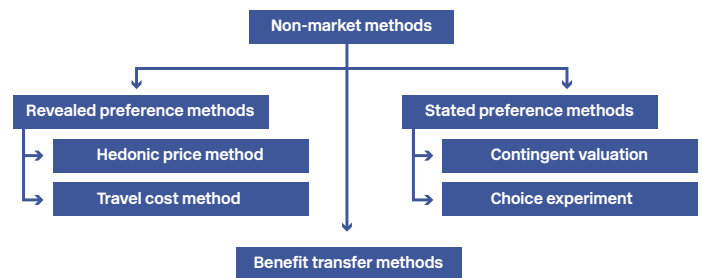


Figure 1: Main NMV methods

## Data Collection

The CRCWSC's IRP2 has carried out an extensive review of existing studies that have published estimates of the intangible benefits due to the use of water sensitive systems and practices. More than 180 studies were reviewed and categorised into eight main themes. The studies reviewed include many Australian studies, but the literature review scope was global, and considered all papers published since 2000 (see Figure 2).

**Australian studies** - bubbles with patterns;  
**International studies** - bubbles with solid fill.

Size of each bubble shows the percentage of studies under each theme.

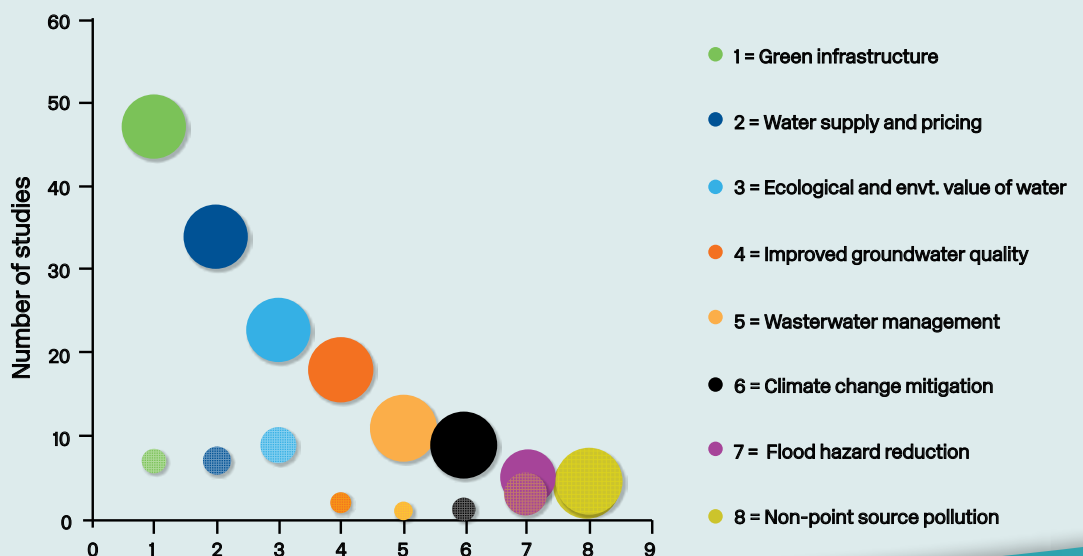


Figure 2: Distribution of studies across the eight themes



## Benefit Transfer

Conducting original NMV studies is the best way to estimate monetary values of intangible services. However, when decision makers face time and resource constraints, then the extrapolation of existing NMV studies to new contexts can provide an approximation on the value of the benefits. This process of systematically mapping existing NMV information to a new context is called Benefit Transfer.

## Non-Market Values Database

To assist benefit transfer, the CRCWSC's IRP2 has developed a database containing key information from the NMV studies that have been reviewed. Industry and academic experts have been consulted on the design and functionality of the NMV database to ensure best practice and to accommodate end-user requirements. In Table 1 the potential and limitations of the NMV database are summarised in terms of the eight major themes.

Table 1: Existing non-market valuation (NMV) studies categorised into 8 main themes

<b>Green infrastructure</b>	There are many NMVs available for amenity benefits, followed by recreation benefits. There is limited health benefit information available.
<b>Climate change mitigation benefits</b>	There are NMVs for urban heat island mitigation (including productivity), carbon sequestration and reduced carbon emissions.
<b>Ecological and environmental value of water</b>	There are many NMVs, although most are from the USA. Evaluations were generally restricted in their focus to specific sites.
<b>Non-point source pollution reduction</b>	Most studies focus on the abatement cost (based on life cycle cost analysis) of removing pollution from waterbodies / storm water.
<b>Flood hazard reduction</b>	There are some broader non-market benefits of different flood management options through stormwater which can potentially be used.
<b>Improved groundwater quality</b>	There are partial NMVs of direct use values of different groundwater systems. Available estimates are related to the well-being of community.
<b>Water supply and pricing</b>	There are NMVs on water supply and pricing. People's willingness to pay also depends on the baseline water supply and demographics.
<b>Wastewater management</b>	There are many NMVs, but mostly for outdoor and non-contact uses. Wastewater recycling projects could provide other external benefits.

## Further reading

Gunawardena, A., Zhang, F., Fogarty, J., Iftekhhar, M. S., (2017). [Review of non-market values of water sensitive systems and practices: An update](#). Melbourne, Australia: Cooperative Research Centre for Water Sensitive Cities.

Zhang, F., Fogarty, J. (2016) [Nonmarket Valuation of Water Sensitive Cities: Current Knowledge and Issues](#). Melbourne, Australia: Cooperative Research Centre for Water Sensitive Cities.

## Further information



**Dr Sayed Iftekhhar**  
School of Agriculture and Environment  
The University of Western Australia  
Ph: (08) 6488 4634  
[mdsayed.iftekhhar@uwa.edu.au](mailto:mdsayed.iftekhhar@uwa.edu.au)



Level 1, 8 Scenic Blvd  
Monash University, Clayton  
Victoria 3800, Australia



[info@crcwsc.org.au](mailto:info@crcwsc.org.au)



<https://watersensitivecities.org.au/content/project-irp2/>



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