



What does the public want to know about the sea?

Exploratory analysis into the information needs of the public at large with regard to knowledge of the sea and coast

Memo of the Flanders Marine Institute (VLIZ):
Jan Seys , Nancy Fockedey , Evy Copejans,
Tom Hoeberigs & Jan Mees

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STRUCTURE:

- 1) Why this memo?
- 2) What does the public at large know about the sea and coast?
- 3) What do people want to know? Estimate based upon:
 - a. Survey among 1250 students/senior citizens & focus interviews
 - b. Questions through VLIZ Infodesk
 - c. Questions through 'Ik heb een vraag.be'
 - d. Summary & discussion
- 4) Themes/suggestions which possibly meet these information needs
- 5) Conclusion

WHY THIS MEMO?

Within the scope of possible redesign plans for the east bank of Ostend, exploratory talks were recently initiated at the initiative of Buitengoed vzw between the hands-on centre Technopolis and various marine and coastal partners, including the Flanders Marine Institute (VLIZ). The intention is to find out how a hands-on centre for science and technology à la Technopolis could be established around the theme of the sea.

On the basis of its experience in disseminating knowledge and information about the sea and the coast and about marine and coastal sciences in Flanders and abroad, VLIZ is prepared to participate in this exercise and to assist in supporting possible lines of thinking as to implementation. VLIZ has served as information, coordination, data and logistic support centre for over 1000 marine and coastal scientists in Flanders since 1999. Within this framework it occupies a key position in providing an overview of the available marine and maritime knowledge and the existing information needs. Partially because of this, VLIZ has been the structural partner of the Flemish Government for marine and coastal scientific information since 2007.

This memo first of all discusses the experiences and the desires of the public as to marine and coastal information, on the basis of four different sources.

This is followed by a summary of suggestions for themes which may be included in a hands-on centre for marine and coastal sciences.

WHAT DOES THE PUBLIC KNOW ABOUT THE SEA AND COAST?

A survey among 1250 people in East and West Flanders

To support its activities VLIZ asked Arteveldehogeschool Ghent to conduct a survey in 2005. This survey assessed the knowledge of the public at large about the sea and the coast. During his work placement at this institute for higher education, Tom Hoerberigs surveyed no less than 1250 respondents in East and West Flanders (http://www.vliz.be/docs/groterede/GR14_kennis.zee.pdf).

His thesis consisted of checking the knowledge of this target group on the one hand, and determining what people wanted to know about the sea and the coast and in which format on the other hand. The knowledge test comprised 14 multiple-choice questions drawn up by marine and coastal experts on a wide variety of subjects. The questions were presented to 17-18 year old students in general secondary education and to senior citizens. Both target groups accounted for approximately half of the total number of respondents, which means approximately 600 persons each. The tests took place under the supervision of a teacher in the classroom or in the presence of Tom himself in senior citizens clubs.

Knowledge limited and less intimate the less people are connected to the sea
Endless

The total average score for the 14 multiple-choice questions was 52%. An element which was not surprising but was demonstrated by figures for the first time was that the score is higher the stronger the ties are with the sea. In other words, people who work at sea (pilots, fishermen, crew members) know the sea better (score: 64%) than people working (57%) or just living (56%) at the coast. Even among the group of tourists a significant difference in knowledge can be seen between tourists who visit the sea less (43%) or more than 5 times a year (49%). Students in general secondary education (53%) have a better average score than senior citizens (49%), and men (56%) perform better than women (50%). Although the level of difficulty of the questions is open to discussion, there were nevertheless quite a number of questions with surprisingly low scores. For example, only 28% of the respondents knew that stagnant seawater does not freeze at minus 1°C, but at a lower temperature, and only 13% knew that groynes do not break water, but are used to prevent beach erosion. Questions about regression and transgression, the cause of the salty nature of the sea and the average depth of the North Sea also proved problematic (56-87% incorrect answers). This limited knowledge also fits in with the image people have of the sea. As a matter of fact, the same respondents were also asked what they think of if they think about the sea. Although numerous human activities take place in the Belgian part of the North Sea and all kinds of things happen under the water surface, approximately 80% mainly associated the sea with ice cream, the sun, the beach and holidays. In the second place (approx. 20%) attention was paid to 'natural

elements' such as fish, birds and dunes, and in the third place (ca. 10%) was the association with a sense of freedom, infinity, beautiful horizons and sunsets etc. This means the sea is mainly associated with emotional elements and with tourist recreational elements.

