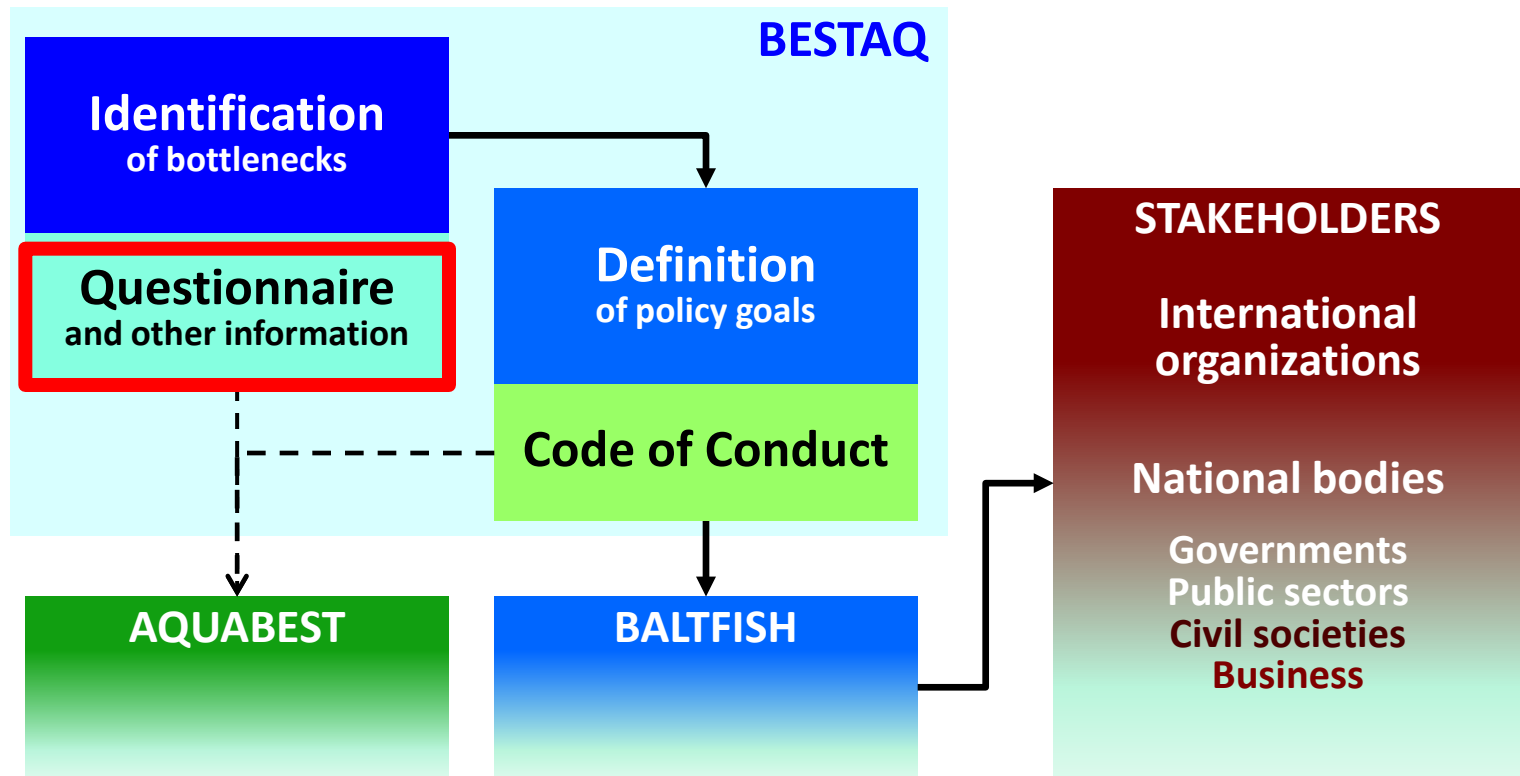


# Main findings of the BESTAQ questionnaire

Petri Heinimaa & Unto Eskelinen  
Finnish Game and Fisheries Research Institute



# The approach and steps of BESTAQ



# Questionnaire - Hypothesis

1. There are similar views on the problems in aquaculture in different countries of the Baltic Sea Region
2. There are similar views on the problems of aquaculture among different stakeholders
3. There is a need for a common Code of Conduct for Aquaculture in the Baltic Sea Region



# Questionnaire - Topics

- Thoughts of aquaculture in global food availability, 12 questions
- Limiting issues of aquaculture development in the Baltic Sea region, 18
- Traditional methods in managing the adverse effects, 7
- New approaches in environmental management, 6
- Perspectives of the future of aquaculture in the BSR, 3
- Open comments

