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**Fredrik Carlsson**
**Mitesh Kataria**
**Elina Lampi**

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SCHOOL OF BUSINESS, ECONOMICS AND LAW, UNIVERSITY OF GOTHENBURG

*Department of Economics*
*Visiting adress* Vasagatan 1,
*Postal adress* P.O.Box 640, SE 405 30 Göteborg, Sweden
*Phone* + 46 (0)31 786 0000

# Do EPA administrators recommend environmental policies that citizens want?

Fredrik Carlsson [a]
Mitesh Kataria [b]
Elina Lampi[c]

**Abstract**
We investigate whether Swedish Environmental Protection Agency (EPA) administrator preferences regarding improvements in environmental quality differ from citizen preferences. The scope and significance of the possible difference are assessed by conducting identical choice experiments (CE) on a random sample of Swedish citizens and a random sample of administrators working at the Swedish EPA. The experiment concerns two environmental quality objectives: a Balanced Marine Environment and Clean Air. The EPA administrators were asked to choose the alternatives they would recommend as a policy, while the citizens were asked to act as private persons. We find that the rankings of attributes differ between the two groups, and that there are significant differences in the willingness to pay (WTP) for particular attributes. EPA administrators have a higher WTP for five out of the seven attributes, and in some cases the difference is not only significant but also substantial. We also asked the administrators to motivate their CE choices, and the main motive was ecological sustainability.

**Key words:** Choice experiment, environmental policy, administrators, citizens.

**JEL classification:** D61, Q51, Q58

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[a] Department of Economics, University of Gothenburg, Box 640, SE-40530 Göteborg, Sweden. Tel: + 46 31 7864174, e-mail: fredrik.carlsson@economics.gu.se

[b] Mitesh Kataria: National Environmental Research Institute, University of Aarhus, Frederiksborgvej 399, PB 358, DK-4000 Roskilde, Denmark Tel: +45 4630 1887, e-mail: mika@dmu.dk

[c] Department of Economics, University of Gothenburg, Box 640, SE-40530 Göteborg, Sweden. Tel: + 46 31 7861393 e-mail: elina.lampi@economics.gu.se

## 1. Introduction

Many people have an attitude of distrust towards politicians and administrators (bureaucrats) responsible for public policy. Part of this distrust could be related to uncertainty about whether administrators serve their own self-interest or act in the interest of the public.[1] Another explanation for this distrust is that politicians and administrators are considered to be distanced from people in general, creating policies and making decisions that are not in line with the desires of citizens. However, it can be argued that certain policies in fact should be paternalistic and to some extent ignore the preference of the general public (O'Donoghue and Rabin, 2003; Johansson-Stenman, 2008). For example, the fact that people working with environmental management have more information about environmental problems than the public may justify paternalistic behavior to some degree. According to studies in psychology, decision makers in the public sector have preferences that are similar to those of the general public when it comes to policies for the reduction of greenhouse gases, while decision makers in the private sector have preferences that are different (Nilsson et al., 2004; Nilsson and Biel, 2008). Moreover, the decisions of those who work in the public sector are based on their private norms regarding environmental values (Nilsson et al., 2004).[2] von Borgstede et al. (2007) show that also individual professional roles in an organization, regardless of whether the organization is private or public, matter for the acceptance of climate policy measures. Environmental managers, planners, and economists all have different patterns of acceptance; environmental managers are significantly more willing to accept high-cost measures than both planners and economists. Additionally, for decision makers in the public sector, the degree of acceptance of policies is positively correlated with the expressed environmental concern.

However, very little attention is given in economics to how the policy recommendations of those who work with policy and management of the environment relate to citizen preferences.[3] There is also a lack of knowledge regarding similarities and differences between

[1] This viewpoint is a central element in public choice theory (Mueller, 2003); for example Niskanen (1971) where the bureaucrat is described as a budget-maximizer, and Brennan and Buchanan (1980) where politicians and bureaucrats collaborate and try to maximize the size of the public sector.

