



How much is the good environmental status worth?

Preliminary results for the German marine waters

Project on behalf of the German Environmental Agency (UBA)

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- MSFD requires economic and social analysis on the use of the regarding waters...
- including an estimation of the “costs of degradation of the marine environment”
- Cost of degradation still to be estimated for Germany
- Germany follows thematic approach – difference between current and good environmental status (GES)





- Estimate benefits for German population of achieving the GES
- Closely following Nieminen et al. (2019) and Nordzell et al. (2020)
- Method: Contingent valuation (CVM)





- Survey adapted from Nieminen et al. (2019) to German context, e.g. North Sea had to be considered
- Current status and GES defined in close cooperation with experts from the UBA
- Four focus groups conducted
- Intensive pretesting of the implemented survey
- Soft launch with 50 participants



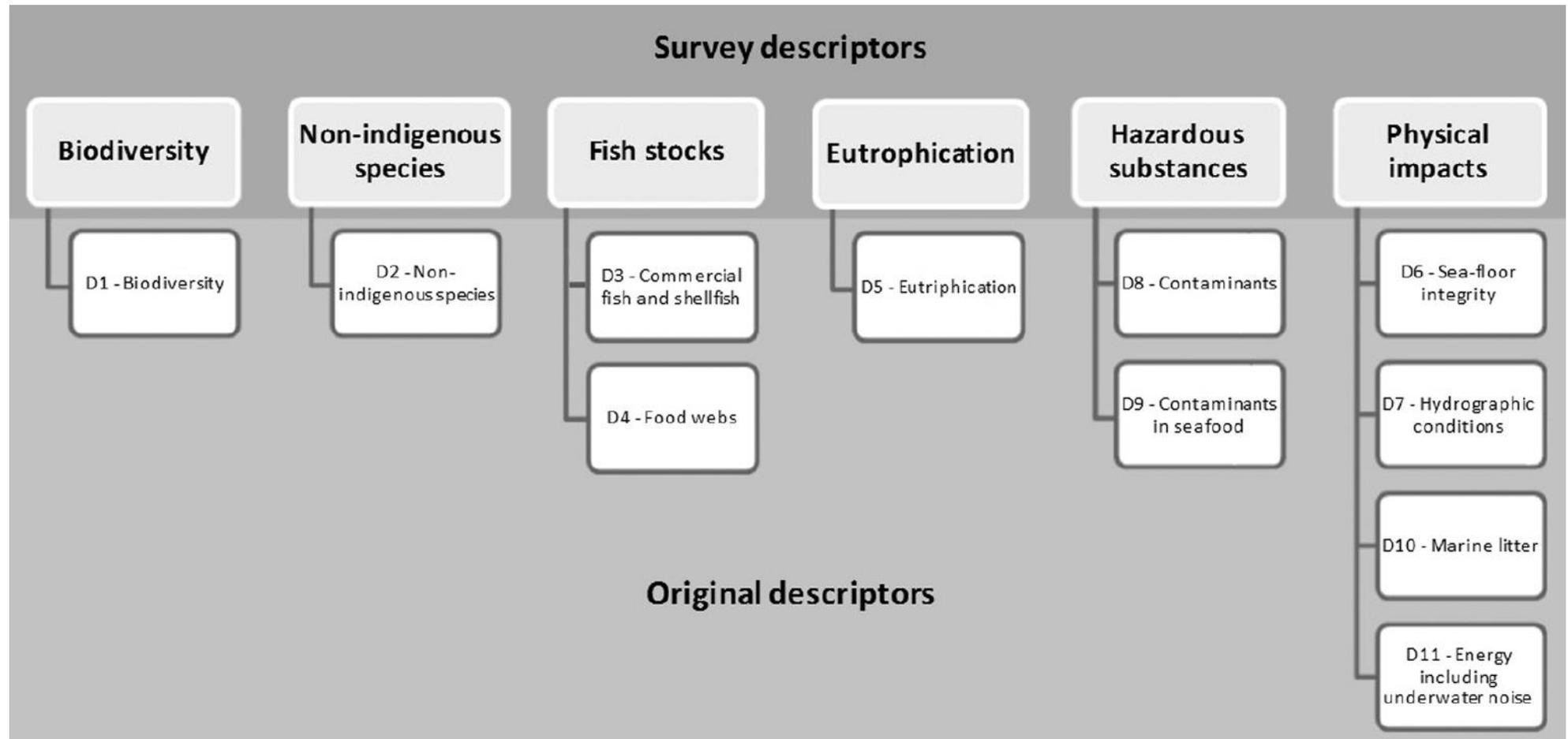


- Previous use of and general relationship to North and Baltic Sea
- Presentation of current status and environmental problems
- Valuation scenario
- Debriefing questions
- Socio-demographics and attitudes



Questionnaire – Area of interest





Source: Nieminen et al. (2019)



Now we show you the current status of the German North and Baltic Sea as well as the good environmental status targeted for the year 2040. The description of the current status takes into account that the environmental status of the German seas is still not good, even though progress has already been made. There may also be differences depending on the season and region.

