

Environment and Resource Economics

Eliciting public preferences for cultural landscapes and forests – A Contingent Valuation Survey

Extensive tree planting for carbon sequestration purposes will affect landscape aesthetics, recreation possibilities and biodiversity levels. The economic value of these ecosystem services must be identified and included for a complete analysis of climate forests as compared with cultural and more natural landscapes. The KLIMALAND project at Statistics Norway (SSB) will explore and document the public's preferences for changes in ecosystem services from Norwegian cultural landscapes caused by the planting of evergreen, climate forests and from alternative land use management. This project will use and combine economic valuation methods (stated preferences) and forest related social indicators for landscapes. The goal of the project is to gauge people's preferences for the changes in ecosystem services associated with planting of climate forests.

For this project, a Master student may take part in designing a contingent valuation survey for cultural landscapes and forests. The survey will include economic valuation questions (willingness to pay) related to the cultural values of landscapes using contingent valuation and choice experiments. The survey will further include questions that will enable construction of social indicators for forests and for cultural landscapes (for a review see e.g., Kajala et al., 2007). Hence, the survey combine well-tested stated preference methods in economic research (Bateman and Willis, 1999; Louviere, Hensher and Swait, 2000), which are well suited to assessing trade-offs, with the landscape and forest management literature that has long investigated features and indicators characterizing forest and cultural landscapes that people prefer for different uses (e.g. Gundersen and Frivold 2008).

The Master thesis may describe standard survey development methodology Internet surveys (Dillman, Smyth and Christian, 2009) as well as challenges in designing a valid contingent valuation survey. As the survey will be conducted in Norwegian, the master student should be fluent in Norwegian. The student will take part in all parts of designing the contingent valuation survey from focus groups to testing out the survey and analysing pilot web data, which will be collected in collaboration with TNS Gallup.

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Benefit-Cost analyses (BCA) of measures that reduce environmental impacts of highway- and tunnel wash water runoff

Nordic Road Water (NORWAT) is a four-year research and development programme under the Norwegian Public Roads Administration (NPRA, Statens vegvesen) (2012-2015).

The purpose of the agency programme is that the NPRA shall plan, build and operate the road network without causing unacceptable harm to the aquatic environment. NORWAT will focus on what chemical and biological effects polluted runoff water has on the aquatic environment, and what measures are most appropriate to reduce the risk of environmental harm. For more information about the programme and previous published master thesis, visit our website <http://www.vegvesen.no/Fag/Fokusomrader/Forskning+og+utvikling/NORWAT>.

Highway and tunnel wash water runoff may contain high levels of pollutants that may cause deterioration of the aquatic environment (e.g. effects on the ecosystems, reduced drinking water quality, less useful for irrigation, recreation etc.). To reduce the impacts from these polluted runoffs, sedimentation ponds are often built. This measure removes pollutants from the water by sedimentation processes, i.e. particle bound contaminants are settled out from the water phase and retained in the pond. This is just one type of measure and there are several other which may be appropriate as well. In contrast to other topics such as air pollution and noise, traffic related aquatic pollution is only marginally considered in decision-makings in the sense that the benefits and cost of reducing the impacts are not sufficiently accounted for in benefit-cost analyses (BCA).

These impacts are costs to the society that essentially should be accounted for in any BCA of road investments. Unfortunately, there is currently no framework for including these factors in the BCA's for road projects; although they are accounted for in the wider impact assessment as non-monetary impacts. Including these in the BCA, may improve the decision making with regards to which roads to invest in and which abatement measures that that should be implemented to reduce the impact of highway and tunnel wash water runoff in the most efficient way.

The reasons for the lack of an appropriate BCA or cost effective tool for assessing the societal impacts of road run-off and tunnel wash is that the monetary values that the society derives from abatements measures have not been quantified and hence, a BCA that includes has not been possible.

To help resolve these inherent problems, we are soliciting two master theses with the following objectives; which are closely related:

1. Deriving the monetary unit values (costs) of highway and tunnel wash water runoff to the society
2. A benefit-cost analysis of abatement measures using a case example

The relationship between the two topics above is that the second topic will depend on the values derived from the first topic. It is therefore necessary that the chosen candidates are willing to work together.

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Inequality of environmental damage

Vista Analyse is looking for a student to write a Master thesis on the inequality of environmental damage. The student will have access to data on indicators of health related environmental damage in parts or all of the Nordic region. The task is to prepare the data and draw out the distribution of damage in isolation and compared to/merged with, e.g., income/consumption inequality. We are looking for an able and interested student.

Time period: Late fall 2017 and first half 2018.

Terms: Office space and scholarship provided

Please apply with cv, courses and grades to Nina Bruvik Westberg, nbwestberg@vista-analyse.no.

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Multiple organic stressors on industrial fishery – a bioeconomic approach

Ocean health is declining and jellyfish are becoming more abundant in many regions Norway. Fish farming interacts with jellyfish blooms will worsen the water quality, marine ecosystem and habitats. One of the important parts of the project is to study

- What are the economic impacts of jellyfish bloom and aquaculture on industrial fishery and recreational fishery?
- What are the main policy and management implication for aquaculture planning when the jelly bloom incidents are considered?

