

# Surveying opinions among environmental students on climate science and Baltic Sea issues

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## 1. Prologue

The concern about environmental issues in the Baltic Sea is widespread in the public and in academia. While this concern for a long time was dominated by the issue of eutrophication and overfishing, climate change has become another high profile issue. After having surveyed the opinion among graduate students and mostly young western scholars about climate change and climate policy (e.g., Bray and von Storch, 1999; von Storch et al., 2019; von Storch and Gualdi, 2019), a series of surveys were done among mostly bachelor and master students in Poland, Germany and Sweden. This was done by approaching a few professors, who distributed and later collected the questionnaires. So far, data from 5 surveys have been obtained.

This selection process of locations and teachers was done according to opportunity, and no claim of a representative cover – neither in terms of country, natural science field, age, nor maturity of study – can be made. It is also possible that the teaching of the professors may have had an influence on the students' responses. However, the results allow to derive hypotheses to be tested in additional surveys.

## 2. The five surveys

The following table lists the locations, and the number of archived responses. Response rates cannot be given in most cases.

	institution	samples
1	Hamburg U, Geology, Germany	22
2	Hamburg U, Oceanography, Germany	9
3	U Gdansk, Geography Poland	69
4	IOPAN, Zopot, Poland	5
5	U Göteborg, Marine Science, Sweden	26

The questionnaires used mostly the same questions; sometimes some more questions were posed; in one case the question was adapted to the country of the institution. First some demographics were collected, then opinions on climate change and science in general, then an assessment was asked for of the major issues concerning the Baltic Sea.

## 3. The perceived task of the climate science community

In the earlier studies among European scholars, the responses to one question were standing out, with a large majority favoring the "motivation", whereas the scientific challenges ("define & attribute") got least ticks (see references above). Since this was a bit surprising, this question was a key element in the survey used with the students from the Baltic Sea institutions.

**Today, what would you rate as the most important task facing the climate science community?**

- define the climate problems and attribute cause of climate change
- determine solutions to climate change
- motivate people to act on climate change
- don't know

Only one choice was accepted as answer. In the following table we provide the numbers and the percentage of valid answers for the five institutions:

	define & attribute		determine solutions		motivate people	
1	3	18%	10	<b>59%</b>	4	24%
2	1	11%	7	<b>77%</b>	1	11%
3	10	16%	17	27%	37	<b>58%</b>
5	1	25%	1	25%	2	<b>50%</b>
5	5	24%	8	<b>38%</b>	8	<b>38%</b>

In all five cases, of which two have very few samples, the scientific issue "define & attribute" was least often clicked at as the "most important task of the climate science community", which is consistent with the surveys among European scholars. However, the students do opt much more often for the determination of solutions as major task and less often for the mobilization than the scholars.

## 4. Serious issues of the Baltic Sea

A second aspect concerns the human pressures on the Baltic Sea. Students were asked if the issues in the table are serious, and need political attention. Multiple clicks were allowed

	% of respondents	1	2	3	4	5
climate change	77	78	42	<b>80</b>	69	
eutrophication	55	22	38	60	85	
overfishing	<b>82</b>	<b>89</b>	65	<b>80</b>	<b>92</b>	
tourism	14	44	19	20	35	
waste	27	67	<b>77</b>	60	69	
constructions	18	55	12	20	23	

Note, again, that the surveys 2 and 4 have only very few samples, namely 9 and 5.

The most frequent choice was "overfishing", but "climate change", "eutrophication" and "disposal of waste" received also many clicks. In many, if not most cases, respondents did not identify one issue as the

dominant one, but an ensemble of different issues as most pressing. "Tourism" and "construction of pipelines and bridges" received less attention.

As mentioned before, the results can hardly be considered representative of what different groups of students tend to think about the most pressing issues. Noteworthy is that climate change is not the dominant issue, albeit an important one, but comparable with others, such as the "disposal of waste", "eutrophication" or "overfishing".

## 5. Hypotheses

The results invite for at best some educated hypotheses if not wild speculations:

- In both groups, the students from the Baltic Sea region and the mostly young western scholars in the previous cases, the challenge of better scientific understanding the climate problem is considered less a task of the scientific community; instead the question of how to solve the climate problem and the political need for alarming the public appear as dominant task. The first is a social-science and engineering task, and the latter a political task. For both, climate scientists are not prepared. This observation may imply that science is considered among some scientists mainly as a social actor, supporting the "right" cause, and not an effort to provide society with knowledge for guiding political choices (Pielke's (2007) advocates or stealth advocates).
- The found tendency of grading the task of solving the problem higher, or equal, to the task of political convergence may be a random effect, but if not, it may point to a change of perception among environmental scholars, namely that alarming of the public does not really lead to a solution of the problem, and that instead more realistic options to deal with the climate problem are needed. This would imply that climate science, as it is, is losing importance, while economists and engineers gain importance.
- After the issue of eutrophication in the Baltic Sea has dominated for many years, other issues are also gaining attention, in particular waste and climate change. The dominance of the Baltic Sea eutrophication in the political and public domain has led to certain adverse power-structures within science advisory leverage and institutional financing. Therefore, such a change may lead to a change in these power structures.

## References

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