

- to identify gaps in knowledge and weaknesses in our ability to observe, understand and statistically calculate extreme events, and
- to review modelling capabilities to estimate the occurrence of extreme events.

Projected outcomes are

- a review of the current state-of-the-art research, gaps and advances in observations, analysis, modeling and prediction (focusing on the scientific understanding),
- action items with identified partners on how to coordinate overlapping interests, close gaps in knowledge, and enhance networking between groups; and
- plans for further research in Baltic Earth

[www.baltic-earth.eu/BACC2](http://www.baltic-earth.eu/BACC2)  
[www.baltic-earth.eu/hazards](http://www.baltic-earth.eu/hazards)

## What do interested audiences think about climate change, the role of science and the Baltic Sea?



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When discussing issues related to climate change, and in particular the process and results of BACC, I have recently used our “Turning Point” technology (for a voting pad, see Figure) to map the opinions among the audience. This system allows showing questions and different answer possibilities on the screen, and the participants respond by pressing a number of the pad – the frequency is determined by software on the laptop. When the voting is complete, the result is shown on the screen – visible for everybody. The voting itself is anonymous, as nobody can really see which number the neighbor is pressing.



The motive for doing this is two-fold, one to allow the audience to note that there are indeed different opinions in the room – the response is usually very positive – and that it may give us Baltic Earthers an extra understanding on what our stakeholders perceive and believe. Obviously, these surveys do not provide a representative estimate of opinions, but a mere snapshots of very different groups. In my case, these groups have all in common not only that they are interested in climate and the Baltic Sea, but they also have joined a presentation by Hans von Storch.

So far I have used the system three times in the Baltic Sea context, with audiences between 15 and 50 people. In one case, voting pads failed so that only about 10 people could participate. These three runs took place in December 2013 in Germany, Denmark and Latvia. The survey was done in the local languages.

The questions used so far were:

### Man-made climate change

1. I am convinced that we are currently experiencing human-induced climate change.
2. I have serious doubts that we are dealing with a human induced climate change
3. No answer

### Energy & climate policy

1. I support the energy transition policy that leads away from nuclear, oil and coal use
2. I find the transition premature and connected with too high costs
3. I do not believe that science legitimizes the energy transition
4. I tend to prefer a different climate policy, such as adaptation as needed or geoengineering
5. No answer

### Extreme weather events

1. I perceive an increase in the strength of regional storms in the last decade
2. Our storms have always been dangerous but I cannot determine a systematic change towards more or stronger storms
3. No answer

### Role of science in policymaking

1. Science should make policy recommendations to deal with problems when first indications show up that there is a serious problem
2. Science is to make policy recommendations dealing with problems when a consensus is made in science
3. Science should not issue any recommendations, but only describe the problem and possible solution strategies
4. No answer

### I am seriously concerned about the state of the Baltic Sea because of

1. Eutrophication
2. Pollution (incl. dumped ammunition)
3. Overfishing
4. Climate change
5. Several causes
6. Other causes
7. No answer

The Danish, German and Latvian versions are available on the web: Go to [thebaccblog.blogspot.de](http://thebaccblog.blogspot.de) where this article is posted and direct links to the details of the survey are given.

	D	DK	LV
Max sample	27	12	13
<b>A % Climate change</b>			
Man made	48	100	38
Doubts	48	0	50
No answer	4	0	13
<b>B % Policies</b>			
Support of present energy policy	42	75	11
Present policy immature	31	0	33
Science insufficient to legitimize energy policy	24	0	55
Other climate policy	4	17	0
No answer	0	8	0
<b>C %Extreme weather</b>			
Recently more storms	28	45	55
Unchanged	60	18	46
No answer	12	36	0
<b>D % Policy</b>			
Recommendation based on indication	40	33	50
Recommendation based on consensus	32	42	8
No recommendation, but options	20	17	42
No answer	8	8	0
<b>E % Baltic Sea</b>			
Eutrophication	8	0	8
Environ. Pollution	23	0	23
Overfishing	4	8	0
Climate change	8	8	8
Several causes	42	75	54
Other causes	8	8	0
No answer	8	0	8

The frequencies of responses of our surveying of - so far - three quite different groups are given in the table above. The German group was an audience in a German University town, the Danish group were students in a regular lecture; the Latvian sample is a group of stakeholders.

Evidently, the opinions vary greatly. Among the Danish students, there are no doubts about the fact that man is the main driver behind the ongoing climate change, whereas in the other two groups from Germany and Latvia, about 50% of the participants have serious doubts about this explanation. In Germany and Denmark, the respondents favor the present energy-policy of out-phasing fossil fuels (and nuclear) from the energy mix, but in Latvia, stakeholders are more reluctant and find such a policy immature and insufficiently supported by science.

A change in storminess is perceived by a majority in the Danish and the Latvian sample, but not in the German sample. 60% to 70% in all three groups favor science to give policy recommendations, either when first signs show up or when consensus has been established. The position of an “honest broker”, which provides analysis and contextualizes options, is favored by 20% in Germany and Denmark, but by 40% in Latvia.

With respect to causes of concern with respect to the Baltic Sea, most respondents see several significant factors at work; the single most significant is seen in pollution, whereas all others are only on the minds of very few members of the groups. Interestingly, the Danish students voice no concern about pollution and eutrophication as primary issues, maybe

because of their chemistry curriculum is likely dealing also with water quality issues.

### Help needed

I ask for comments of this exercise – are these questions precise enough, are answers to such questions informative? I am ready to change the catalog of questions accordingly. Also, I would help to get the list of questions also in other local languages of the Baltic Sea regions. Please check the compatibility of the different versions.

I would welcome very much, if others would like to use the same format with their audiences. This effort would then become a major component in the Working Group on Outreach and Communication within Baltic Earth.

PS: The internet tool (<http://www.poll Everywhere.com/>) allows to do such surveys with a laptop, and the participants use their smart-phones.

[thebaccblog.blogspot.de](http://thebaccblog.blogspot.de)

## Project Reports

### FoMoBi (Foredune - Morphodynamics – Biodiversity) - A project to investigate dune dynamics and biodiversity on the Polish coast

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Dune coasts cover more than 80% of the Polish coastline (length 500 km, mainly aligned). Nowadays, dunes and natural habitats are transformed into artificial habitats in coastal urban areas due coastal protection works. This type of habitat is also increasingly threatened due to the development of tourism and an anticipated increase in storminess.

The Polish research project „The location and morphodynamics of the foredune environment and vegetation fluctuations – The biodiverse habitat on the Polish coast“ (FoMoBi) started in October 2011 and will continue until June 2014.

The FoMoBi project (1) is aimed at understanding the contemporary foredune relief, their dynamics, vegetation patterns and the emerging threats to that habitat as a part of accumulative coasts ([en.fomobi.pl/](http://en.fomobi.pl/)), and (2) reflects the need of education and the future use of these valuable areas. The research is carried out with financial support from the National Center for Research and Development along the whole Polish coast, where there are sections of accumulation on coastal dunes.