[2] Ordinary citizens might also act as a policy maker when answering a stated preference survey. According to Nyborg (2000), people have multiple preference orderings. A respondent might take the social point of view, i.e. applying social rather than her/his personal preferences, when answering a stated preference study. This might especially be the case if the good to be valued is ethically complex, such as endangered species. On the other hand, people in general are also reluctant to tax increases (Gemmell et al., 2004; Hammar et al., 2006), which might affect their willingness to pay for a public good like environmental quality.

[3] In political science, there has been an increased interest in the behavior of administrators ever since Lipsky (1980). In economics, citizen juries and participatory tools have been used as environmental valuation methods or complements to stated preference methods (Davis and Whittington, 1998; Kenyon et al., 2001). However,

citizens and administrators in terms of willingness to pay (WTP) for environmental improvements. The only study in economics that we are aware of that touches upon a similar issue is Colombo et al. (2007) who looked at possible differences between citizen and expert preferences. They used a choice experiment (CE) to obtain citizen preferences, and the Analytic Hierarchy Process method[4] to obtain expert preferences, and found similar attribute rankings in the two groups.

In Sweden, just as in many other countries, the Environmental Protection Agency (EPA) is one of the main responsible authorities in managing environmental resources, and hence plays a crucial role in determining environmental policy.[5] The main objective of this paper is to investigate whether administrators at the Swedish EPA recommend environmental policies that the citizens prefer. This is done by conducting two identical CEs: one on a random sample of Swedish citizens and one on a random sample of EPA administrators. The CE concerns two of the environmental objectives in Sweden: a Balanced Marine Environment and Clean Air (these are explained in the next section). One advantage of our approach is that by using the same method (CE) and a very similar survey for both groups, we can make a clean test of whether the preferences differ. Moreover, since we are interested in preferences for several various aspects of these two environmental objectives the CE method is most appropriate considering the objectives.[6]

The citizens were asked to choose their preferred environmental policy, and the EPA administrators were asked to choose which policy they would recommend. The choices made can be used to estimate the marginal WTP for various measures to improve environmental quality. By comparing the WTPs for the two groups, we can assess whether or not the choices of the administrators are in line with the preferences of the citizens. We also investigate on what grounds administrators make their policy recommendations and whether they feel that some people should have more to say when deciding on environmental policy. We also asked them to rate their perceived trustworthiness of the results of stated preference studies. As Lipsky (1980) argues, "Policy implementation in the end comes down to the people who

these are methods where citizens discuss and make decisions in groups, and not a comparison between decision makers and citizens.

[4] A method designed for using expert judgments to represent citizen preferences. Experts are asked to compare attributes on a scale; see Colombo et al. (2007) and Saaty (1980).

[5] As in other countries, the people working at the EPA are public servants and not politically appointed.

[6] In a CE respondents make repeated choices between alternatives. The alternatives are described by a number of attributes, and the levels of the attributes are varied among the choice sets. For overviews on the CE method, see for example Alpizar et al. (2003) and Louviere et al. (2000).

actually implement it." Thus, the personal opinions of administrators about different environmental issues might affect environmental policy decisions.

## 2. The choice experiment

In Sweden, there are 16 so-called environmental quality objectives, adopted by the Swedish Parliament in 1999 and 2005. The main purpose of these objectives is to provide a framework for obtaining a sustainable environment. Another purpose is to define the quality of the environment, natural resources, and cultural resources in Sweden, and to be able to measure the change in environmental quality over time. The objectives are designed to, among other things, promote human health, safeguard biodiversity and the natural environment, and preserve the cultural heritage. The objectives should be reached within one generation, i.e. by the year 2020 (SEPA, 2006). The Environmental Objectives Council has the overall responsibility for coordinating the goals of and monitoring the actions taken by different governmental bodies in different sectors. Every year the council publishes a progress report.