The target status can only be achieved by the year 2040 with an additional program of measures. Without the implementation of this program, it can be assumed that the current state will not improve by 2040.

Questionnaire – Environmental states



	Current status	Aim: Good environmental status
Eutrophication	<p>Strong algal growth</p> <p>Baltic Sea: Turbid water</p> <p>North Sea: Algae foam on the beach</p>	<p>Low algal growth</p> <p>Baltic Sea: Clear water</p> <p>North Sea: No algae foam on the beach</p>
Biodiversity	<p>Decreasing diversity of typical habitats and species</p>	<p>Stable large diversity of typical habitats and species</p>
Non-indigenous species	<p>Continuous introduction</p>	<p>No further introduction</p>
Fish stocks	<p>Some fish stocks in poor condition</p> <p>Unbalanced size and age distribution</p>	<p>All fish stocks are in good condition</p> <p>Balanced size and age distribution</p>
Hazardous substances	<p>Exceeding threshold values for some substances</p>	<p>All threshold values are met</p>
Physical impacts and waste	<p>Severe impairment of habitats, animals and plants through noise, damage to the seabed, cooling water and waste</p>	<p>No impairment of habitats, animals and plants through noise, damage to the seabed, cooling water and waste</p>



Questionnaire – Payment card



<input type="radio"/> €0	<input type="radio"/> €1-5	<input type="radio"/> €6-10	<input type="radio"/> €11-15	<input type="radio"/> €16-20
<input type="radio"/> €21-25	<input type="radio"/> €26-35	<input type="radio"/> €36-50	<input type="radio"/> €51-75	<input type="radio"/> €76-100
<input type="radio"/> €101-140	<input type="radio"/> €141-200	<input type="radio"/> €201-300	<input type="radio"/> €301-400	<input type="radio"/> €401-550
<input type="radio"/> €551-750	<input type="radio"/> €751-1000	<input type="radio"/> More than €1000	<input type="radio"/> I cannot specify	





- Survey conducted in March and April 2020
- Participants from Norstat online panel
- Quota regarding age, gender, education and 16 federal states
- Mean interview length: 18 minutes
- 1,063 respondents

Results - Socio-demographics



Variable	Sample population	Target population
Mean age (years)	49.6	45.7
Female (%)	51.2	50.7
Mean household size	2.3	2.0
Mean minors per household	0.3	0.3
High education (%)	21.1	18.0
Mean household income (EUR)	2587	2079

