Externalities and Opportunity Costs

The opportunity cost is the value of something that is forgone in order to achieve something else. In resource management this is the value that is lost by pursuing one use of a resource at the expense of a possible alternative use. All resources can have an alternative use, which means that every action has an associated opportunity cost.

An externality arises if the activity of one person is affecting another person without compensation. An adverse effect is called a negative externality and a beneficial effect is known as a positive externality. The discharge of nutrients from farmland can end up in water bodies which then contributes to declining water quality. This can have negative impacts on the users of water bodies (e.g. use for drinking water or recreational activities) which is an example of a negative externality.

Targets

From 2010:

Any assessments of regional economic value factor In externalities (e.g. water quality treatment costs, climate change emissions, changed recreational values) as well as the costs of environmental repair and restorations.

By 2020:

Measures in place to assess the economic wealth benefits of freshwater biodiversity (and other ecosystem services) and recreational use of water.

By 2040:

Recognised and reported on the employment benefits (direct and indirect) that arose from the CWMS.

Progress to 2020

Not started | **Started** | Progress | Good progress | Achieving

A summary of the estimated opportunity costs and externalities as they have been costed through the sub-regional planning processes includes the following examples are a mix of both capital and operational costs;

Plan Change 1 (Selwyn Waihora)

- The cost of impacts on drinking water is calculated using the cost to deepen wells to achieve a secure drinking water source to avoid drinking shallower groundwater. The capital cost for the owners of potentially affected bores is $2.5 million.
- The Managed Aquifer Recharge (MAR) and Targeted Stream Augmentation (TSA) have been proposed as tools to help achieve an imbalance between quantity (declining groundwater levels and lowland streams flows) and quality (high concentrations of Nitrate-nitrogen in groundwater and lowland streams) outcomes for this area. The estimated cost is $1.1 million.
- Te Waihora/Lake Ellesmere has huge amounts of phosphorus sediments on the lake bottom. The cost of inactivating these phosphorus sediments is estimated to be $5 million.
- A suite of non-regulatory measures was costed to exclude stock access to water bodies, riparian area restoration, restoration of ecosystem in waterbodies and to protect spring heads. The total cost for these measures, including cost of land for riparian margins, is in the order of $142 million.

Plan Change 2 (Hinds/Hekeao Plains)

- Potential cost for bottled water for pregnant and breast feeding population (for 15 months) to avoid high levels of Nitrate-nitrogen concentrations in drinking water ranges from $0.32–1.42 million.
- The cost of impacts on drinking water is calculated using the cost to deepen wells to achieve a secure drinking water source to avoid drinking shallower groundwater. The capital cost for the owners of potentially affected bores is $11.2 million.
- Three types of impacts of agricultural activities; health risk of pathogens, excess nutrients and low flow impacts of irrigation were assessed and costs for improvements to rivers and streams ranges from $13-29 million.
- A suite of non-regulatory measures was costed to exclude stock access to water bodies (fencing), riparian restoration, habitat restoration, spring head protection, river mouth opening and to protect remnant indigenous dryland biodiversity. The total cost for these measures is in the order of $76 million.