In this paper we look at two of the environmental quality objectives: a Balanced Marine Environment and Clean Air. The Swedish EPA is the public agency that has the main responsibility for these two objectives. The overall goal of the Balanced Marine Environment objective reads: "The North Sea and the Baltic Sea must have a sustainable productive capacity, and biological diversity must be preserved. Coasts and archipelagos must be characterized by a high degree of biological diversity and a wealth of recreational, natural, and cultural assets. Industry, recreation, and other utilization of the seas, coasts, and archipelagos must be compatible with the promotion of sustainable development. Particularly valuable areas must be protected against encroachment and other disturbance" (SEPA, 2006). The overall goal of the Clean Air objective reads: "The air must be clean enough not to represent a risk to human health or to animals, plants, or cultural assets" (SEPA, 2006).

The survey was developed in collaboration with selected EPA administrators, who were of course not included in the sample.[7] Focus groups and a small pilot study were conducted before implementing the final survey. The questionnaire sent to the general public consisted of three parts. The first part asked questions about the respondent's engagement in environmental issues. The second part contained the CE about one of the environmental

[7] The random sample of the EPA administrators did not include the department where environmental economists work.

quality objectives. Each respondent answered a CE on either a Balanced Marine Environment or Clean Air. The random sample of 2,000 individuals was split into two groups of equal size. The third part of the questionnaire consisted of questions regarding the respondent's socio-economic status.

The CE included six choice sets, each with three different alternatives. The first alternative was always an opt-out alternative describing the current environmental quality. Each alternative had four or five different attributes depending on the environmental objective under consideration. All 16 environmental objectives adopted by the Swedish Parliament are described with different interim targets that are intended to make them more tangible and to be of help in the progress towards reaching the objectives. We decided to use these interim targets when defining the attributes, and when possible the opt-out levels in the CE in order to concretize the objectives and make them easier to understand. In the case of a Balanced Marine Environment, we used four different attributes: (1) amount of threatened animals and plants, (2) discharge of oil and chemicals, (3) catch and growth of fish stock, and (4) cultural assets. In the case of Clean Air, three attributes were used (each affected by emissions of sulfur dioxide and nitrogen oxides): (1) animals and plants, (2) human health, and (3) materials in cultural assets. The cost attribute was expressed as a tax to be collected over the next five years.

The survey sent to the EPA administrators was almost identical to the one sent to the citizens, with the exception that the administrators were asked to make choices for both a Balanced Marine Environment and Clean Air.[8] In addition, the administrator survey contained a fourth part, which included questions about attitudes towards stated preference surveys, cost-benefit analysis, and environmental decision-making. Table 1 presents the attributes and levels of the CE in the survey.

[8] Since we could only send out surveys to 100 administrators we preferred to obtain more information at the expense of a possible fatigue or order effect.

**Table 1.** Attributes and levels in the choice experiment.

| Attribute | Description | Levels | |
|---|---|---|---|
| **Balanced Marine Environment** | | Opt out | Improvement |
| **Animals and plants** | Number of endangered species | 35 | 5, 15, 30 |
| **Discharge of oil and chemicals** | Increase in surveillance of oil and chemical discharges | 0% | 10, 40% |
| **Catch and growth of fish stock** | Increase in fish (cod) stock | 0 | 10, 40, 70% |
| **Cultural assets** | Number of small-scale fishermen at risk of losing their jobs | 800 | 200, 600 |
| **Clean Air** | | | |
| **Animals and plants** | Number of acidified lakes (due to bad air quality) | 17000 | 3000, 8000, 14000 |
| **Human health and recreation** | Number of premature deaths per year (due to bad air quality) | 5000 | 1000, 2500, 4000 |
| **Cultural assets** | Reduction, in percent, in number of damaged cultural buildings (due to bad air quality) | 0% | 10, 40, 60 % |
| **Cost** | Cost in SEK per year and household | 0 | 100, 300, 600, 800, 1000 |

The choice sets were created using a cyclical design, or a so-called fold-over (Carlsson and Martinsson, 2003). First an orthogonal main effects design was generated, consisting of 12 attribute level combinations. These combinations are one alternative in each set. The levels of the attributes in the second alternative are obtained by adding two levels to each attribute level of the first alternative, and when the highest level is reached, it starts over from the lowest level. To these two alternatives, an opt-out alternative was added. The 12 sets were then randomly blocked into two survey versions. All respondents were asked to choose one of the three alternatives. An example of a choice situation to citizens is given in Figure 1.

