Stakeholder's Attitudes to the Development of Aquaculture in the Baltic Sea Region

Unto Eskelinen, Petri Heinimaa and Maarit Perkonoja

Baltic Sea Region Programme 2007–2013

Part-financed by the European Union (European Regional Development Fund and European Neighbourhood and Partnership Instrument)

AQUABEST

Finnish Game and Fisheries Research Institute, Helsinki
2012

ISBN 978-951-776-914-3

AQUABEST

Reports of Aquabest project 2 / 2012

Stakeholder's Attitudes to the Development of Aquaculture in the Baltic Sea Region

Unto Eskelinen, Petri Heinimaa and Maarit Perkonoja
Finnish Game and Fisheries Research Institute

Description

Authors Unto Eskelinen, Petri Heinimaa, Maarit Perkonoja		
Title Stakeholder's Attitudes to the Development of Aquaculture in the Baltic Sea Region		
Year 2012	**Pages** 23	**ISBN** 978-951-776-914-3

Abstract

As part of the aquaculture development under the EU strategy for the Baltic Sea Region the stakeholder attitudes towards aquaculture in the region were assessed. The survey was carried out in native languages in all EU member States of the Baltic Sea coast. Target groups were aquaculture producers, fisheries and rural administrations, research and education and environmental authorities and organizations. The results showed that the global role of growing aquaculture as an eco-efficient primary food production was rather unanimously accepted. The attitudes towards problems, constraints and opportunities of aquaculture in the Baltic Sea Region are very similar in all parts of the region. The environmental stakeholders were slightly more than others concerned on environmental constraints of the industry. In all target countries the heavy and complex legal regulation framework was considered to be a crucial barrier of aquaculture development. In spite of expressed worries, the majority of respondents in all groups can see opportunities for the growth of aquaculture in the Baltic Sea region

Keywords
Aquaculture, Baltic Sea, Survey, Stakeholders, Regulation, Environmental impacts

Publications internet address
http://aquabestproject.eu/reports.aspx

Contact
unto.eskelinen@rktl.fi

Additional information

AQUABEST

Contents

1. Background

Contrary to the rapid global growth of aquaculture, the production volumes in the Baltic Sea Region (BSR) have slightly declined during the last ten years. The development of sustainable aquaculture was included in the EU Strategy for the Baltic Sea Region (EUSBSR), adopted in 2009.

Flagship projects are the principal tool in the implementation of the EUSBSR. Aquabest project, part-financed by the Baltic Sea Region Programme 2007-2013 has the main responsibility of the reinforcement of sustainable aquaculture in the BSR.

As the first step, before the launch of Aquabest, a work for the definition of strategic goals was started. The outcome of this work of the catalyst project Bestaq was the Code of Conduct for developing responsible aquaculture in the Baltic Sea Region. The Code is published by Aquabest in the projects website: (http://www.aquabestproject.eu/media/6960/aquab_codeofconduct090512.pdf).

As an integral part of Code formulation, a survey of the bottlenecks and attitudes was executed. This report summarizes the survey results. The linkage between the survey, and Bestaq and Aquabest objectives is shown in the figure 1.

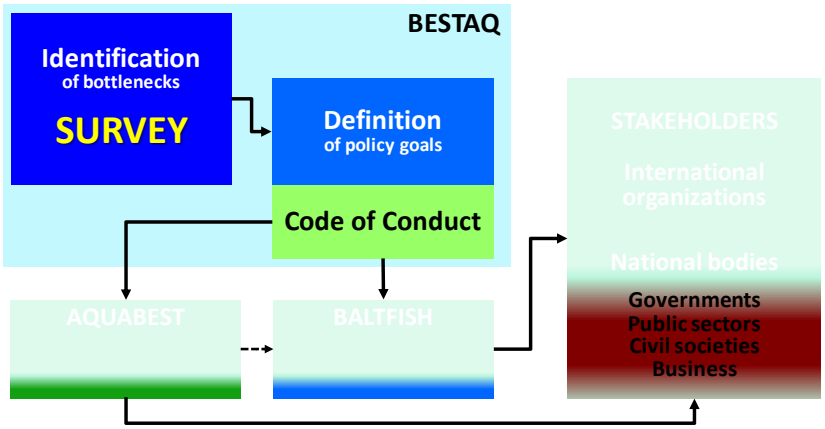

Figure 1. The role of this survey in the development of aquaculture in the context of the EU Strategy for the Baltic Sea Region.

2. Objective

Before definition of strategic goals it was necessary to know if the views on the industry's problems and their solutions are similar enough to enable BSR-wide development efforts. With this questionnaire we tried to find out answers to four crucial questions.

1. Are the views on the problems and the industry's future perspectives similar enough in different BSR countries? This is a necessary precondition for the meaningfulness of region-wide development goals.
2. Are the views on the problems and the industry's future perspectives similar enough among different stakeholder groups? Consensus would enable a target-oriented dialogue and co-operation.
3. Is there a need for common governance guidelines for aquaculture development in the region's countries, to justify defined goals and principles in the form of Code of Conduct.
4. Is there space for aquaculture production growth in the BSR, since growth is necessary for the economic viability of the sector.

3. Realization of the survey

3.1. Cooperation

The survey was carried out in tight co-operation with national partners from all EU Member States having Baltic Sea shoreline. The organizations and persons listed below translated the questionnaire and helped with the survey contacts. The Finnish Game and Fisheries Research Institute planned and technically executed the questionnaire.

- Finland: Finnish Game and Fisheries Research Institute (RKTL), Unto Eskelinen, Maarit Perkonoja, Petri Heinimaa
- Åland: The Government of Åland, Jenny Eklund-Melander
- Sweden: Jämtland County Council, Erik Olofsson
- Denmark: Technical University of Denmark (DTU Aqua), Alfred Jokumsen
- Germany: Johann Heinrich von Thünen Institute (vTI), Michael Ebeling
- Poland: Polish Trout Breeders Association, Dariusz Gorbachow
- Lithuania: Ministry of Agriculture, Alenas Brazauskas
- Latvia: Institute of Food Safety, Animal Health and Environment (BIOR), Ruta Medne
- Estonia: Ministry of Agriculture, Juhani Papp

3.2. Tools

The survey was executed over internet with Webropol© survey software.

3.3. Target groups

The survey was principally a personal expert query. The stakeholder groups covered diversely different standpoints and links to the aquaculture sector. The national partners defined the target groups who got the survey via personal link. In some cases the narrow contact network or limitations in the use of personal data forced to open the survey as a public link as well. Therefore the exact number of receivers is not known. Via personal links the questionnaire was sent to 349 persons.

3.4. Language versions

One of the principal aims was to reach also those grass-root stakeholders who have no foreign language skills. Therefore the native language was used in all the participating countries. The master version of the questionnaire was written in English (Appendix 1.). The national partners translated the query form, the cover letter and instructions from English to their native languages.
The cover letter was signed by the national partner and the form was provided also with the national partner's logo.

3.5. Timetable

The survey was carried out between June 2011 and May 2012. The preparation of the language versions and the collection of target group information were time-consuming and couldn't be started simultaneously in all countries. The rather long turnaround time was taken into account in the planning of the survey. The questions were timeless with no rapidly changing hot issues.

4. The survey

4.1. Structure

The questionnaire consisted of five questions which included sets of statements or proposals on the theme concerned. The respondents were asked to choose the option best matching with their opinion, on a five-step scale from full agreement to full disagreement. Space for free comments was also provided.

