

Morsa Case Study Fact Sheet

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The heart of AquaMoney ([see Policy Brief No. 1](#)) are 11 case studies from different European countries. Based on these case studies, AquaMoney developed guidelines for benefit transfer. This policy brief will present the main results of the Morsa Case study. The idea is to give policy makers an overview of the range of values that can appear and how the perception of environmental problems in the different countries differs.

The Norwegian Case Study

An internet survey was conducted on 1113 households in Østfold and southern municipalities of Akershus in the summer of 2008. A total of 160,952 households live within the 27 municipalities included in the study area. The survey focused on households' recreational use of water bodies and their willingness to pay for improvements in lake ecological status. The main objective of the study was to evaluate at what distance from improved lakes, households willingness to pay falls to zero. This is essential to correctly determining how large a population has benefits from measures under the Water Framework Directive, and making correct estimates of total benefits of a programme of measures. Valuation methods aimed at capturing recreational use values and also non-use values. The largest lakes in Østfold in three different catchments (Morsa, Glomma and Halden) were considered, Alternative valuation methods – contingent valuation versus choice experiments - are compared for two lakes in particular in this report (Vestre Vansjø and Storefjorden, Morsa catchment). Valuation data are available for all lakes illustrated on the map of the study area.

This Policy Brief will describe:

- Water quality status of lakes
- Survey response
- Use frequency and water quality suitability thresholds
- Willingness to pay per household per year
- Sensitivity of willingness to pay to the scope of lake improvements
- Distance decay and spatial extent of willingness to pay
- Total willingness to pay for improving Lakes Vestre Vansjø and Storefjorden

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Water quality status of lakes

In the study water quality in the Morsa catchment, Glomma catchment and Halden catchments were characterised using a four level water quality ladder with colour codes from „red“ (poor ecological status) to „dark blue“ (very good ecological status). Smaller lakes in these catchments and, lakes in other catchments were not evaluated (shown in light blue).

According to Vann-Nett (<http://vannnett.nve.no/>), Norway's official WFD website, all lake area in the Morsa catchment are in current moderate status and at risk of not reaching good ecological status by 2015 (illustrated in red and yellow in the map). Morsa's water quality problems are almost entirely due to eutrophication. Agriculture is a significant pollution pressure on almost the entire lake surface area. The situation for the largest lakes in the Halden catchment is similar. The lakes in the Glomma River catchment were characterised as currently in „good ecological status“ (green) for the purposes of this case study. Residents in Østfold were asked to consider their willingness to pay for improvements from this baseline current situation shown in the map.

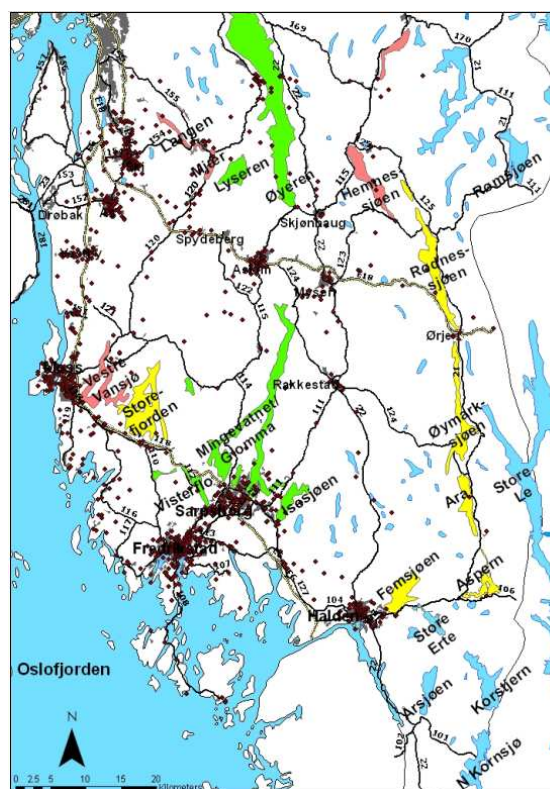
Survey response

The web-survey was sent to the whole of TNS Gallups panel in the study area for a total of 3 358 households. Response rate after a week of fielding the internet survey was 33.7% for a total 1133 respondents. About 60% of the sample had positive willingness to pay for water quality improvements. About 10% of the sample protested to any form of valuation questioning. The remaining approx. 30% of the sample had a combination of zero WTP because they e.g. did not use lakes for recreation and because of protest responses.