**Figure 1.** Example of a choice situation for the environmental quality objective Clean Air.

| | **Alternative 1 (Situation today)** | **Alternative 2** | **Alternative 3** |
|---|---|---|---|
| **Animals and plants** | 17000 lakes are severely acidified because of air pollution | 14000 acidified lakes | 3000 acidified lakes |
| **Human health and recreation** | 5000 premature deaths per year because of air pollution | 1000 premature deaths per year | 2500 premature deaths per year |
| **Cultural assets** | Air pollution damages buildings | 60 % less cultural buildings are damaged | 40 % less cultural buildings are damaged |
| **Increased tax per year and household, during next 5 years** | 0 SEK | + 300 SEK | + 800 SEK |

If you could only choose between these three alternatives, which one would you choose?

□ Alternative 1 (current situation)
□ Alternative 2
□ Alternative 3

The choice sets in the version sent to the EPA administrators were identical to those in the version that citizens received with one exception. We added an instruction before the choice sets that read: "Suppose that you as an EPA administrator are asked to recommend one of the following three alternatives to govern Swedish environmental policy for the environmental objective a Balanced Marine Environment / Clean Air." We then asked the EPA respondents to recommend one alternative in each choice set.

## 3. Econometric model

In the econometric analysis we apply a random utility model. For the citizens, the underlying utility function represents their preferences, and for EPA administrators it represents their preferences as administrators. The utility consists of a systematic $(V_{njt})$ and a random component $(\varepsilon_{njt})$:

$$U_{njt} = V_{njt} + \varepsilon_{njt},$$

where $U_{njt}$ is respondent $n's$ utility of choosing alternative $j$ (j=1,2,3) in choice situation $t$ (t=1,...,6). The systematic part of the utility can be expressed as $\beta_n' x_{njt}$, where $x_{njt}$ is a vector

of observed variables. Alternative $i$ is chosen over alternative $j$ if $U_{nit} > U_{njt}$. We estimate the models with a random parameter logit model. We include an alternative specific constant for the opt-out alternative and assume that all attribute parameters other than the cost parameter are normally distributed. Since we have repeated observations, we assume that the parameters are constant across choice sets for a given respondent. The models are estimated with Nlogit 4.0 using simulated maximum likelihood with Halton draws with 500 replications. See Train (2003) for details on simulated maximum likelihood. We decided not to include any socio-economic characteristics and use the same model specification for both subsamples.[9]

## 4. Results

For the general public, we use survey responses from a mail questionnaire sent out in June 2007 to a random sample of 2,000 men and women aged 18-75, selected from the Swedish census registry. One thousand questionnaires were sent out for each objective, and the respondents received a single reminder three weeks after the main survey. In total 648 individuals returned the questionnaire, of which 306 (a Balanced Marine Environment) and 310 (Clean Air) were available for analysis due to non-responses to various questions.[10] For the administrators, we use survey responses from a mail questionnaire sent out in September 2007 to a random sample of 100 EPA administrators. A single reminder was sent out two weeks after the main survey. In total 59 administrators returned the questionnaire, of which 58 were available for analysis.[11] Comparing the descriptive statistics of the citizens with the national statistics, we find that the mean age of the citizens (48.8 years) in our sample does not significantly differ from the mean age at the national level. However, the shares of women and of those who have at least three years of university education are significantly higher in our citizens sample than in the population as a whole (Statistics Sweden, 2007).[12] In the econometric analysis we therefore have to test whether this overrepresentation affects the results.