4.2. Contents

The survey approached aquaculture development in the BSR from a bird's eye view to the grass roots level. The first question included a set of global statements arguing for or against growing aquaculture. The second question focused the attention on the BSR-level, with statements on environmental, political and industrial pros and cons of the aquaculture development.

The next two questions measured the respondent's opinions on the feasibility of future management methods and reduction of the harmful environmental impacts. The third question concentrated on the traditional regulatory and process methods considering aquaculture as a point source loader. The fourth question presented more innovative management options, based on the ecosystem approach. The last question summarized the survey with three comprehensive options for the industry's future in the BSR.

5. The attitudes of the respondents

5.1. Respondents and presentation of the results

In this report the results are presented as bar-graphs with a single variable; the percentage of the respondents fully or largely agreeing with the statements. In the figures the results are sorted in descending order of supported opinions.

The results are presented by country groups (macro-regions) and by stakeholder groups (Table 1). The groupings were made to ensure adequate number of answers for all groups (Table 2).

Table 1. Groupings of respondents by macro-regions and stakeholders.

IN THE QUESTIONNAIRE	IN THE RESULTS	REASONING
Countries		
Estonia	**East**	Much in common in the political history, in the characteristics of coastal and inland waters and in the structure of aquaculture industry
Latvia		
Lithuania		
Poland		
Germany (BSR counties)	**West**	Societies with versatile aquaculture conditions, technologies and production structures
Denmark		
Sweden		
Finland	**North**	Special characteristics in the climatic conditions, water bodies suitable for aquaculture and in some degree in the regulatory frames of the industry
Aland (autonomic area)		
Stakeholders		
Aquaculture producer or association	**Industry**	Directly involved in the value chain of farmed fish production
Fish processing or trade		
Fisheries authority	**Fisheries and rural administration**	Public responsibility of the sectoral or regional development of aquaculture
Rural or livelihoods authority		
Sectors of education or research and development	**Research and education**	Advisory and know-how service role towards the aquaculture
Fish health authority		
Environmental or license permitting authority	**Environmental bodies**	Concentration on the environmental impacts of the aquaculture
Environment protection organization		

Table 2. The number of respondents by macro-regions and stakeholders.

	Macro-region			
Stakeholder group	**East**	**West**	**North**	**Total**
Industry	16	6	34	**56**
Fisheries and rural administration	7	7	10	**24**
Research and education	14	17	24	**55**
Environmental bodies	2	3	15	**20**
Not defined	2	0	1	**3**
Total	**41**	**33**	**84**	**158**

5.2. Global perspective

General global acceptability of aquaculture is naturally the necessary base for the regional growth of the industry. Figures 2 and 3 show the attitudes towards the general arguments connected to the acceptability of the aquaculture growth.

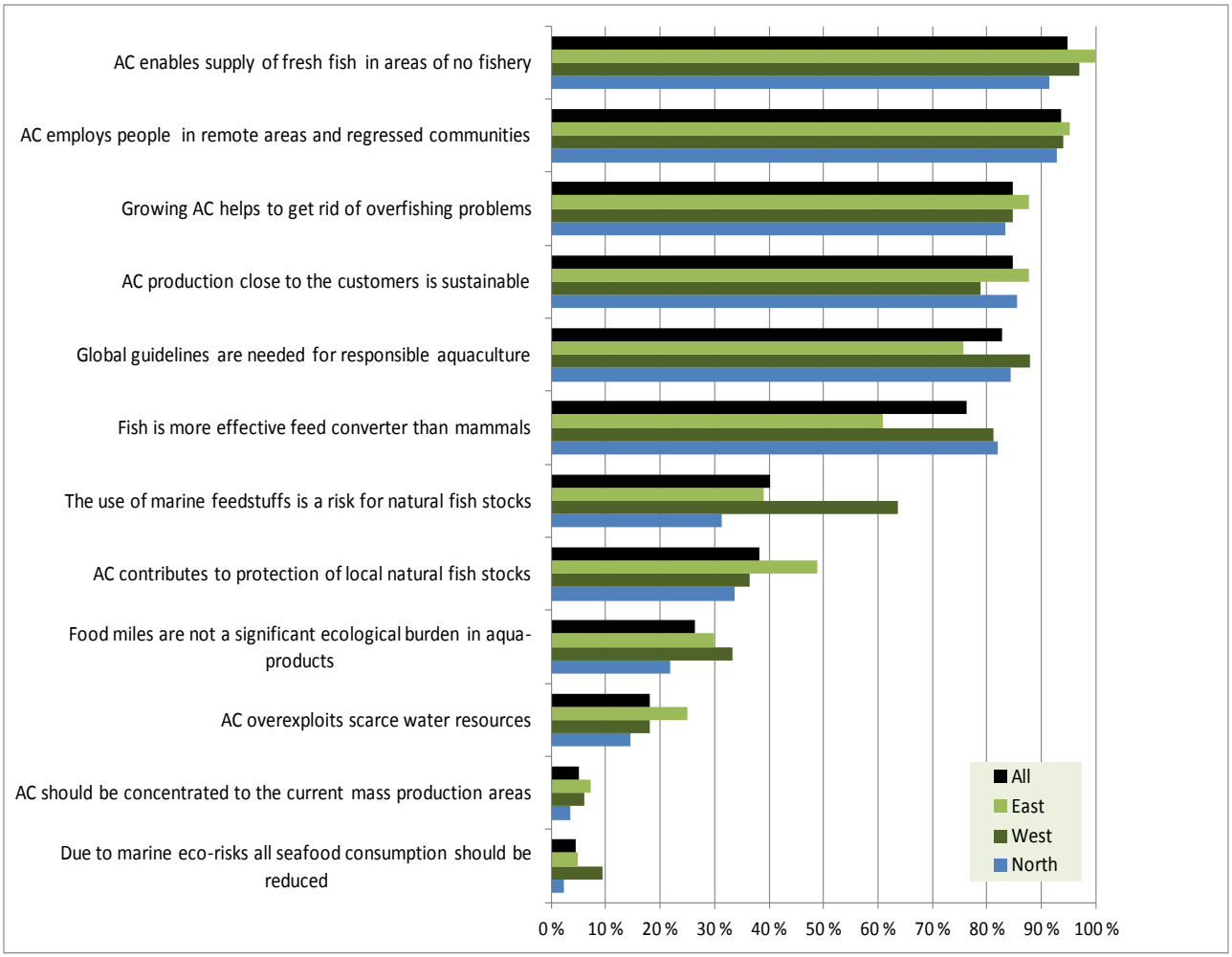

Figure 2. Attitudes to the global perspectives of aquaculture (AC) by regions. Percentage of respondents fully or largely agreeing with the statement.

Regionally the results are astonishingly uniform. The important role of aquaculture in bridging the gap between the steadily growing seafood demand and the declining catches is recognized and accepted.