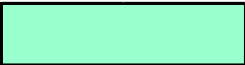

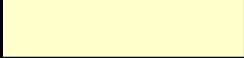


# Questionnaire – Number and background of respondents

Macro-region	Number of respondents					
	Stakeholder group				Sum	Percent
	Aquaculture and fish industry	Fisheries and rural administration	Research & education	Environmental stakeholders		
<i>Scandinavian countries (SE &amp; DK)</i>	6	8	12	4	<b>30</b>	<b>21 %</b>
<i>Baltic countries (EE, LV &amp; LT)</i>	12	3	10	2	<b>27</b>	<b>19 %</b>
<i>Finland (FI &amp; AX)</i>	34	11	24	15	<b>84</b>	<b>60 %</b>
Sum	<b>52</b>	<b>22</b>	<b>46</b>	<b>21</b>	<b>141</b>	
Percent	<b>37 %</b>	<b>16 %</b>	<b>33 %</b>	<b>15 %</b>		



# Questionnaire – Colour indicators

	<b>Supporting majority</b> , 50 % or more agree with the statement in all groups of both comparisons
	<b>Disagreeing majority</b> , less than 50 % agree with the statement in all groups of both comparisons
	<b>Dissenting opinions</b> , one or two groups have opposite majority or minority to all others



# Thoughts of aquaculture in global food availability

Thoughts of aquaculture in global food availability				Percentage of respondents fully or to a large degree agreeing with the statement						
Statement				By stakeholder groups				By macro-regions of the BSR		
				Aquaculture and fish industry	Fisheries and rural administration	Research & education	Environmental stakeholders	Scandinavian countries	Baltic countries	Finland incl. Åland
<b>To avoid overfishing of wild stocks the share of aquaculture should be increased in the sea-food production</b>				82,3	90,0	90,9	70,0	86,7	87,5	83,3
<i>Due to ecological problems of fishery and aquaculture, consumption of sea-food should be reduced</i>				0,0	5,3	4,6	20,0	10,0	4,2	2,4
<b>Production close to the customers is the base for ecologically and ethically sustainable aquaculture</b>				88,3	89,5	79,6	85,0	80,0	91,7	84,5
<i>Aquaculture contributes to protection of natural fish stocks in the production areas</i>				13,7	21,1	40,9	75,0	36,7	25,0	33,3
<i>The use of fish-based ingredients in aquaculture feeds is a risk for wellbeing of fish stocks</i>				25,5	42,1	45,4	60,0	60,0	41,6	30,9
<i>It would be reasonable to concentrate the global aquaculture production to the current mass production areas (like China, Norway, Chile, Viet Nam)</i>				2,0	5,3	9,1	5,0	6,7	8,3	3,6
<b>Aquaculture creates employment and livelihoods in remote areas and regressed fisheries communities</b>				94,1	100,0	100,0	80,0	96,6	100,0	91,7
<b>There is a need for global and forcing guidelines for responsible aquaculture</b>				82,4	68,4	84,0	95,0	93,3	75,0	83,3
<i>Due to low freight costs even long transportations do not significantly increase the carbon footprint of aquaculture products</i>				22,0	15,8	27,3	25,0	33,3	16,7	21,4
<b>Aquaculture provides supply of fresh fish even in areas with no fishing waters</b>				94,0	100,0	95,4	84,2	96,6	100,0	89,3
<b>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</b>				80,4	89,5	79,6	60,0	83,3	54,2	80,9
<i>Aquaculture overexploits scarce water resources</i>				3,9	11,2	22,7	65,0	20,0	37,5	14,3



# Limiting issues of aquaculture development in the BSR

Limiting issues of aquaculture development in the Baltic Sea region	Percentage of respondents fully or to a large degree agreeing with the statement								
	By stakeholder groups				By macro-regions of the BSR				
	Aquaculture and fish industry	Fisheries and rural administration	Research & education	Environmental stakeholders	Scandinavian countries	Baltic countries	Finland incl. Åland		
<i>The Baltic Sea provide good coastal and in-land farm sites for a growing aquaculture production.</i>	88,0	100,0	86,3	50,0	90,0	91,3	78,6		
<i>Due to its harmful environmental impacts the amount of aquaculture production should be reduced in the Baltic Sea Region.</i>	4,0	0,0	11,6	45,0	13,3	13,6	13,1		
<i>The availability and the terms of environmental licenses are not excluding a profitable production.</i>	14,0	0,0	25,0	55,0	13,3	40,0	16,7		
<i>The production of the Baltic Sea Region has no chance to compete with cheap imported fish.</i>	24,0	20,0	29,5	30,0	20,0	63,6	19,0		
<i>The accessibility to good farm sites is very difficult or expensive.</i>	58,0	40,0	38,6	42,1	23,3	50,0	52,4		
<i>Due to the extremely concentrated gross trade the access to the market is hard for local producers.</i>	44,0	75,0	47,7	45,0	40,0	48,4	48,8		
<i>There is not political support for the aquaculture industry in my country.</i>	82,0	35,0	61,4	20,0	46,7	68,1	59,5		
<i>The various subsidies are a competitive advantage for agriculture compared to aquaculture.</i>	90,0	75,0	70,4	50,0	63,3	81,8	77,4		
<i>The availability of trained labour force for fish farms is insufficient.</i>	56,0	65,0	48,8	20,0	63,3	81,8	35,7		
<i>The marine spatial planning is undeveloped and doesn't take into account the needs of aquaculture.</i>	82,0	75,0	60,4	70,0	70,0	59,1	73,8		
<i>The governmental support and subsidy to aquaculture is sufficient.</i>	36,0	25,0	32,6	45,0	33,3	27,3	36,9		
<i>The aquaculture's role in the eutrophication of the Baltic Sea is insignificant.</i>	83,7	90,0	72,7	26,3	70,0	72,7	72,6		
<i>The application procedure for environmental licenses is laborous and takes too much time.</i>	88,0	85,0	61,4	30,0	70,0	50,0	73,8		
<i>The short license periods and uncertainty of renewal are impeding the long-term planning of the production.</i>	84,0	75,0	77,3	40,0	63,3	54,5	80,9		
<i>The present permitting system has secured equal treatment of all water users.</i>	18,0	20,0	18,7	50,0	13,3	59,1	17,9		
<i>Bigger production licenses are necessary for securing profitability and competitiveness on the sector.</i>	88,0	80,0	68,2	50,0	60,0	68,2	82,1		
<i>The costs of permitting processes and control are unreasonable compared with allowed production.</i>	82,0	65,0	50,0	10,0	66,7	36,4	59,5		
<i>Increase of predators (cormorants, seals etc.) weakens remarkably preconditions of aquaculture.</i>	74,0	60,0	54,5	10,0	43,3	81,8	52,3		