[9] The mean WTPs for the citizens do not differ to any large extent if we include socio-economic characteristics. The EPA administrators were asked to make their choices as recommendations for environmental policy, so their socioeconomic characteristics should not affect their choices to any great extent.
[10] The response rate is 33 percent, corrected for those who had moved or for other reasons had not received the questionnaire.
[11] The response rate is 62 percent, corrected for those who had changed jobs or were on parental or sick leave.
[12] One thousand samples were bootstrapped by randomly drawing observations with replacement as many times as there are observations in the original sample. By using the percentile method and a 95 % confidence interval, it can be shown whether the means significantly differ from each other at the 5 % significance level.

### *4.1 The choice experiment*

As explained, the EPA administrators answered CEs on both environmental objectives, and the citizen respondents answered only one CE for one environmental objective. Four separate models were estimated, one for each objective and group of respondents. Table 2 reports the results of the random parameter models, all of which are estimated with simulated maximum likelihood.

**Table 2.** Estimated random parameter logit models, p-values in parentheses.

| | **Balanced Marine Environment** | | **Clean Air** | |
|---|---|---|---|---|
| **Parameters** | Citizens | EPA administrators | Citizens | EPA administrators |
| Opt-out | -4.9097 | -4.1363 | -3.5098 | -1.2404 |
| | (0.000) | (0.051) | (0.000) | (0.143 |
| Animals and plants | -0.0247 | -0.1091 | -0.0002 | -0.0002 |
| | (0.000) | (0.000) | (0.000) | (0.000) |
| Health and recreation | | | -0.0004 | -0.0009 |
| | | | (0.000) | (0.000) |
| Cultural assets | -0.0011 | -0.0013 | 0.0026 | 0.0054 |
| | (0.000) | (0.095) | (0.332) | (0.299) |
| Oil and chemical spills | 0.0179 | 0.0276 | | |
| | (0.000) | (0.005) | | |
| Fish stock | 0.0109 | 0.0368 | | |
| | (0.000) | (0.000) | | |
| Cost | -0.0015 | -0.0031 | -0.0024 | -0.0014 |
| | (0.000) | (0.000) | (0.000) | (0.001) |
| **Standard dev.** | | | | |
| Opt-out | 6.6813 | 2.3415 | 3.5613 | 1.4755 |
| | (0.000) | (0.094) | (0.000) | (0.027) |
| Animals and plants | 0.0403 | 0.0809 | 0.0002 | 0.00006 |
| | (0.000) | (0.004) | (0.000) | (0.258) |
| Health and recreation | | | 0.0012 | 0.0007 |
| | | | (0.000) | (0.000) |
| Cultural assets | 0.0008 | 0.0031 | 0.0081 | 0.0150 |
| | (0.046) | (0.007) | (0.364) | (0.140) |
| Oil and chemical spills | 0.0075 | 0.0286 | | |
| | (0.448) | (0.042) | | |
| Fish stock | 0.0118 | 0.0210 | | |
| | (0.000) | (0.027) | | |
| No. of individuals | 306 | 58 | 310 | 57 |
| No. of observations | 1814 | 344 | 1843 | 338 |
| R-squared (constants only) | 0.28 | 0.34 | 0.33 | 0.27 |

In terms of sign and significance, the models for the two subsamples do not differ in any substantial way. The estimated standard deviations of the random parameters are highly significant in all models, indicating that we capture unobserved heterogeneity. However, the differences in heterogeneity between the administrators and citizens do not show any systematic pattern: for example, the heterogeneity is not systematically larger for one of the groups. In order to test whther the observed overrepresentation of females and highly educated people affects the results we estimated the two models for citizens with interaction

variables between the attributes and the two socio-economic variables. In all cases except one, the interaction variables are insignificant. We therefore proceed with the reduced model without interaction variables.[13]