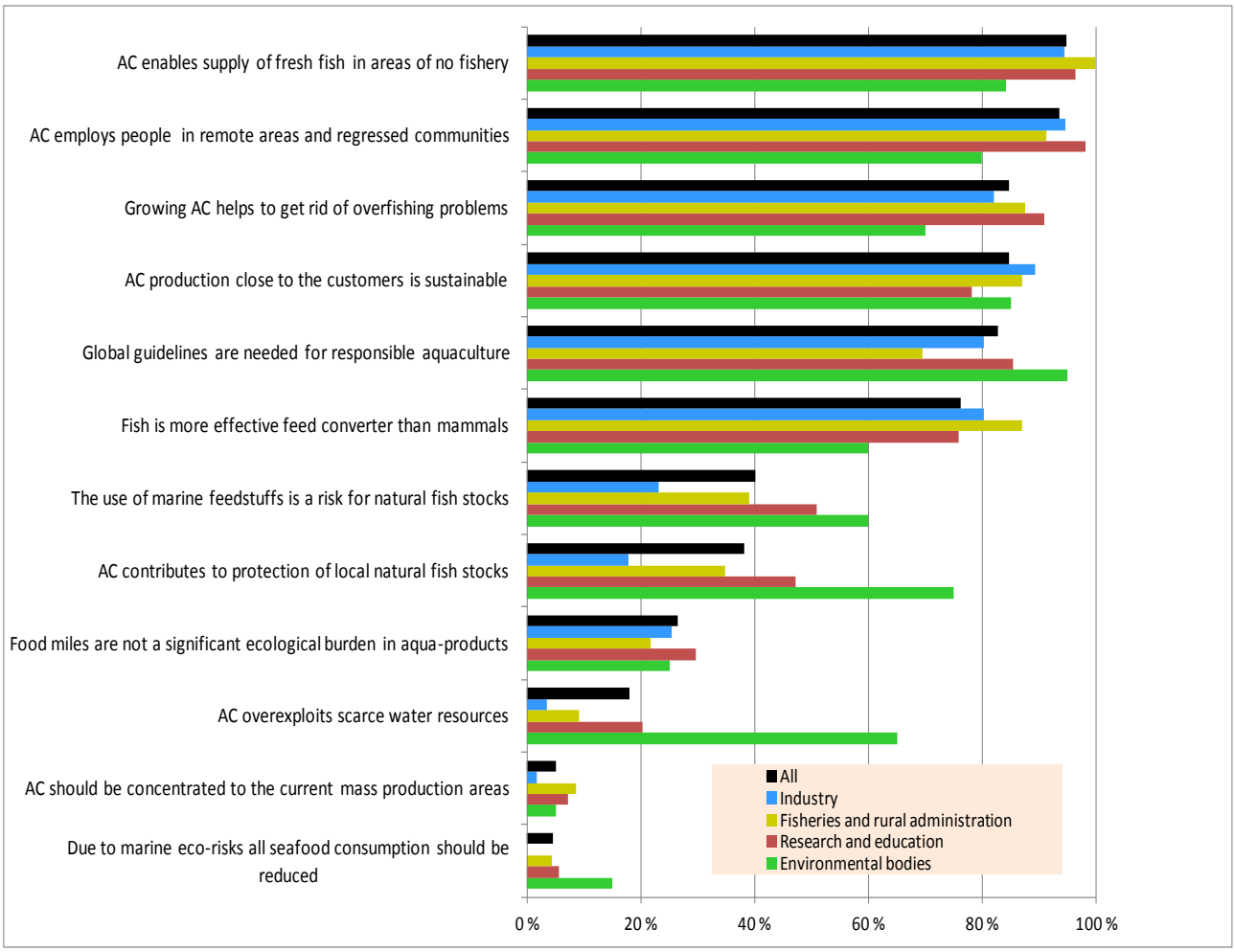

Figure 3. Attitudes to the global perspectives of aquaculture (AC) by stakeholders. Percentage of respondents fully or largely agreeing with the statement.

In a slight contrast to the regional uniformity there is some dissonance between the stakeholders. The environmental interest groups are more than others concerned on the overuse of finite resources and on the local environmental disturbances.

5.3. Opportunities and constraints in the Baltic Sea Region

When turning the focus from global level to the Baltic Sea level and to more practical questions, the results started to reflect regional differences in the natural conditions, industry structures and regulatory systems.

The attitudes towards the perspectives and limitations of the industry in the BSR are presented in the figures 4 and 5.

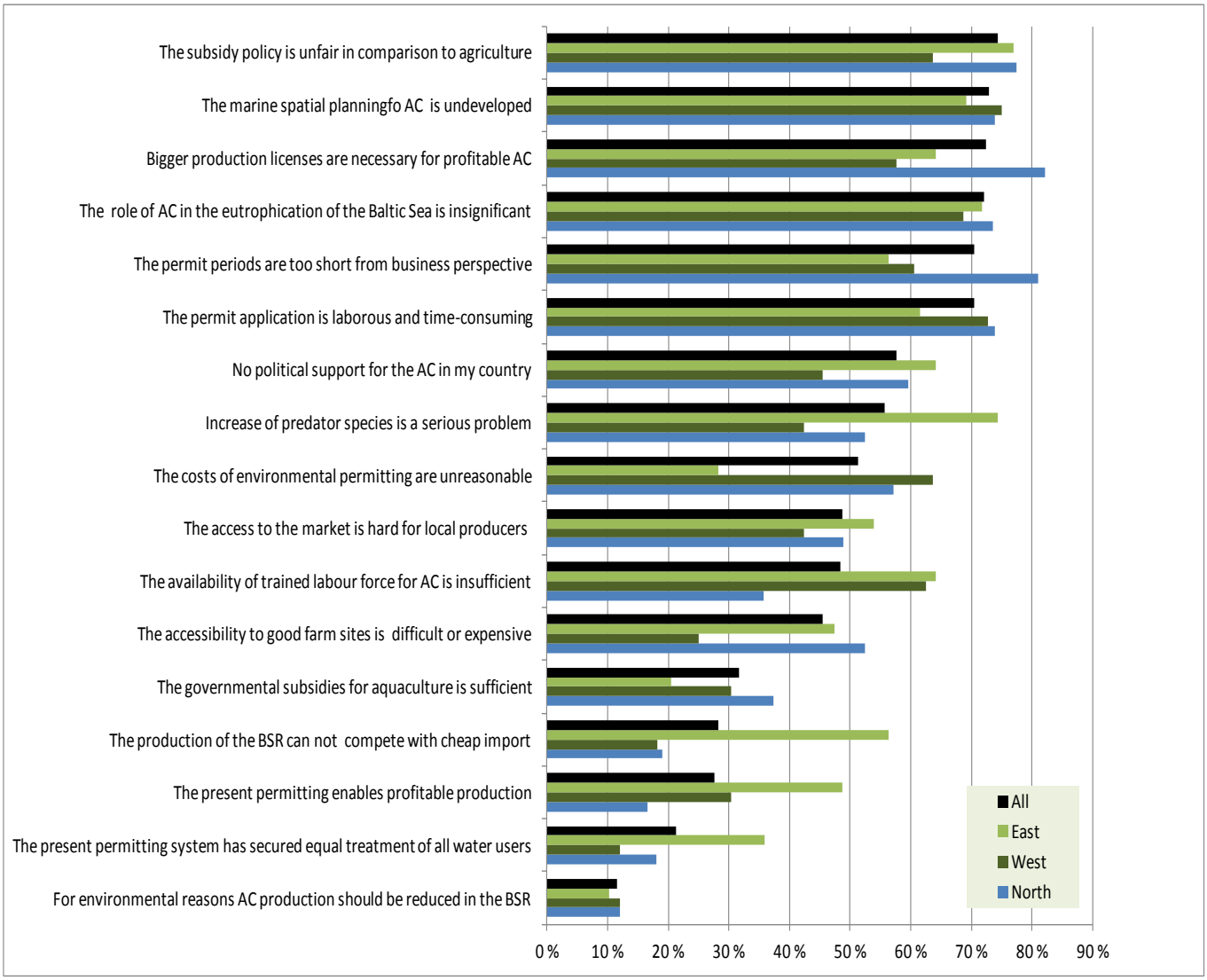

Figure 4. Attitudes to the perspectives of aquaculture (AC) development in the Baltic Sea area by regions. Percentage of respondents fully or largely agreeing with the statement.

