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AGRICULTURE, ENVIRONMENT AND MARINE

The value of bathing waters and the influence of bathing water quality

Introduction

The Scottish Government commissioned Collingwood Environmental Planning Limited (CEP) in association with Economics for the Environment Consultancy (eftec) to undertake a research project in Scotland to investigate **the value of bathing waters and the influence of bathing water quality**. The project ran from May 2017 to March 2018.

The overall aim of the research was to provide a detailed and quantifiable socio-economic understanding of the value of Scottish bathing waters and the influence of bathing water quality (BWQ) to bathers, beach users and to the national and local economies. Four specific research objectives were also addressed, as follows:

1. To assess the benefits of bathing waters and the value of bathing water quality at a local and national scale;

2. To assess the impact of the bathing water quality classification signs / symbols;

3. To understand and assess the benefits (or costs) of an improvement (or deterioration) in bathing water quality classification; and

4. To make recommendations for policy and practice, by providing recommendations on the management and assessment of designated bathing water sites, and the overall value of bathing water quality in Scotland.

The project brought together a number of perspectives on what the value of beaches and bathing water quality mean to users of beaches in Scotland. A mixed methods approach was adopted which allowed the economic, recreational, social and emotional value of bathing waters to be investigated, providing a holistic understanding grounded in people's experience.

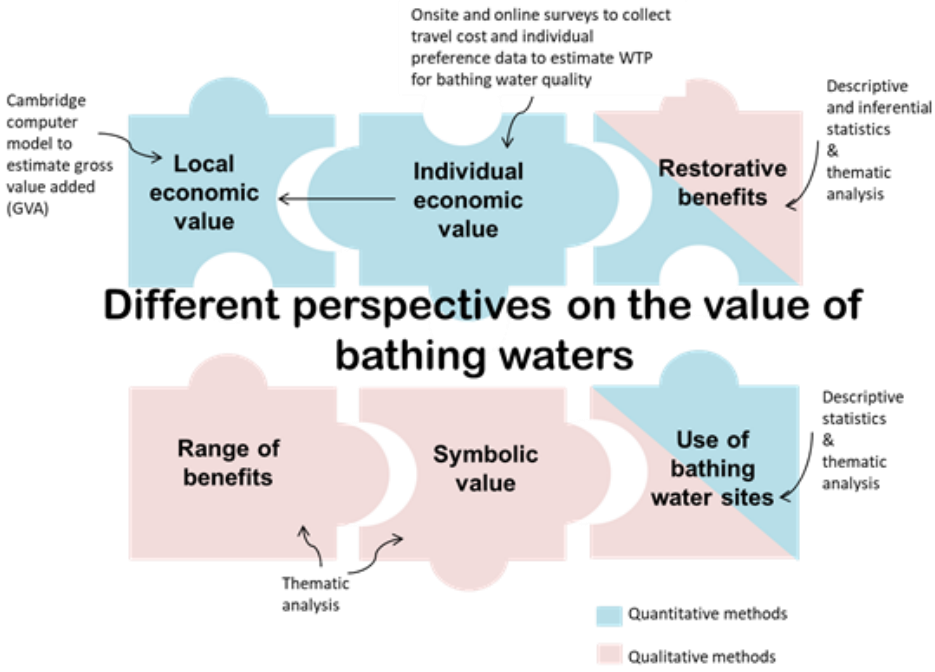
Context for the research

The European Union (EU) revised Bathing Waters Directive (rBWD) (2006/7/EC) requires member states to monitor, classify and manage bathing waters and provide information to members of the public on BWQ. Bathing waters are defined in the rBWD as "*any element of surface water where the competent authority expects a large number of people to bathe*"[1]. Sites are assessed against bacteriological quality standards and classified as either: 'excellent'; 'good'; 'sufficient'; or 'poor'.

The rBWD requires member states to achieve a bathing water classification of 'sufficient' and above for their designated sites. A critical provision within the rBWD means that sites classified as 'poor' over five consecutive years can receive a 'permanent advice' against bathing, with potential implications for the uses, activities and benefits provided / supported by the site. Scotland has 86 designated bathing waters. In the most recent bathing water classifications (2017/18), 11 of these sites were classified as 'poor'.