WHAT DO PEOPLE WANT TO KNOW ABOUT THE SEA AND THE COAST?

Three sources

Three sources were used to answer this question. First of all, this question was asked verbatim to the same group of 1250 respondents who participated in the above-mentioned survey (cf. [1]). In addition, a number of so-called 'nominal group technique interviews' were held in Bruges and Knokke-Heist with 8 and 10 persons respectively within the scope of the same work placement. During this moderated conversation the participants were asked to formulate as many questions as possible on the sea and the coast to which they would like to know the answer. The formulated questions were subsequently discussed by the group and registered.

In addition, the information requests of 2007 and 2008 were analysed which had been submitted by phone or by e-mail through the VLIZ Infodesk (cf.[2]). It concerns approximately 200 questions a year. Only questions related to knowledge transfer were retained (i.e. no questions as to the particulars of experts and the like).

Last but not least, we also examined which types of marine and coastal questions were asked through the website 'Ik heb een vraag.be' (cf.[3]). Started in spring 2008, this initiative enables interested persons to fire questions at experts through a website. The coordinator, the Royal Belgian Institute for Natural Sciences and the different scientific partners ensure that these questions are answered within a reasonable amount of time. VLIZ is a partner in this project and committed itself to assist in answering as many marine and coastal questions as possible.

[1] The survey

Neither the results to the open questions "What do you want to know about the sea" within the scope of the comprehensive survey nor the results of the focus group interviews were processed mathematically. It was nevertheless clear that people asked remarkably many questions directly related to the immediate living environment of the interviewee. In addition, many questions revealed a certain level of concern. A

remarkable number of questions were directly or indirectly related to threats to human welfare or to the welfare of animals and plants in the sea (e.g. sea pollution, sustainable future, Tricolor disaster, coastal defence etc.).

New evolutions, such as the appearance of wind turbines at sea, also attract much attention. Purely technical and impersonal information not directly related to human welfare (e.g. beaconing at sea, shipping, water collection in the dunes ...) get far less attention.

The list of the 25 types of information that were most frequently quoted includes :

- life at sea and its evolutions
- climate change impact
- chance of flooding at the coast
- quality of fish caught and consumption risks
- quality of the North Sea water
- weather forecasts
- danger zones at the beach and origin of undercurrents.

[2] Questions through VLIZ Infodesk

We extracted 80 knowledge questions out of some 300 questions answered through the VLIZ Infodesk in 2007 and the first six months of 2008. Most other questions which are not dealt with here concern expertise questions (where can I find someone who can tell me something about? is there a publication on this subject? etc.). The selected questions give an accurate image of the kind of questions asked through this channel (cf. Table 1).

The table below shows that approximately half of the questions asked concerns basic knowledge; the other half concerns specialist knowledge. Over one third (37%) of the questions asked through the VLIZ Infodesk deal with fauna & flora. Then we have questions about the use of the sea (=shipping/ports + fishing/aquaculture + architecture/technology: 32% altogether) and general questions (oceanography + climate + geology/geography: 19% altogether). A little more than half of the questions (53%) result from own observations which people would like to know more about. Almost 70% do not seem to be linked to fear of a particular danger or to hope of salutary effects. Questions expressing clear concerns about the functioning of the public authorities (is this fish species sufficiently checked for the presence of PCBs? Are we actually safe from the sea level rise?) turn out to be very rare. Finally, 65% of all questions deal with the local region (Flanders/Belgium and the North Sea). Questions with respect to the entire world or questions not geographically specified only represent 29%.