The most significant observation is that the obstacles of political, legal or administrative nature are considered as much bigger disincentives of the industry development than the economic or environmental factors. In the Eastern area other than governance factors affect strongly on the industry, the severe cormorant problem and low competitiveness as examples.

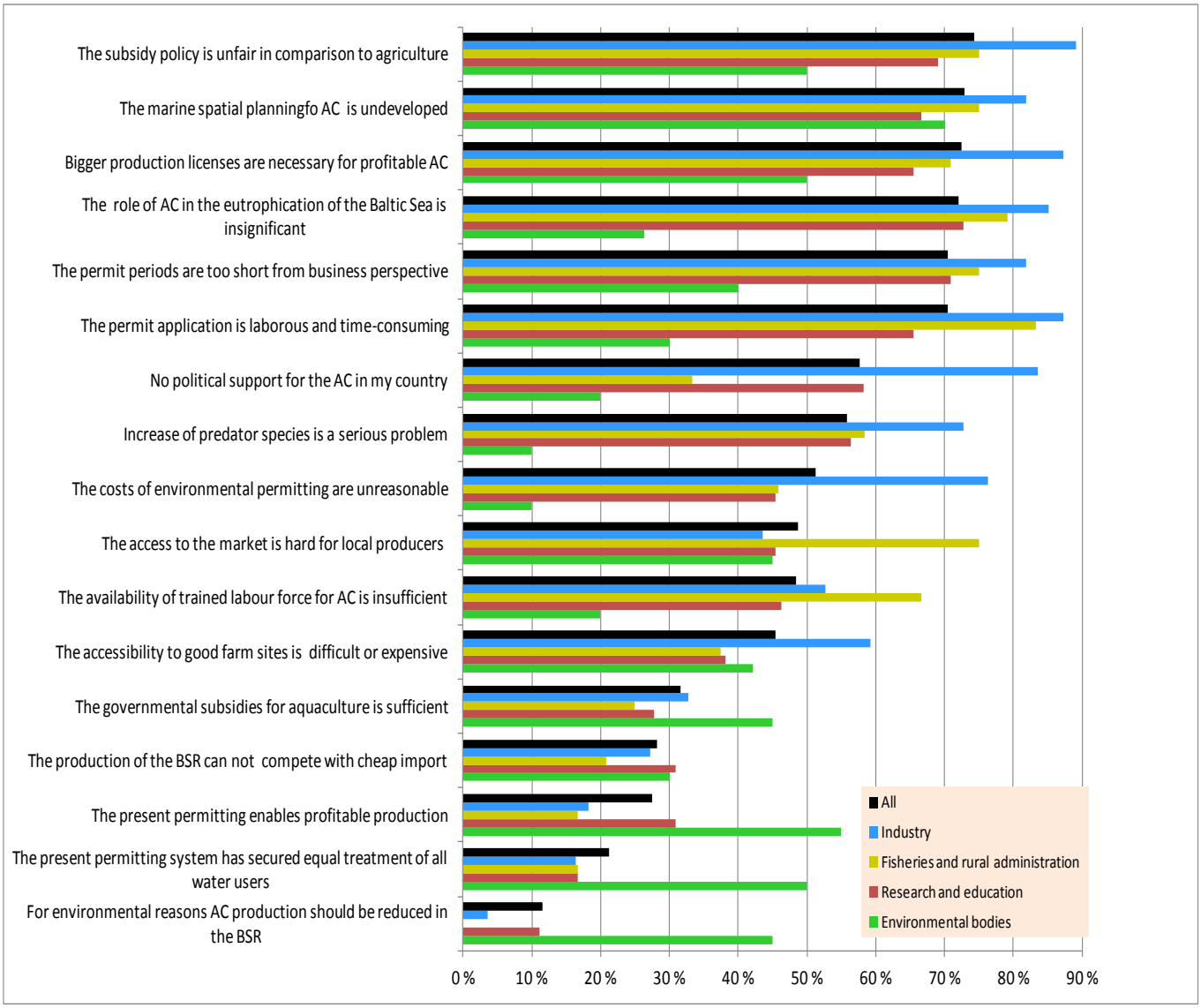

Figure 5. Attitudes to the perspectives of aquaculture (AC) development in the Baltic Sea area by stakeholders. Percentage of respondents fully or largely agreeing with the statement.

The environmental groups' stronger global criticism parallels the opinions on the BSR perspectives. This group supports more than others the strict command-and-control measures in the legal regulation and does nott consider this as an especially high economic or administrative burden.

5.4. Traditional methods in the control of adverse environmental impacts

At the present the environmental impacts of aquaculture are reduced by a variety of restrictions and process development measures. The legal limits and technology applications can not lead to improvements infinitely without jeopardizing the viability of the industry. It was therefore relevant to ask if substantial improvements can be achieved by these methods in the future. The results are in the figures 6 and 7.