The challenge of implementing the rBWD lies in balancing the costs to stakeholders (i.e. the water industry, the agricultural sector, other economic sectors and the general public) of maintaining BWQ classification at 'sufficient' and above at a designated bathing water site against the costs of not maintaining 'sufficient' status. A status less than significant may lead to costs such as loss of tourism revenue and drop in informal recreation if visitors are put off by lower water quality and, in particular, permanent advice against bathing. These costs are less well understood than the costs of maintaining BWQ. This is because: (i) the range and (monetary) value of benefits provided by bathing waters is not fully understood; and (ii) it is not known how members of the public would respond to permanent advice against bathing. These are the key gaps that were investigated in this research project.

Figure 1: Relationship between different perspectives on the value of bathing water and methods for their investigation



[1] http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2006:064:0037:0051:EN:PDF

Methodology

A mixed methods research design was adopted to tease out different conceptions and perspectives concerning the 'value' of bathing waters (see Figure 1). Within this, a fieldwork component was undertaken at five case study bathing water sites selected to capture a range of different rBWD statuses and site types (see Table 1).

Table 1: Details of the five case study bathing water sites

Site	Local authority	rBWD status[2]	Site type
Nairn (Central)	Highlands	Poor	Coastal town
Ayr (South Beach)	South Ayrshire	Poor	Coastal resort
Troon (South Beach)	South Ayrshire	Good	Coastal resort
Portobello (West)	City of Edinburgh	Poor	Coastal town
Gullane	East Lothian	Excellent	Coastal village

An evidence review was undertaken at the start of the project to understand the current state of knowledge against the research questions being investigated and to inform other aspects of the project. Three key primary data collection methods were used:

1. An 'onsite' survey with beach-users at the five case study bathing water sites (n=516) comprising 15 minute interviews with a minimum of 100 participants per site;
2. An 'online' (web based) survey with a nationally representative sample (n=1,013); and
3. Focus groups at each of the five case study bathing water sites with both community members and local businesses.

Summary of key findings

Main activities undertaken at bathing water sites. Walking, relaxing, dog walking and socialising / spending time with friends and family were the main activities undertaken by both the onsite and online surveys. Water based immersive and non-immersive activities were also identified in both surveys but less frequently.

Bathing waters as economic assets. The local economic impact analysis based on the onsite survey data estimated total local economic benefits across the five case study sites as follows: (i) £19.4M local business turnover supported; (ii) 263 Full Time Equivalent (FTE) jobs related to visitor spend; and (iii) £8.8M in Gross Value Added (GVA).

Restorative benefits of bathing waters. Results from the onsite and online surveys revealed that the majority of respondents find beaches and bathing waters to be beneficial in terms of

[2] rBWD status as per the 2015/16 bathing season

physical and psychological restorativeness (e.g. in terms of making visitors feel revitalised, calm and refreshed).

Focus groups reveal the multiple benefits of bathing waters. Evidence from the focus groups revealed how the local beach and the sea is integral to the recreational, social, wellbeing, community and economic benefits that local communities (and businesses) enjoy. Most of the participants visit their local beach at least a few times a week.

Limited awareness of rBWD designation and BWQ status. Results from the onsite survey revealed that the majority of respondents (60%) were not aware that the beach they were visiting was a designated bathing water. Of the 40% that did know, there was limited and / or incorrect awareness of the site's BWQ status (most respondents overestimated BWQ).

Awareness / use of rBWD signage. Responses to both surveys and discussions at the focus groups suggest that beach users do not pay much attention to rBWD signage (electronic or otherwise). For example, a high proportion (72%) of online survey respondents said that they hadn't seen / don't remember seeing any signs and, crucially, that they didn't look for them.

Behavioural response to 'permanent advice' against bathing suggests limited concern about BWQ. The surveys showed that the majority of respondents would not change their decision to visit the relevant beach and the frequency of visits in future if they saw a 'permanent advice' sign against bathing. From this, it is reasonable to assume that permanent advice against bathing would have a somewhat minimal effect on recreational opportunities and visit patterns at Scotland's bathing water sites.

Deterioration in BWQ impacts the quality of visits if not the quantity. Statistical analysis of the onsite and online survey data revealed that perceived BWQ was found to be a key predictor (statistically significant) of wellbeing outcomes linked to the restorativeness benefits of bathing waters. This means that although respondents do not expect to visit significantly less often due to permanent advice against bathing, the quality of the visit would be diminished as the perceived restorative benefits received would be less.

Limited concern about health impacts of BWQ among focus group participants though appetite for more / better BWQ information. Evidence from the focus groups showed that most participants who went into the water or who used the beach recreationally in areas where the BWQ was 'poor' were not concerned that current BWQ could potentially impact their health. However, there was also a general perception that existing BWQ information is poor. This was linked to an appetite for more / better information, particularly for those participating in water-based activities (e.g. wild swimming).