To begin with, we test the hypothesis of equal parameters between the two groups of respondents, i.e. if we can pool the data from the two CEs. This is done with a likelihood ratio test where we adjust for a possible difference in scale parameters.[14] For both environmental objectives we can reject the hypothesis of equal parameters; there are therefore some differences in preferences between the two groups. However, this is an overall comparison of preferences and we allow for differences in the heterogeneity of the mean preferences as well. Furthermore, based on Table 2 we cannot say that an attribute from a Balanced Marine Environment is more or less important than one from Clean Air, since the scale parameters might be different. It is therefore important to also estimate and compare the WTPs for the various attributes. We could use the marginal WTPs, but the problem is that the attributes are measured in different units for the different environmental objectives. Therefore, we report the WTP for an improvement of the attribute from the current level (opt-out) to the best possible level (the highest level of the attribute) in the experiment in Table 3.[15]

[13] The exception was Animals and plants for the Marine Environment objective, where the university educated have a lower WTP than other respondents.

[14] When performing this test we need to account for the fact that the estimated parameters are confounded with the respective scale parameters. One way of dealing with this problem is to first test for a difference in scale between the data sets. We do this using the grid search procedure proposed by Swait and Louivere (1993). Given the estimated scale parameter one can then test the hypothesis of equal parameters. When estimating the random parameter model with the grid search procedure, 25 replications are used instead of 250.

[15] This is simply the marginal WTP times the change in the attribute level from the status quo level to the best possible level. The marginal WTP is simply the ratio between the attribute parameter and the cost parameter.

**Table 3.** Mean WTP in SEK for attributes, standard errors in parentheses. Results of t-tests of equal mean WTP between citizens and administrators, p-values in parentheses.

| | **Balanced Marine Environment** | | | | **Clean Air** | | | |
|---|---|---|---|---|---|---|---|---|
| | Citizens | EPA administrators | Diff. (%) | t-test (p-value) | Citizens | EPA administrators | Diff. (%) | t-test (p-value) |
| Animals and plants* | 510 (99) | 1068 (202) | 109 % | 2.481 (0.013) | 961 (115) | 1771 (521) | 84% | 1.52 (0.129) |
| Health and recreation* | | | | | 710 (142) | 2560 (794) | 261% | 2.295 (0.022) |
| Cultural assets* | 437 (70) | 240 (131) | - 45% | 1.323 (0.186) | 66 (67) | 229 (225 ) | 247% | 0.692 (0.489) |
| Oil and chemical spills | 492 (67) | 361 (108) | - 27% | 1.038 (0.299) | | | | |
| Fish stock | 525 (83) | 840 (148) | 60% | 1.856 (0.063) | | | | |

* In order to express the values in WTP terms we simply change the sign of the parameters with a negative sign in Table 2 (Animals and plants and Health and recreation, and Cultural assets for the Balanced Marine Environment objective). For example, the WTP for Animals and plants for the Balanced Marine Environment objective is the WTP for reducing the number of endangered species from today's level of 35 to 5.

The WTP estimates of both the citizens and the EPA administrators are significant for all attributes except Cultural assets for the Clean Air objective. For the given improvements of the attributes, we can also compare the ranking of the attributes. The rankings (in terms of the WTP estimates) are actually a little bit different. For the Balanced Marine Environment objective citizens rank Fish stock highest, and then Animals and plants, while the administrators have the opposite ranking for these two attributes. However, the levels of the WTPs do not statistically differ among the attributes for the citizens.[16] Therefore, the administrators have a clearer ranking of the attributes in the objective Balanced Marine Environment objective than what the citizens have. For the Clean Air objective, the rankings are also different. Citizens have the highest WTP for the Animals and plants attribute, while administrators have the highest WTP for the Health and recreation. Both groups rank the Cultural assets attribute as the least important for both objectives.[17] In terms of attribute ranking, these results are not in line with Nilsson et al. (2004) who found that the preferences of the general public and decision makers working in the public sector do not differ with respect to support for programs aimed to improve environmental quality. Colombo et al. (2007) also found that citizens and decision makers rank environmental attributes in a similar fashion.