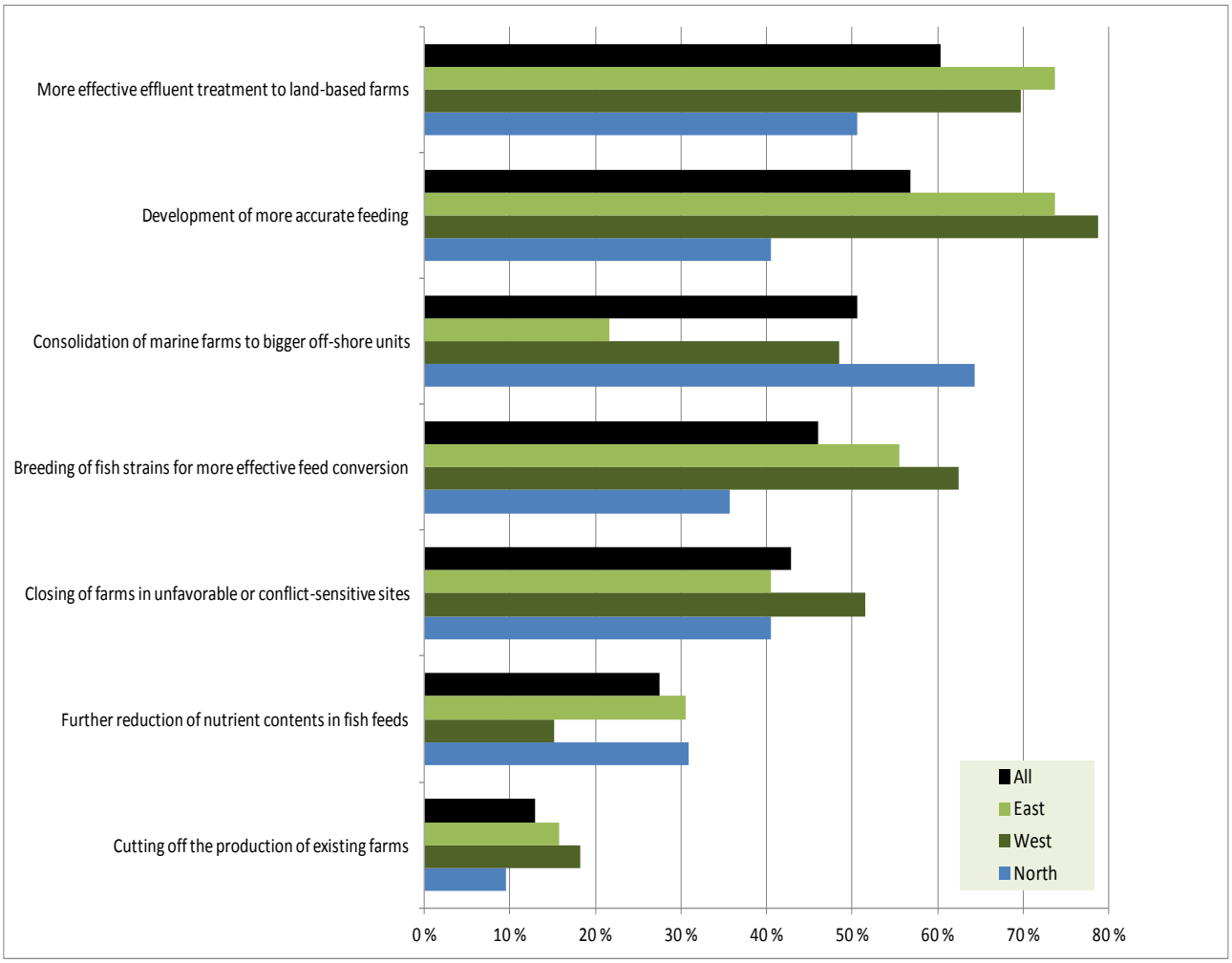

Figure 6. Opinions of the future effectiveness of traditional environment protection methods of aquaculture (AC) in the Baltic Sea area by region. Percentage of respondents fully or largely agreeing with the statement.

The attitudes towards the traditional measures in managing the environmental effects are quite parallel in the macro-regions of the BSR. Due to unsuitable natural conditions the marine farming is insignificant in the Eastern countries. Consequently the question of merging marine units is not relevant.

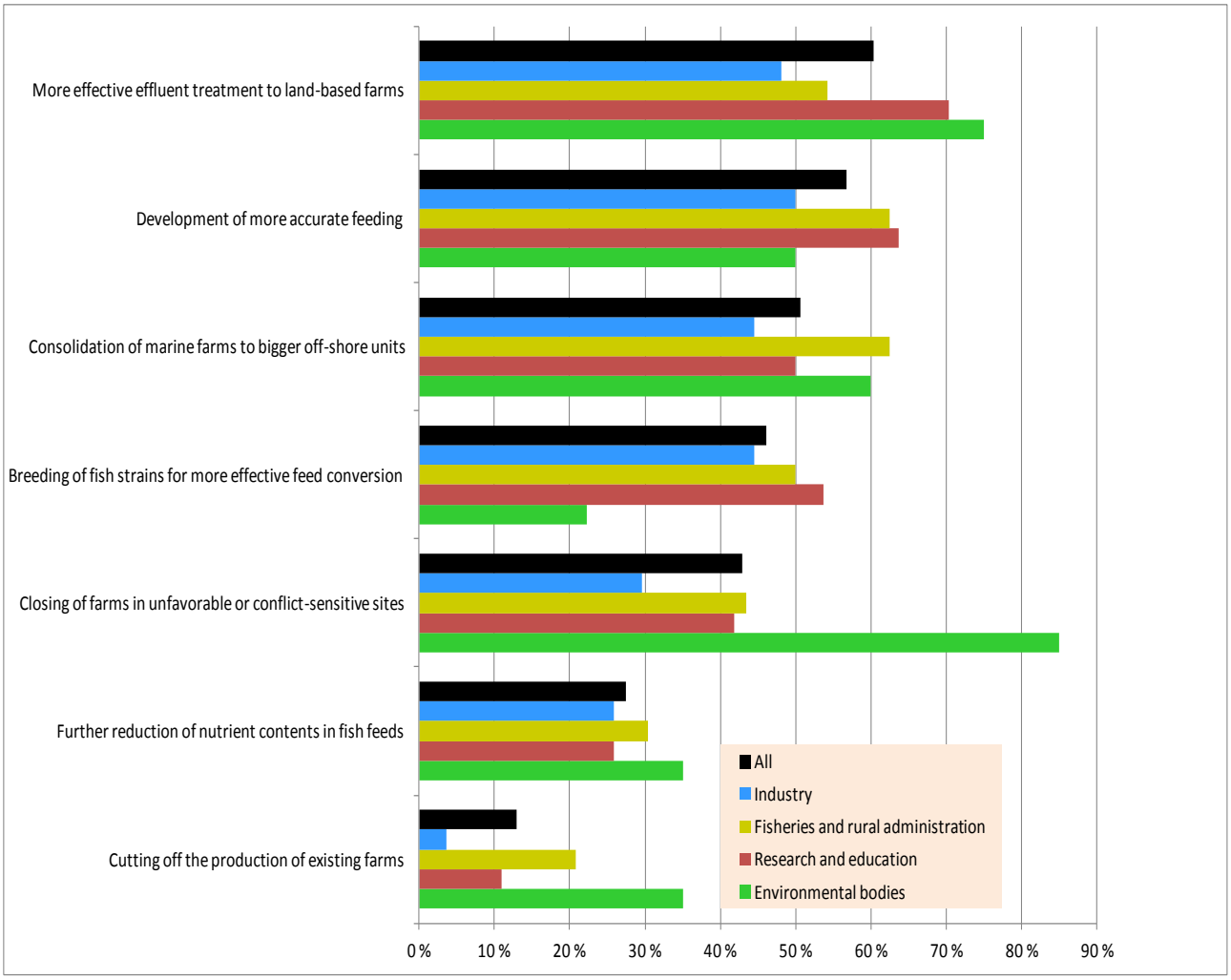

Figure 7. Opinions of the future effectiveness of traditional environment protection methods of aquaculture (AC) in the Baltic Sea area by stakeholders. Percentage of respondents fully or largely agreeing with the statement.

The external measures (bans, limits and end-pipe technique) are supported more in the environmental group than among the other stakeholders.

5.5. Usefulness of new approaches in the environmental management

As an environmental risk aquaculture is traditionally considered and treated as a point source of load. A more extensive approach has recently been demanded, even on high political level, e.g. by the FAO. The concept EAA, Ecosystem Approach for Aquaculture, has been created for consideration of the industry's environmental interactions in a broader way, both thematically and geographically.

Figures 8 and 9 show the results of the question asking opinions on some novel BSR-wide approaches and possible solutions to the environmental effects.