Table 1: Classification of 80 and 92 marine and coastal questions asked by the public at large through (1) the VLIZ Infodesk and (2) 'Ik heb een vraag.be' respectively. The questions were classified according to level; theme; whether they originate from own observations; whether they express danger or 'concerns towards the government'; and their geographic scope. The coloured boxes accentuate the most important figures.

share expressed in terms of %	VLIZ Infodesk	Ik heb een vraag.be
Level		
<i>Basic</i>	46	58
<i>Expert</i>	54	42
Theme		
<i>Fauna/Flora</i>	38	12
<i>Shipping/ports</i>	16	7
<i>Physical/chemical oceanography</i>	14	51
<i>Climate</i>	4	12
<i>Pollution/health</i>	5	2
<i>Fishing/aquaculture</i>	9	0
<i>Geography/geology</i>	1	9
<i>Language/history/law</i>	5	4
<i>Architecture/technology</i>	8	3
From own experiences/observations		
<i>Yes</i>	53	19
<i>No</i>	47	81
Danger vs. salutary effects		
<i>Dangerous</i>	13	20
<i>Neutral</i>	69	77
<i>Salutary</i>	18	3
Concerns towards the government		
<i>Concerned</i>	8	10
<i>Unconcerned</i>	92	90
Geographic scope		
<i>Flanders/Belgium</i>	52	13
<i>North Sea</i>	13	3
<i>Europe</i>	6	2
<i>World/undefined</i>	29	81

In short:

The VLIZ Infodesk receives a healthy mix of basic knowledge and expert questions with a major focus on fauna/flora and use of the sea. The questions are mainly linked to Flanders/Belgium and the North Sea, are not driven by fear of a particular danger or poor functioning of the government and originate from own observations in half the cases.

[3] Questions through 'Ik heb een vraag.be'

The 92 questions that have been answered since the website 'Ikhebeenvraag.be' (in English 'I have a question.be') went on-line give the following picture (cf. Table 1).

Both basic knowledge questions (58%) and expert questions (42%) occur. Thematically, general scientific questions with regard to physical and chemical oceanography are remarkably well represented (51%). In combination with the climate and geology/geography questions, this brings the share of purely scientific knowledge questions on non-living matter to 72%. Fauna and flora account for another 12%. Questions on the use of the sea ('shipping/ports' + 'fishing/aquaculture' + 'architecture/ technology') also represent only 10%. There are practically no questions concerning possible dangers (20%) or government dysfunctions (90%). It is remarkable, however, that, contrary to the questions asked through the VLIZ Infodesk, a majority of these questions are not linked to own observations (19 as compared to 53%). It is also striking that 81% of all questions are of a global nature or are not geographically specified.

In short:

the marine and coastal questions received through 'Ik heb een vraag.be' have a slightly different profile than the questions received through the VLIZ Infodesk. It especially concerns general scientific questions on physics, chemistry, biology and earth sciences which are not geographically restricted or are of a global nature. The questions appear to originate from own observations rather rarely. In line with the questions of the VLIZ Infodesk it concerns a mix of basic knowledge and expert knowledge questions which do not originate from a suspected danger or concern.

[4] Summary and discussion

There are remarkable differences in the type of questions asked through the three channels discussed above . It seems that when you really invite people to ask questions (as in the case of the survey and the focus group interviews), they often bring up matters which are considered threatening: is the coast sufficiently protected against the sea level rise? does fish not contain too many PCBs? etc. It is also remarkable that in this scenario people especially look for information directly linked to their own environment and the environment of their loved ones.

If questions bubble up spontaneously and are asked through the VLIZ Infodesk or 'Ik heb een vraag.be', these questions seem to be mainly prompted by inquisitiveness. If there is a certain link/element of recognition between the asker and the initiative (as in the case of the

VLIZ Infodesk), the questions are less generally scientific, but originate from own observations more often: "I've seen that over there, what was it or why was it lying there?".