Bioeconomic modelling could be the main tool. The master thesis will be under the project “Combined effects of multiple organic stressors from jellyfish blooms and aquaculture operations on seafloor ecosystems” (JellyFarm) –funded by Norwegian Research Council. We are looking for a master student who is interested in the research questions mentioned above and would like to write master thesis for the project. The student will get supervision from both NMBU and Norwegian Institute for Water Research (NIVA). We would like the student to start the study in spring 2018 or sooner.

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Effects on CO₂-emissions of the tax free arrangement

The tax free arrangement implies that traveling abroad by plane or ferries indirectly become cheaper, both because the traveler can buy tax free goods cheaper than elsewhere, and because the sales of tax free goods generates income for airports and ferry companies, which can further lead to lower prices of flight and ferry tickets. Thus, such transport can indirectly be stimulated by this arrangement. Flight and ferry transport are important emission sources, and one could ask the following question: To what degree does the Norwegian tax free arrangement affect emissions of CO₂ related to such transport?

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Financing mechanisms for stormwater handling, public financing and incentives for private sector investment – practices in Norwegian cities and other countries

In different cities there are different mechanisms how the implementation of new stormwater measures is financed. And there are also popping up the first solutions how to engage private investors. We want to know how this is done in different Norwegian cities (tentatively: Oslo, Bergen, Frederikstad, Trondheim), as well as in 3-4 cities abroad (tentatively: DK-Copenhagen, NL-Amsterdam, US (Philadelphia and another city), Germany-Munich). But we are not limited to these, so depending on your language skills we can also take into account more countries and cities!

Approach: Conduct a literature review and eventually follow up with interviews with water utilities and other relevant municipal entities.

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Testing of a reverse auction mechanism for implementing stormwater solutions in Oslo Oppgavene omfatter å teste ut en “omvendt auksjons tilnærming” i et boligstrøk i Oslo. Dvs. vi vil spørre beboerne hvilken “minste kompensasjon” trengs for at de er villig å få et regnbed, grønt tak eller regntønne installert på sitt privat tomt. Det blir ikke et fiktiv eksemplet, men det er satt av penger for slike installasjoner i etterkant. En master-student fra NTNU kommer trolig til å se nærmere på det hydrologiske, så det er noen her å jobbe sammen med!

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How will a shift towards a green bio-economy affect cultural ecosystem services?

Available in English:

Gode norskkunnskaper er en fordel pga av kommunikasjon med lokal forvaltning og intervjuer

What will a shift from a fossil fuel-based society to a bioeconomy mean for Nordic ecosystems? In what way will changes in forestry and agriculture affect the benefits society derives from river catchments?

In the coming decades, the green shift will likely change land use patterns and natural processes in river catchments. We currently derive benefits from these catchments through the harvesting of food, water and materials, through regulating services like water and nutrient retention, as well as through recreational and spiritual activities and experiences, called cultural ecosystem services.

The aim of this project is to quantify the value of cultural ecosystem services from selected Nordic catchments. You will collect data by in-person interviews in the field. This will involve asking questions on the different ways people use and benefit from their local environment, how they value these benefits in monetary terms (i.e. Stated Preference methods), and how they feel about possible changes to the ecosystem. The results will allow us to assess whether expected future changes will impact the delivery of these cultural ecosystem services in Nordic catchments. We will adjust the survey questionnaires separately for each catchment, but start from a generic design, and include pre-defined, contrasting scenarios that sketch different but plausible ways a Nordic bio-economy may well unfold.

You will primarily work together with Bart Immerzeel, PhD candidate in the Nordic Center of Excellence BIOWATER, working at MINA at NMBU (www.biowater.info). BIOWATER will offer (limited) funds to cover travel costs.

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To study why sea urchin fishery succeeded in some country while not in the others such as Norway?

The main approach will be using the socio-ecological system e.g a framework developed by Ostrom (2009) and McGinnis and Ostrom (2014), to study the formal and informal institutions that affects the success of small fishery. First attempt could be focus on Nordic areas, Canada and/or Japan.

Background information:

Sea urchin harvesting is an emerging industry in the northern Norway. The last 20 year trial has not been very successful. Currently only one harvester makes profit. The almost whole coast of Northern Norway is covered by urchin dominated barrens. Urchin roe in contrast is a delicacy and has very high price in the international market. The international demand for the product is very high. There are various issues for Norwegian urchin startups earlier such as lack of good transportation from the north to ship the fresh product, no collaboration between the new industry with other fishery logistics, lack governmental support, expensive labor costs etc. On the other hand, harvesting urchins could help to recover kelp forest. Kelp forest supports diverse ecosystem and ecosystem services hence benefit the local communities. Iceland is currently using drawling to harvest the resource to make profit. Canada is a big urchin exporter and successfully manage the urchin population as well as kelp forest. Japan has suffered depletion of the urchin population as urchin is one of the delicacy in the sushi.

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Factors that affect willingness to pay for kelp habitat restoration in Norway, a choice experiment approach.

Background information:

Urchin barrens has dominated the northern coast of Norway in the latest 40 years. Urchins have grazed down almost entire kelp forest along the Northern coast. In contrast to urchin barrens, kelp forest is an important ecosystem, supporting various ecosystem functions and providing many ecosystem services. Recovering kelp forest is therefore important for both ecosystem and local communities in the North. We have carried out a choice experiment survey in Norway. We would like the student to analyze the data set.

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