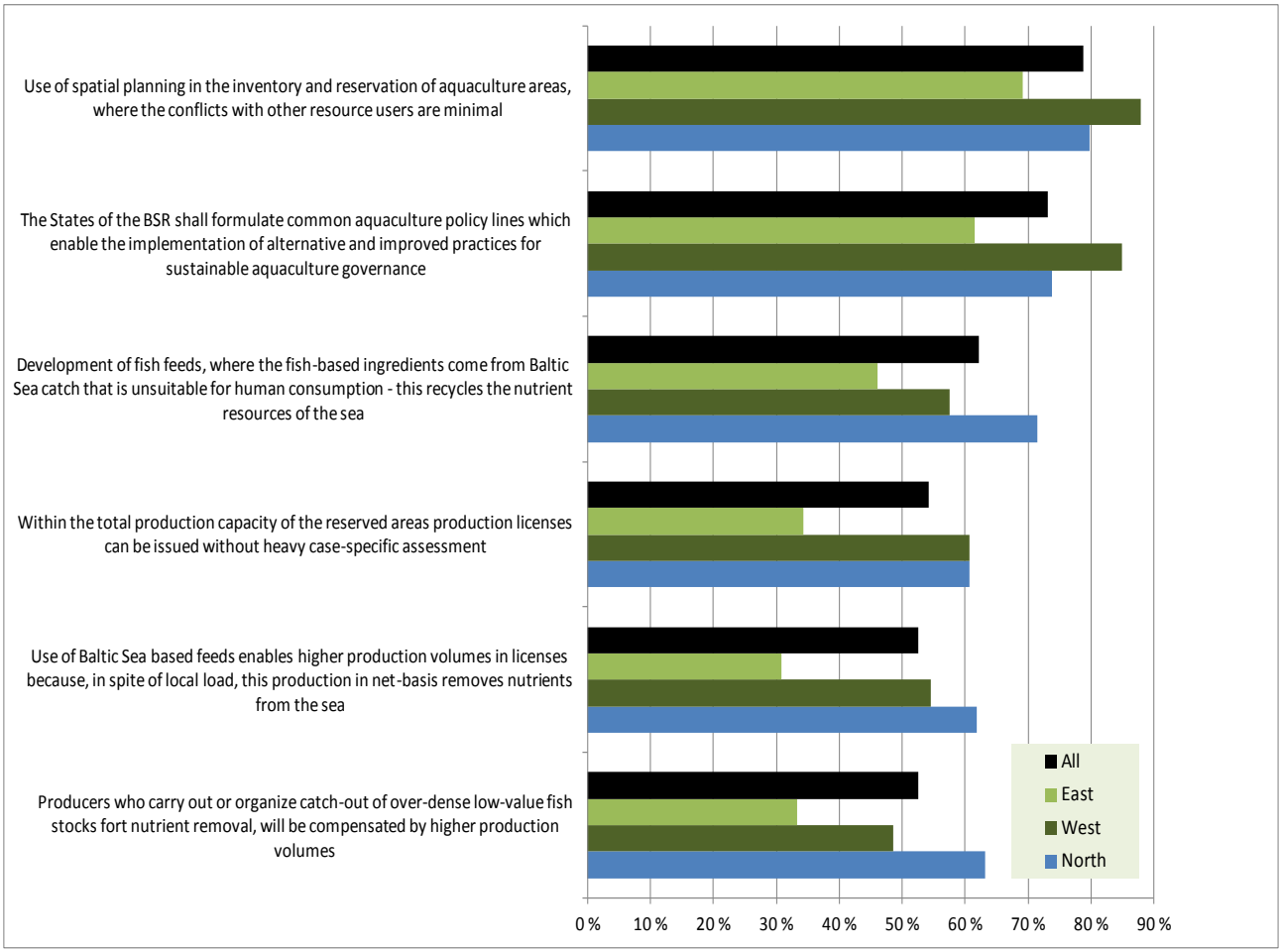

Figure 8. Opinions of the usefulness of novel approaches in the environmental management of aquaculture (AC) in the Baltic Sea area. Results by regions as percentages of respondents fully or largely agreeing with the statement.

The Eastern area's lower support to the new methods arises most likely from the structural differences of the industry: the statements are more or less linked to marine farming, which is of low importance in the eastern shores of the Baltic Sea.

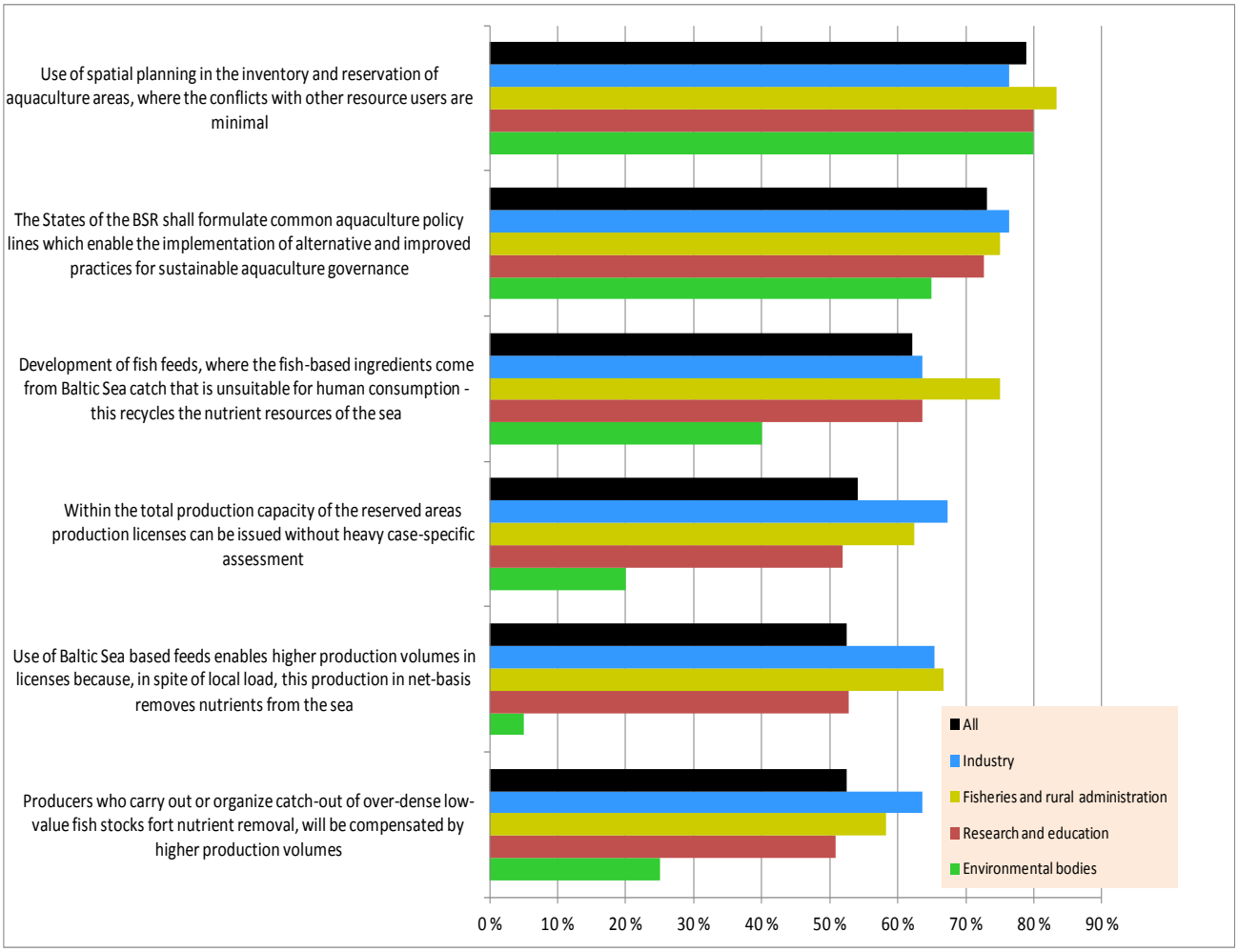

Figure 9. Opinions of the usefulness of novel approaches in the environmental management of aquaculture (AC) in the Baltic Sea area. Results by stakeholders as percentages of respondents fully or largely agreeing with the statement.

Concerning the attitudes of the environmental bodies the results are a mirror image of the figure 6. Contrary to the traditional measures the novel ideas get lowest support from the environmental groups.

5.6. Perspectives for the future of aquaculture in the BSR

The overall attitudes towards the possible role of aquaculture in the BSR were asked with three reasoned statements; close down, status quo or growing of the sector. As seen in the figures 10 and 11, a clear majority of all groups can see opportunities for the industry growth – with certain premises.