[16] Using two-sided t-tests we cannot reject the hypothesis of equality for any of the WTP comparisons for citizens. For administrators, the WTP for Animals and plants and Fish stock is significantly different from the WTP of the other two attributes.

[17] For citizens, the WTP for Cultural assets is significantly lower than the WTP for the two other attributes. For administrators, the WTPs for the three attributes are all statistically different from each other.

However, simply comparing the ordering of the attributes with respect to the magnitude of WTP does not give much information. Table 3 therefore also reports the results of a two-sided t-test of equal mean WTP between citizens and administrators. Using a two-sided t-test for the Balanced Marine Environment objective, the difference in WTP between the citizens and the EPA administrators is significant at the 10% level for Animals and plants and Fish stock. The administrators have a higher WTP than the citizens for decreasing the amount of endangered animals and plants and for increasing the fish stock. For Clean Air, the difference in WTP is significant at the 5% level for one of the attributes: Health and recreation. Hence, when the difference in WTP is significant, the administrator WTP is always larger than the citizen WTP. There is also a large difference for Cultural assets in the Clean Air objective; however, the difference is not statistically significant, which is explained by the large standard errors for this attribute. Table 3 also reports the difference in percent between administrator WTP and citizen WTP; a positive difference means that the administrator WTP is larger than the citizen WTP. The difference varies between -27 percent and +261 percent.

EPA administrators have a higher WTP than citizens for five out of the seven attributes, and in some cases the difference is not only significant but also substantial. Although both citizens and EPA administrators have a high WTP for endangered animals and plants living in the marine environment, the administrator WTP is twice as high as the citizen WTP. Similarly, the administrator WTP for better air quality, in terms of improved health, is over three times the WTP of the citizens. That administrators working with environmental issues have a higher WTP for measures improving environmental quality is in line with the results of von Borgstede et al. (2007). Moreover, it is possible that those citizens who answered the questionnaire are more interested in environmental issues than those who did not participate in the study. If this is the case, the differences in the sizes of administrator and citizen WTPs should be even larger than what we found here.

Thus, if we were to use the administrator preferences for policy management, resources would be allocated differently than if we had used the citizen preferences. Note that these are the conditional WTPs, i.e. we do not use the alternative specific constant for the opt-out alternative. Since fewer EPA administrators choose the opt-out, any difference in WTP would be even larger if we considered the alternative specific constant. None of the EPA administrators chose the opt-out alternative in *all* choice situations, while 8 percent of the citizens did.

### *4.2 The motives and opinions of the EPA administrators*

As said before, the personal views of EPA administrators on how decisions regarding environmental projects should be made are likely to affect the extent to which economic information is incorporated into the environmental decision-making process. In the survey we asked the EPA administrators to motivate their CE choices. A majority (55 percent) chose the alternatives they perceived as necessary for ecological sustainability, while about one-third chose the alternatives they believed would be appreciated the most by future generations.[18] Only 16 percent answered that they chose alternatives they believed to be preferred by people living today. In other words, administrators put a heavy weight on the long-run development of environmental quality, and ecological aspects were more important than how ordinary people view the changes. when the administrators made their choices in the experiment. Bromley (1990) made similar conclusions in a critical discussion of the main-stream economist perception of economic efficiency, arguing that the past 40 years of observations of public decisions indicate that the public sector is not especially convinced of the efficiency advice offered by economists.