Welfare benefits of visits to the five case study bathing waters can be expressed in monetary terms. The estimated average willingness to pay (WTP) (all sites) was £8.90 per person per visit. On average, onsite survey respondents make around 40 visits to the bathing water per year meaning an annual expenditure of £356 per respondent. Across the five sites, this equates to a total annual estimated recreational value of £12.7M. These represent conservative proxies for the per person trip / annual and total annual monetary values of the recreational and access benefits enjoyed by visitors to the five case study sites considered in this research.

Reduction in visits and loss of recreational value in the event of advisory against bathing. The results suggest that around 5% of onsite respondents and 29% of online survey respondents

would visit less often, resulting in reductions in annual visits of 22,436 and 358,567, respectively. This equates to an estimated loss of recreational value of between £0.2M (onsite) and £3.19M (online) per year (applying the estimated WTP per visit of £8.90). These values can be interpreted as the benefits of meeting 'sufficient' status (i.e. not displaying permanent advice against bathing).

Amount households are willing to pay for BWQ improvements. Average WTP per household for a 1% reduction in the number of Scottish beaches failing to meet BWQ standards were estimated at £0.93 per household per year or £2M per year for all households in Scotland. This can be interpreted as the value of the benefits associated with this level of improvement in BWQ standards.

Households value improved levels of BWQ. The online survey shows that the higher the bathing water status of the most visited beach, the higher respondents are willing to pay to maintain it. The greatest value is attached to ensuring bathing waters that meet 'excellent' status. Respondents are indifferent to improvements at lower levels of bathing water quality but have significant WTP for moving from 'poor for 5 years' to 'excellent' of approximately £85 per household per year. This implies that in future, while achieving 'good' quality may become a policy objective, the additional benefits associated with this change may be small.

Focus group participants were more affected by a change in BWQ than survey respondents. Results from the onsite and online surveys suggest that there will be a small decline in the number of visits due to deteriorationin BWQ and hence a relatively small cost. However, the quality of the visits made may decline further on the basis of the strength of feeling expressed in the focus groups in response to the possibility of permanent advice against bathing.

Key learning about the overall value of BWQ in Scotland

Local economic benefits associated with visits to case study bathing water sites. Although it is not appropriate to extrapolate the local economic impact estimates from the five case study sites (£19.4m business turnover, 263 FTE, £8.8M GVA), they give a sense of the potential magnitude of the economic benefits of Scotland's bathing waters, considering that there are 86 designated sites in total, and there are other beaches that are not designated but still visited.

The value of recreational visits to case study bathing water sites. Data from the onsite survey revealed that the estimated WTP for recreational visits (the welfare value) to the five case study bathing water sites is: (i) £8.90 per person per visit; (ii) £356 per person per year; or (iii) £12.7M per year for all visits across all five sites.

The value of improving BWQ standards at the national level. Reducing the number of Scottish beaches failing to meet BWQ standards by 1% would result in benefits equating to £2M per year. This value can be used alongside the costs of meeting the same objective in cost-benefit analyses (CBA) to inform policy decisions.

The overall importance of Scottish bathing waters. Visits to the beach were shown to be important for the respondents: nearly 50% of them visit more than once a month (across both onsite and online surveys). Respondents do various activities at the beach and receive various multiple benefits. The benefits received are significant, especially considering that physical and mental health and wellbeing benefits (potentially the largest benefits delivered) have not been elaborated on in this study (beyond restorative benefits).

Recommendations for bathing water management

Prioritisation of management / investment. There is an argument for prioritisation of beach / BWQ management intervention and investment towards the types of activity people are most interested in undertaking on the beach / at the bathing water site (e.g. ensuring adequate provision of dog waste bins).

Managing pressures on bathing waters / the marine environment. Evidence from the focus groups suggests that members of the public have some concerns about the impact of development (as a pressure) on BWQ. These are legitimate concerns and development should be managed sensitively to ensure that BWQ (and other aspects of the water environment) are not adversely affected.

Improvements to BWQ information. Results from both surveys suggest that awareness of bathing water designation is low and that there is limited concern about BWQ and permanent advice against bathing, mainly because respondents don't go in the water anyway. There may be a case for more targeted BWQ information towards the smaller proportion of bathing water users / user groups who do go in the water. This could include awareness raising activities aimed at 'active user' groups such as surfers about the health risks associated with on-water immersive / non-immersive activities in poor BWQ.

The views expressed in this report are those of the researcher and do not necessarily represent those of the Scottish Government or Scottish Ministers.

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