A parallel positive attitude was the result, when the possibilities were in earlier question 2 approached from a practical viewpoint – as favorable sites for fish farms (Table 3).

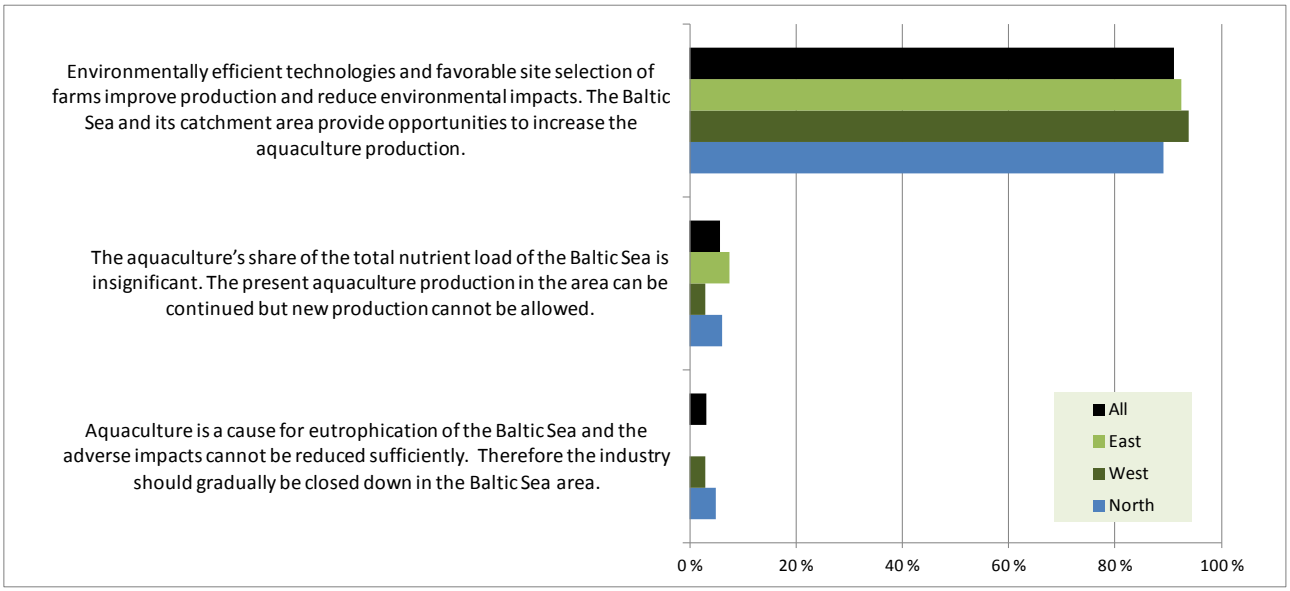

Figure 10. Attitudes to the development possibilities of aquaculture in the BSR by regions.

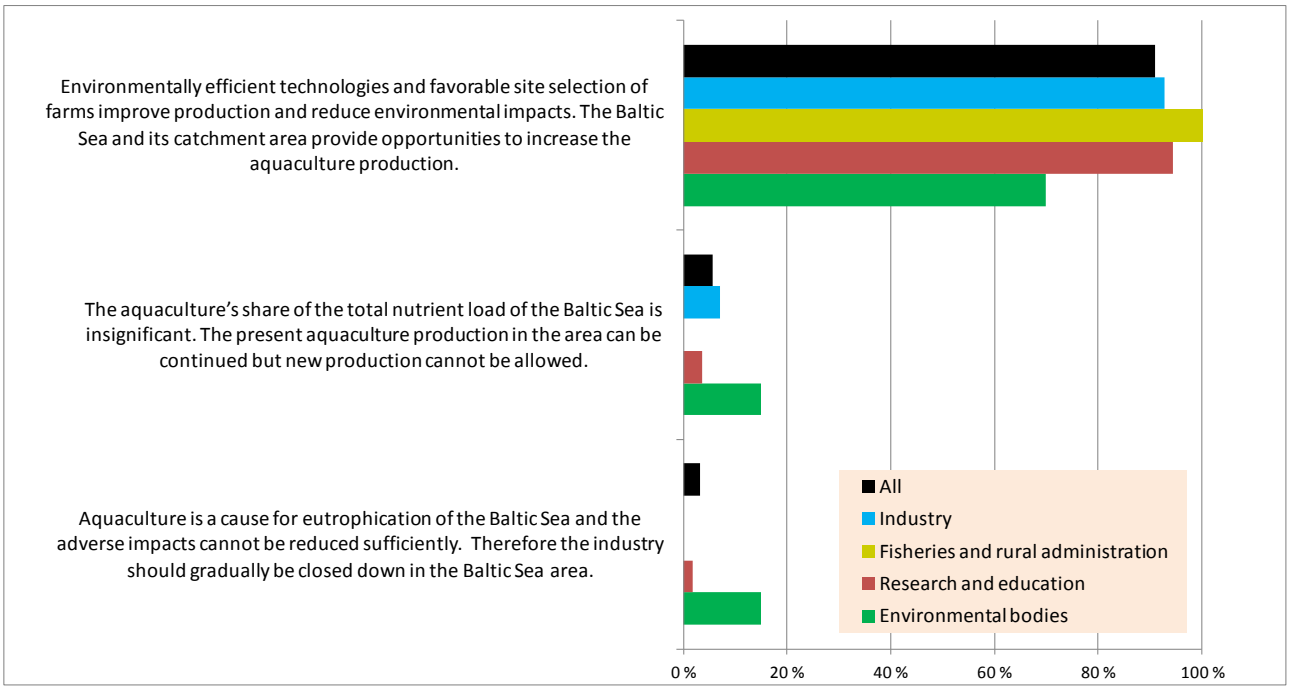

Figure 11. Attitudes to the development possibilities of aquaculture in the BSR by stakeholders.

Table 3. Attitudes towards the statement concerning suitable sites for fish farms in the BSR. Results by regions and stakeholders.

The Baltic Sea provides good coastal and in-land farm sites for a growing aquaculture production	Fully agree	Partly agree	Neutral	Partly disagree	Fully disagree
ALL	**47 %**	**36 %**	**8 %**	**7 %**	**3 %**
East	31 %	56 %	8 %	5 %	0 %
West	52 %	36 %	3 %	0 %	9 %
North	52 %	26 %	10 %	11 %	1 %
Industry	58 %	31 %	9 %	2 %	0 %
Fisheries and rural administration	54 %	46 %	0 %	0 %	0 %
Research and education	49 %	33 %	9 %	5 %	4 %
Environmental bodies	5 %	45 %	5 %	35 %	10 %

5.7. Free comments

The query was provided with space for open comments. The national partners translated the comments to English. The comments included a wide spectrum from general sustainability issues to local problems. The contents analysis in the table 4.

Table 4. Classification of the issues in the open comments of the questionnaire.

Issue of open comments	References in the comments
Additional arguments confirming the attitude to the statement	16
Explanations or reservations concerning the reading of the answer	10
New approaches to the issue in question	15
New cautions or restrictions to the issue in question	14
Criticism against the idea, structure or content of the questionnaire	5
Lack of competence to answer a specific question	5
General information of the troubles of aquaculture development	13
General criticism against the executed policy	4
Concretic proposals for solutions of specific problems	8
Questions to be answered before commit on the matter	5

6. General conclusions

The purpose of the survey was practical and with no scientific ambitions.