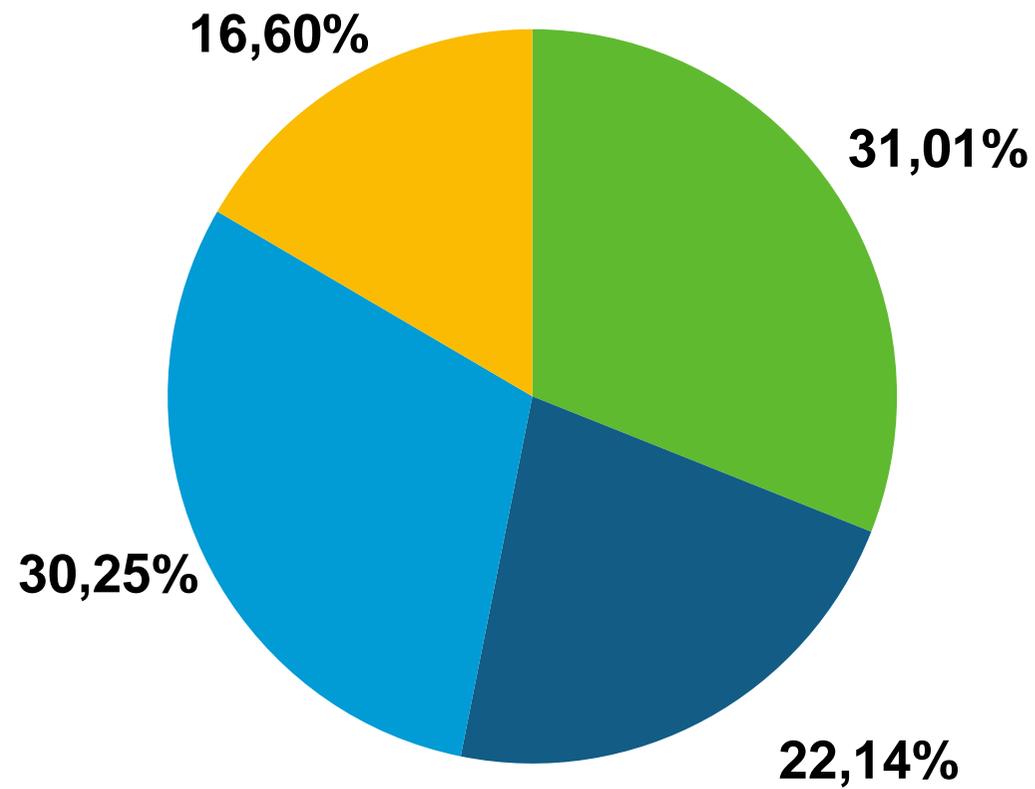
Source: Own data and presentation

Results – Distance



Variable	Mean	SD	Min.	Max.
Stated distance North Sea	377.5	148.8	2.5	500.0
Stated distance Baltic Sea	384.6	146.6	2.5	500.0
Calculated Distance to Sea	296.3	175.1	0.8	687.3