It is nevertheless possible to conclude that the questions which the public at large has about the coast and the sea are generally a mix of generally scientific questions of a global or regional nature, exact questions based upon own observations and questions which express concerns or try to establish a link with the body or living environment of the asker.

SUGGESTIONS FOR POSSIBLE THEMES

On the basis of these findings and the hundreds of questions collected through the 3 sources discussed above, a number of suggestions can be given for popular themes. Practically all questions mentioned were asked through one of the consulted sources:

'Fauna/flora' theme:

- fluorescence of the sea
- abundance of life in various oceans (e.g. dangerous marine animals through touch screen on a map of the world; e.g. link with counter on World Register of Marine Species etc.)
- sea air imitation = odour of dead seaweed
- jellyfish
- what to do if there are sharks
- dolphins and seals: differences with mankind (also look up this parallel for other organisms: "do fish drink?", "do fish also have hormones?"; "do starfish breath?" etc.)
- only organism on earth visible from space = coccolithophores

'Physical/chemical phenomena' theme:

- wind energy and other alternative forms of energy generation at sea
- ocean currents and the collapse of the Gulf Stream
- climate effects (e.g. on the sea level; flood risks and ocean acidification)
- freezing of seawater and temperature-buffering effect
- buoyancy in water (salt and fresh)
- composition of seawater
- pressure, light and t° at great depth (+ comparison of oceans with situation on land): cf movie on Polar Stern in www.planeeetzee.org
- "how far is the horizon?"
- simulation of tides?
- tsunami creation
- storm and Beaufort Scale
- formation of ripples on a beach by the flow of waves
- underwater sound propagation (make ship sounds heard underwater)
- where does the sand on the beach come from?
- impact of lightning on the sea?
- where does the salt of the sea come from?

- where does the water on earth come from?
- why is the sea blue, green, brown or even red?
- why is sea sand sometimes white, brown or black?
- how does a sailing boat return?
- is the weather better at the coast?

'Pollution and health impact' theme:

- foam on the beach
- plastics and degradability in marine environment
- what is cod liver oil and where does it come from?
- iodine in the air: a health fable?
- oil and its effect on bird feathers
- hypothermia in case of 'man overboard'
- comparison of blood serum and seawater
- scattering of ashes at sea
- why do you die of thirst when you drink seawater?

'Sea as a blessing' theme:

- all kinds of recognisable pharmaceutical products from the sea
- energy from seaweed? cosmetics from jellyfish?
- production of drinking water from seawater
- sea proverbs in language

'Use of the sea' theme:

- "how many vessels are there all around the world"; what types
- buoys/beacons/lighthouses
- shipwrecks: e.g. Titanic

CONCLUSIONS

This memo discusses what questions the public at large has about the sea and the coast. The analysis is based on three sources: (1) a survey among 1250 students in general secondary education / senior citizens in East and West Flanders complemented with some focus group interviews; (2) the knowledge questions answered through the VLIZ Infodesk; (3) the knowledge questions answered through 'Ik heb een vraag.be'.

The analysis first of all shows that the type of questions asked partially depends on the circumstances under which the questions are collected. If actively encouraged to fire questions about the sea and the coast, people will tend to express their concerns about matters possibly threatening to the personal living environments ("how much does the sea level increase?"; "is the fish we eat actually healthy?" etc.). When people ask questions spontaneously, they will rather be generally scientific questions resulting from pure inquisitiveness. Some questions are general and global in nature, others are specific and originate from own observations.

Some themes are nevertheless clearly popular and occur in each of the consulted sources, such as general physical and chemical questions about oceanography, fauna and flora questions, questions that draw parallels with the human body and questions about the uses and salutary effects of the sea. Starting from these themes a number of careful suggestions are made with regard to possible marine content that can be elaborated in a hands-on science centre.