The multilingual method offered an opportunity to answer in native language. On the other hand, the translations always include risk of misunderstandings and non-equivalent concepts. When using eight languages there is no way to fully control these risks.

The multi-nationality set also challenges to the activity of responding. Messages from a foreign player and computer server didn't activate stakeholders as much as in the country of the survey operator. With reminders and public links the bias was decreased but not removed.

The data doesn't enable any far-reaching conclusions or verifications.

In spite of its limitations the questionnaire served well the basic purpose of its use. The good internal congruence of the answers indicates that the survey has been taken seriously. The results are considered opinions of the respondents.

The main findings of the survey can be compacted into five conclusions.

1. A properly managed growth of aquaculture is considered a necessary and responsible way to produce food to the growing global population.
2. The attitudes towards problems, constraints and opportunities of aquaculture in the Baltic Sea Region are very similar in all parts of the region.
3. Environmental stakeholders are more suspicious than other groups on the adverse local effects and abuse of finite resources.
4. Improvements in the spatial planning and in the international coding of the industry are strongly supported by all stakeholder groups.
5. In spite of expressed worries, the majority of respondents in all groups can see opportunities for the industry growth in the Baltic Sea region.

The aim of the Aquabest project is to pave the way for a growing and prosperous BSR aquaculture. The four main tasks of the project cover improvements in the regulation, planning, feed sourcing and environmental technology. The results of this survey verify the relevance and topicality of Aquabest themes.

Appendix 1

Development possibilities of aquaculture in the Baltic Sea region

A. Thoughts of aquaculture in global food availability

The increasing global food demand increases the need of fish products, but capture fisheries has no more growth potential. The gap has been filled by aquaculture production which globally increases faster than any other primary food production. The growth has not happened without conflicts.

Following you find statements concerning global development of aquaculture. What are your opinions over them?

- To avoid overfishing of wild stocks the share of aquaculture should be increased in the sea-food production
- Due to ecological problems of fishery and aquaculture, consumption of sea-food should be reduced
- Production close to the customers is the base for ecologically and ethically sustainable aqua-culture
- Aquaculture contributes to protection of natural fish stocks in the production areas
- The use of fish-based ingredients in aquaculture feeds is a risk for wellbeing of fish stocks
- It would be reasonable to concentrate the global aquaculture production to the current mass production areas (like China, Norway, Chile, Viet Nam)
- Aquaculture creates employment and livelihoods in remote areas and regressed fisheries communities
- There is a need for global and forcing guidelines for responsible aquaculture
- Due to effective transportation the food miles are not a significant ecological burden even in long intercontinental transports of aqua-products
- Aquaculture provides supply of fresh fish even in areas with no fishing waters
- Fish is more effective feed converter than mammals, therefore fish-based feed ingredients should be used in aquaculture feeds instead of being used for animal husbandry
- Aquaculture overexploits scarce water resources

B. Limiting issues for development of aquaculture industry in the Baltic Sea region

There are certainly several reasons affecting alone or together for the poor development aquaculture industry in the Baltic Sea region. Opinions on their importance are variable.

What is your own opinion on the following development statements on the Baltic Sea region aq-uaculture?

- The Baltic Sea provides good coastal and in-land farm sites for a growing aquaculture produc-tion.
- Due to its harmful environmental impacts the amount of aquaculture production should be re-duced in the Baltic Sea Region.
- The availability and the terms of environmental licenses are not excluding a profitable produc-tion.
- The production of the Baltic Sea Region has no chance to compete with cheap imported fish.
- The accessibility to good farm sites is very difficult or expensive.
- Due to the extremely concentrated gross trade the access to the market is hard for local pro-ducers.

- There is not political support for the aquaculture industry in my country.
- The various subsidies are a competitive advantage for agriculture compared to aquaculture.
- The availability of trained labor force for fish farms is insufficient.
- The marine spatial planning is undeveloped and doesn't take into account the needs of aquaculture.
- The governmental support and subsidy to aquaculture is sufficient.
- The aquaculture's role in the eutrophication of the Baltic Sea is insignificant.
- The application procedure for environmental licenses is laborious and takes too much time.
- The short license periods and uncertainty of renewal are impeding the long-term planning of the production.
- The present permitting system has secured equal treatment of all water users.
- Bigger production licenses are necessary for securing profitability and competitiveness on the sector.
- The costs of permitting processes and control are unreasonable compared with allowed production.
- Increase of predators (cormorants, seals etc.) weakens remarkably preconditions of aquaculture.

C. Traditional methods in managing the adverse effects

The environmental impacts of aquaculture in the Baltic Sea region have been managed by a variety of restrictions and development measures. Opinion on the effectiveness and financial soundness of these traditional measures has been variable.

How efficiently may the environmental impacts of the aquaculture industry be decreased by the following measures so that the operation possibilities could be maintained?

- Cutting off the production of existing farms.
- Closing of farms in unfavorable or conflict-sensitive sites.
- Consolidation of marine farms to bigger units in more exposed off-shore sites.
- Further reduction of nutrient contents in fish feeds.
- More effective effluent treatment systems to on-land / flow-through farms.
- Breeding of fish strains for more effective feed conversion.
- Development of more accurate feeders and feeding strategies and processes.

D. New approaches in environmental management

The current licensing models consider the fish farms only as local point sources of loading and do not take into account the real net impacts resulting from re-circulating Baltic Sea nutrients or relocating farms from unfavorable sites. The ecosystem-based licensing needs new approach and new environmental policy instruments.

Following you find statements concerning novel environmental instruments. What are Your opinions over the feasibility of them?

- Use of marine spatial planning for inventory and reservation of aquaculture areas, where the conflicts with other resource users (coastal or in-land) are minimal.
- Within the total production capacity of the reserved areas production licenses can be issued without heavy case-specific assessment
- Development and launch of fish feeds, where the fish-based ingredients come from Baltic Sea catch that is unsuitable for human consumption. This recycles the nutrient resources of the sea.
- Use of Baltic Sea based feeds enables higher production volumes in licenses because, in spite of local load, this production in net-basis removes nutrients from the sea.

- Producers who carry out or organize catch-out of over-dense low-value fish stocks fort nutrient removal, will be compensated by higher production volumes.
- The States of the Baltic Sea region shall formulate common aquaculture policy lines which enable the implementation of the above mentioned alternative and improved practices for sustainable aquaculture governance.

E. Thoughts over aquaculture development in the Baltic Sea region

In comparison to the increasing global aquaculture development, the production of the Baltic Sea region has decreased slightly. At the same time also the competitiveness of aquaculture industry has declined. Aquaculture production requires coastal and in-land water resources, so there is a need for political decisions for the future activities.

Choose from the next choices the one, which is the closest to your view on the need for development of aquaculture industry in the Baltic Sea and its catchment area.

- Aquaculture is a cause for eutrophication of the Baltic Sea and the adverse impacts cannot be reduced sufficiently. Therefore the industry should gradually be closed down in the Baltic Sea area.
- The aquaculture's share of the total nutrient load of the Baltic Sea is insignificant. The present aquaculture production in the area can be continued but new production cannot be allowed.
- Environmentally efficient technologies and favorable site selection of farms improve production and reduce environmental impacts. The Baltic Sea and its catchment area provide opportunities to increase the aquaculture production.

F. Other opinions

Field for answering in free form

G. Background of respondent

Your working role in relation to aquaculture industry?

- Aquaculture producer or association
- Fisheries authority
- Environmental or license permitting authority
- Fish health authority
- Rural or livelihoods authority
- Fish processing or trade
- Sectors of education or research and development
- Environment protection organization