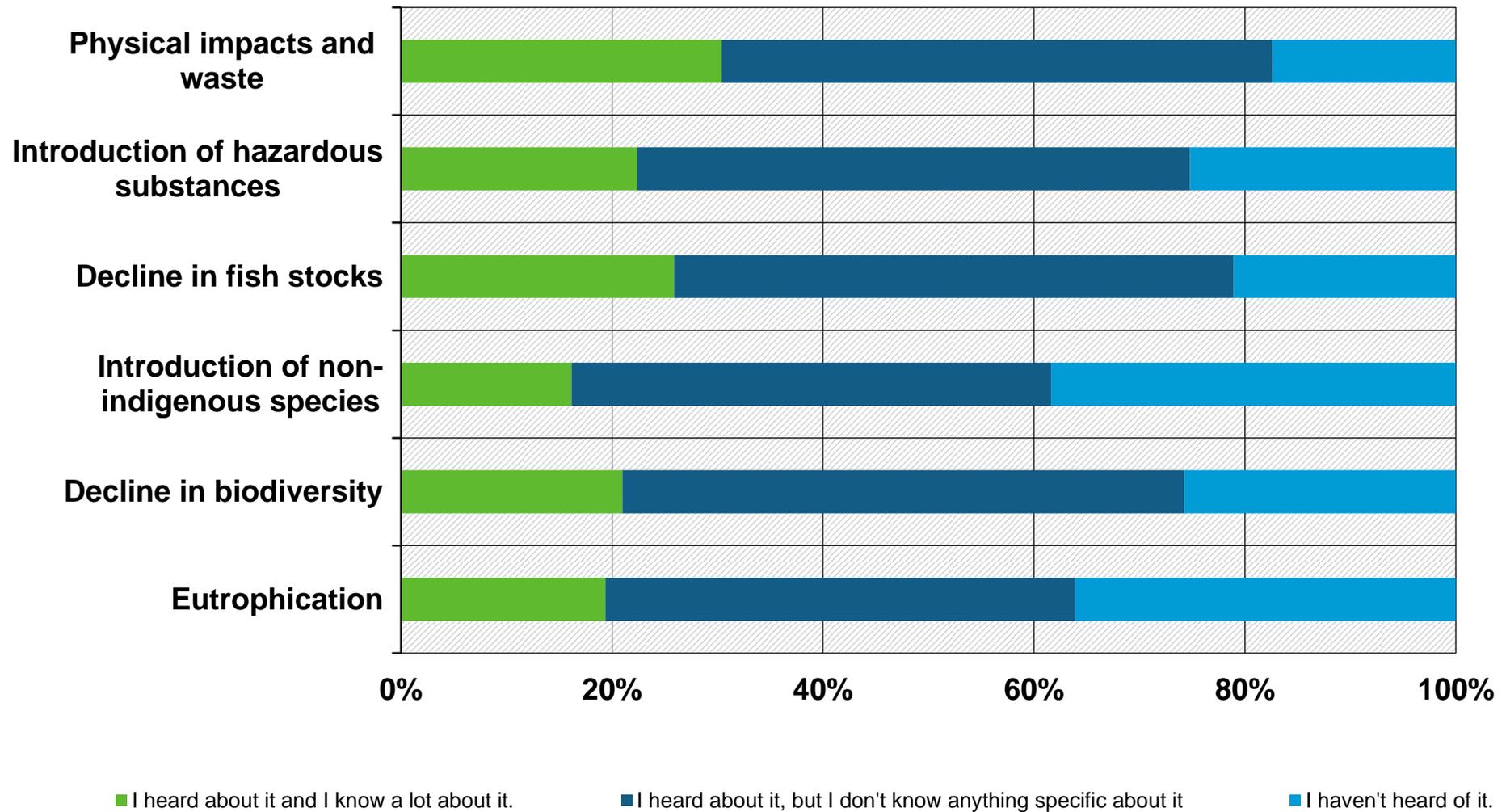
Source: Own data and presentation



■ Yes, in the last 12 months ■ Yes, 1-5 years ago ■ Yes, more than 5 years ago ■ Not at all

Source: Own data and presentation

Results – Knowledge



Source: Own data and presentation.

Results – General WTP



Answer	Percentage
Yes	18.34%
Maybe	51.46%
No	30.20%

Note: N= 1063

Results – Reasons for not being willing to pay



Reason given	Percentage
I cannot afford to pay.	29.46%
Those who pollute should pay.	25.89%
I do not believe that the money will be used to achieve the good environmental status of the sea.	13.39%
I do not wish to pay another fee.	12.50%
Other reason	6.25%
I prefer to spend my money on other things.	4.46%
The target year (2040) feels too distant.	2.68%
The state of the sea is good enough.	2.08%
I do not believe that the good environmental status is achievable.	2.08%
I do not care about the state of the North Sea or Baltic Sea.	1.19%

Note: N= 336

Results – Reasons for being willing to pay



Reasons given	Percentage
I would like to preserve an intact North and/or Baltic Sea for future generations.	38.87%
The existence of intact habitats for animals and plants in the North and/or Baltic Sea is important to me.	31.13%
I want to make sure that I have the opportunity to use the North and/or Baltic Sea for recreation and leisure in the future.	12.90%
I want to ensure that other people of my generation can use the North and/or Baltic Sea for recreation and leisure.	11.94%
I use the North Sea and Baltic Sea for leisure activities.	5.16%