We also asked the administrators to state whether they perceive that some people should have more say than others when deciding on Swedish environmental policy. They were allowed to choose among various interest and professional groups such as biologists/ecologists, environmental economists, experts in political science, sociologists, politicians, and people who are especially affected by the environmental problem in question. Forty-one percent of the EPA administrators think that biologists/ecologists should have more say than others, while about 18 percent believe that environmental economists should. This indicates that a majority of the administrators believe that persons with environmental education know what the best environmental management is. However, about 12 percent of the EPA administrators answered that people who are especially affected by the problem should have the most say, while 15 percent believe that no group should have more say than others. Thus, although the EPA should consider the perspective of the citizens in the decision making process (SEPA, 2004), our results suggest that making decisions in line with citizen preferences is not generally of high priority.

[18] This is in line with the experiences of one of the authors, as a former Swedish EPA employee. Ecological sustainability and the future generation perspective are very strong objectives in the management.

Finally, the administrators were asked to rate their perceived trustworthiness of the results of stated preference studies on a 1-5 scale (1 meaning *Not trustworthy at all* and 5 meaning *Very trustworthy*). Although about 90 percent of the EPA administrators had heard about stated preference studies, they responded that they do not believe in them: About 40 percent stated that these methods are not trustworthy and no one feels that they are very trustworthy. This could affect their willingness to incorporate economic information into the final policy decision. On the other hand, a large majority (79 percent) have a positive view of using cost-benefit analyses as a basis for decision making in environmental problems. This is however partly in conflict with the fact that the EPA administrators do not trust stated preference studies. Stated preference studies constitute the most commonly used method to capture the benefit side in cost-benefit analyses.[19]

## 5. Conclusions

In Sweden, just as in many other countries, the EPA is one of the main responsible authorities for managing environmental resources. Consequently, it plays an important role in determining environmental policies. The main interest of this paper was to investigate whether citizen preferences regarding environmental quality differ from the preferences of those engaged in environmental management. This was done by conducting the same choice experiment on a random sample of Swedish households and on a random sample of administrators working at the Swedish EPA. For the environmental objective in question, the EPA administrators were told to choose the alternative they would recommend to govern Swedish environmental policy. We found that the rankings of attributes by citizens and EPA administrators are not the same. These results are not in line with the previous studies by Colombo et al. (2007) and Nilsson et al. (2004). Clearly, the results are contextual, but our advantages are that we use the same preference elicitation method for both groups and that the EPA is the public agency that is responsible for the two environmental objectives.[20] We also found significant differences in the levels of WTP for particular attributes. For example, for the attribute Animals and plants in the Balanced Marine Environment objective, the EPA administrator WTP is more than twice as large as the citizen WTP. For the Clean Air objective, the administrator WTP for better health is more than three times the citizen WTP. These differences are found despite the choice experiment being generic in the sense that not

[19] According to Samakovlis and Vredin Johansson (2005) the quality of cost-benefit analysis done by several Swedish public authorities is not good enough and authorities should use cost-benefit analysis more often.

[20] Colombo et al. (2007) use different elicitation methods and Nilsson et al. (2004) sample administrators at a wide range of public agencies.

all citizens have personal experiences of marine environments or live in large cities with particularly bad air quality.

These differences between administrators and citizens can have two effects. First, administrators are likely to make different priorities than citizens for a given amount of resources. Second, administrators are likely to argue for a larger share of the resources to be spent on environmental quality compared to what the citizens would argue for. The administrators' motives for their CE choices show that ecological sustainability is more important than the preferences of ordinary people regarding changes in environmental quality. A majority of the administrators have a paternalistic approach; they think that individuals with environmental education should have more say in shaping environmental policy in Sweden than other groups in society. Although EPA administrators have more information about the environmental quality objectives than what citizens have,[21] a paternalistic point of view is in strong contrast to how economic theory and many economists advocate that environmental resources should be managed. It might also increase potential distrust among citizens towards those who are responsible for the environmental policies and management.

This is to our knowledge the first study that compares decision makers and citizen preferences for environmental quality using the same methodology. Clearly, more studies of this kind are needed.

[21] They of course have more information since they work with these issues daily. Moreover, they are more educated than the average person, and many of them have a degree in natural sciences.

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