Use frequency and water quality suitability thresholds

Currently, households make an average 49 visits

per year to water bodies in Østfold-Akershus; 1.5 visits/month to rivers, 2.0 visits/month to lakes and 4.2 visits/month to the seaside during summer months. Valuation studies using the official Norwegian (SFT) guidelines for use suitability tend to over-emphasise the impact water quality improvements may have on suitability for recreational uses. We observed that household activities such as bathing boating and fishing were considerably more tolerant of poor water quality than assumed by official guidelines.



Map showing the distribution of households interviewed in Østfold and Akershus and current lake eutrophication status (red, yellow, green and blue classes).

Willingness to pay per household per year

Willingness to pay (WTP) for an improvement in lakes Vestre Vansjø and Storefjorden to „good ecological status“ or better is estimated at





between 1070-2000 NOK per household per year, using two different valuation methods. Households in Østfold currently pay on average KR 4000/yr. per household for water and sanitation.

Sensitivity of willingness to pay to the scope of lake improvements

Households' willingness to pay is sensitive to the number of lakes improved (one versus two lakes were tested) only in special cases: when the lake that is their favourite recreation location; when an improvement is promised, but then scaled down. Recreational values of lakes seem to predominate over non-use values. Households' willingness to pay is (highly) sensitive to how large the improvement in lake quality is for certain lakes, especially those in the lower part of the three catchments. There are nonetheless great differences between willingness to pay for lakes in adjacent catchments such as Morsa, Glomma and Halden.

Distance decay and spatial extent of willingness to pay

Willingness to pay drops by as much as 72 NOK/kilometre or as little as 25 NOK/kilometre depending on what valuation method is used (for improvements from current status to good ecological status or better) . For the lakes in lower Morsa catchment this means that the 'limit' to how far away households are willing to pay for a lake improvement lies between about 30 km and 60 km depending on the method. The number of households affected by this magnitude of improvement varies between roughly 96 000 and 130 000, respectively.

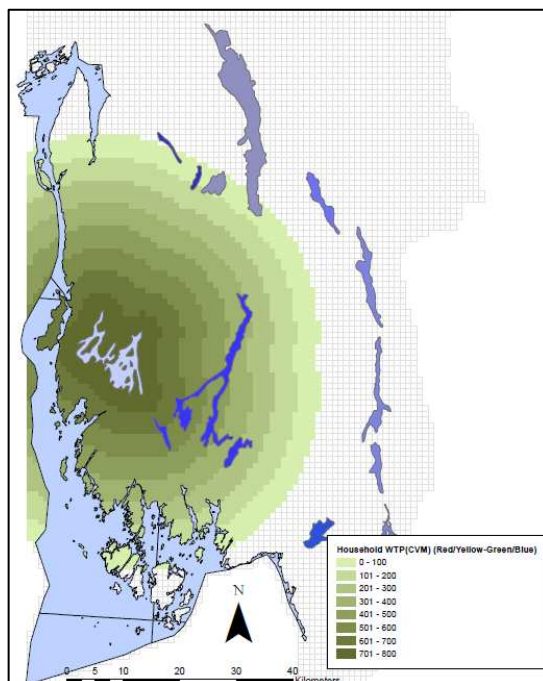
Total willingness to pay for improving Lakes Vestre Vansjø and Storefjorden

A conservative estimate of the annual willingness to pay for improvements to "good ecological status" is roughly 21 million NOK/year, using the contingent valuation method. Using the choice experiment method, total willingness to pay for households affected by lake improvements can be estimated as high as 113 million NOK/year. Using the results of the survey we can make similar

calculations for other lakes in Østfold.

Summary

In Norway there is a difference between a valuation study attempting to place a monetary estimate on benefits of water quality improvements, and the institutional arrangement that is actually used to finance the measures under the Water Framework Directive. A number of measures will be implemented by municipalities (e.g. sewage fee financed), but measures focusing on agricultural run-off – the main pressure on ecological status - will mostly be financed by state institutions such as Ministry of Agriculture (e.g. taxation financed). Valuation studies are therefore unlikely to be used directly for setting e.g. water and sewage pricing in Norway. Nonetheless, results of the valuation study may be useful for illustrating the "area of concern" in the population for different lakes and motivating municipal cooperation in water management also across catchments.



Map showing distance decay of willingness to pay for Vansjø-Storefjorden Lakes in the Morsa catchment based on conservative estimate of the contingent valuation method.

Further information can be found in the Case Study Reports and in further Policy Briefs on:

www.aquamoney.org