Note: N =619

Results – Consequentiality

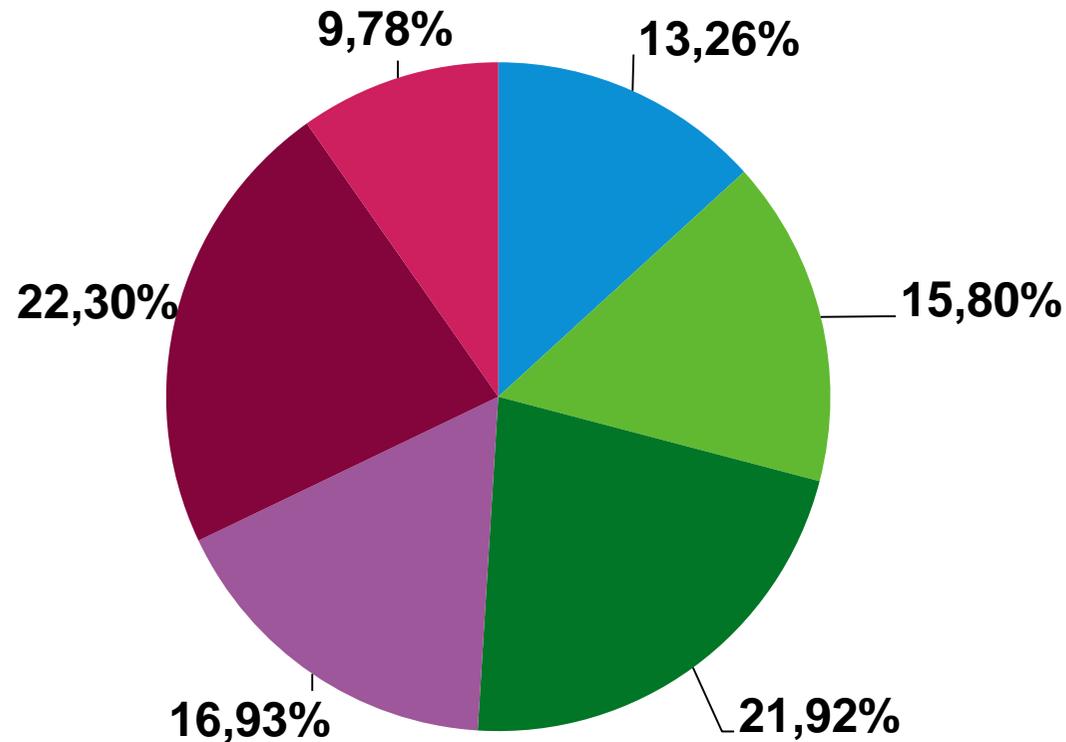


My statement about my willingness to pay will...	Percentage
Definitely have an influence	6.49%
Rather have an influence	27.09%
Rather not have an influence	39.04%
Definitely not have an influence	15.52%
I do not know	11.85%

Results – COVID19 control



As a result of the Corona crisis, my disposable income will decrease this year.



■ Do totally agree ■ Do agree ■ Neiter agree nor disagree ■ Do not agree ■ Do not agree at all ■ Do not know

Note: N =1063

Results – Environmentalism



When buying food I pay attention to how environmentally friendly packaging is.

Answer	Percent
Do not agree at all	4.33%
Do not agree	7.71%
Neither agree nor disagree	20.60%
Do agree	41.49%
Do totally agree	24.74%
Do not know	1.13%

Note: N =1,063

Results – Basic Model



	Dependent variable: WTP (ln)
	OLS
Intercept	2.00* (6.74)
Income	0.02%* (5.63)
Age	-0.71% (-1.92)
Female	-20.57% (-1.71)
High Education	35.11%* (2.34)
Distance to Sea	0.02% (0.84)
Household Size	8.18% (1.64)
Adjusted R2	0.096
Note:	N= 782, z Values in Brackets, *p<0.05

Results – Extended Model I



Variable	Coefficient	 t-value
Intercept	0.1060	0.53
Age	-0.0088*	2.89
Knowledge	0.8980*	4.79
Consequentiality	1.2514*	10.11
Environmentalism	0.3806*	3.59
Visit (1 year ago)	0.4196*	2.63
Visit (1-5 years ago)	0.5833*	3.45
Visit (more than 5 years ago)	0.2848	1.86

Note: N= 850

Results – Extended Model II



Variable	Coefficient	t-value
Intercept	-0.6548*	2.92
Householde size	0.1001*	2.32
Income	0.1378*	2.92
Knowledge	0.4476*	2.04

Note: N= 850

Results – Consumer Surplus



	OLS regression (basic excluding protest responses, N=782)
Mean WTP (EUR/person/year)	66.63
95% confidence interval of mean WTP (EUR/person/year)	53.42-79.84
Aggregate benefits (MEUR/year)	4,630.0
95% confidence interval of aggregate benefits (MEUR/year)	3,712.1-5,548.0

Notes: Aggregate benefits calculated based on an adult population of 69,488,809 people as of December 31, 2019 (Statistisches Bundesamt 2020). Standard errors in parentheses.

- Mean WTP to achieve GES 66.63 EUR per person and year
- 4.63 billion for Germany population to achieve GES
- Main drivers of WTP: age, income, consequentiality, knowledge; no effects for distance

Comparison to other countries



Country	Mean WTP	Aggregated WTP
Finland	123.2 EUR/person and year	431.5 million EUR
Sweden	104.2 EUR/person and year	793.0 million EUR per year
Germany	66.63 EUR/person and year	4,630.0 million EUR per year

Note: Figures based on OLS



- Survey also included a choice experiment with descriptors being the attributes
- Study possible impacts of the COVID19-pandemic
 - Second wave conducted in September 2020
 - Additional N =880 Respondents
 - Half of them already participated in the first wave
- Final report at the beginning of 2021 expected



Thank you!

Questions? Comments?

Choice Set Example



	Status A	Status B	Status C
No eutrophication	30% reached	60% reached	Good environmental status is not achieved Status 0% (as today)
Stable biological diversity	60% reached	0% reached	
No non-indigenous species	0% reached	100% reached	
Good fish stocks	0% reached	0% reached	
Hazardous substances negligible	30% reached	0% reached	
Physical impacts low	0% reached	0% reached	
Waste without impact	30% reached	100% reached	
Annual fee	350 EUR	8 EUR	