## Questionnaire – Summary of results 1/2

- Similar results in different macro-regions of the BSR
- Environmental stakeholders views differed from all the other stakeholder groups, whose views were similar
- Largely similar view among all stakeholders on global need for aquaculture products and in connection to that on the necessity of regional development of aquaculture
- Development possibilities in the BSR are recognized, environmental stakeholders more critical than other stakeholders



## Questionnaire – Summary of results 2/2

- Other stakeholders except environmental stakeholders recognize difficult and expensive licensing system as a problem
- Environmental stakeholders believe more in the traditional regulation measures than the other stakeholders
- Other stakeholder groups than environmental stakeholders believe more in new regulation measures
- All stakeholder groups recognizes possibilities for growth of aquaculture industry with certain prerequisites



# Questionnaire – Issues of open comments

Issue of open comments	References in 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



## Questionnaire – Hypothesis answers

1. There are similar views on the problems in aquaculture in different countries of the Baltic Sea Region **YES**
  2. There are similar views on the problems of aquaculture among different stakeholders **YES**
  3. There is a need for a common Code of Conduct for Aquaculture in the Baltic Sea Region **YES**
- **There is a common interest and need for regional and local aquaculture food supply in the BSR**





Thank You for Your attention!

Information for making sustainable choices



# Thoughts of aquaculture in global food availability

Thoughts of aquaculture in global food availability				Percentage of respondents fully or to a large degree agreeing with the statement						
Statement				By stakeholder groups				By macro-regions of the BSR		
				Aquaculture and fish industry	Fisheries and rural administration	Research & education	Environmental stakeholders	Scandinavian countries	Baltic countries	Finland incl. Åland
<b>To avoid overfishing of wild stocks the share of aquaculture should be increased in the sea-food production</b>				82,3	90,0	90,9	70,0	86,7	87,5	83,3
<i>Due to ecological problems of fishery and aquaculture, consumption of sea-food should be reduced</i>				0,0	5,3	4,6	20,0	10,0	4,2	2,4
<b>Production close to the customers is the base for ecologically and ethically sustainable aquaculture</b>				88,3	89,5	79,6	85,0	80,0	91,7	84,5
<i>Aquaculture contributes to protection of natural fish stocks in the production areas</i>				13,7	21,1	40,9	75,0	36,7	25,0	33,3
<i>The use of fish-based ingredients in aquaculture feeds is a risk for wellbeing of fish stocks</i>				25,5	42,1	45,4	60,0	60,0	41,6	30,9
<i>It would be reasonable to concentrate the global aquaculture production to the current mass production areas (like China, Norway, Chile, Viet Nam)</i>				2,0	5,3	9,1	5,0	6,7	8,3	3,6
<b>Aquaculture creates employment and livelihoods in remote areas and regressed fisheries communities</b>				94,1	100,0	100,0	80,0	96,6	100,0	91,7
<b>There is a need for global and forcing guidelines for responsible aquaculture</b>				82,4	68,4	84,0	95,0	93,3	75,0	83,3
<i>Due to low freight costs even long transportations do not significantly increase the carbon footprint of aquaculture products</i>				22,0	15,8	27,3	25,0	33,3	16,7	21,4
<b>Aquaculture provides supply of fresh fish even in areas with no fishing waters</b>				94,0	100,0	95,4	84,2	96,6	100,0	89,3
<b>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</b>				80,4	89,5	79,6	60,0	83,3	54,2	80,9
<i>Aquaculture overexploits scarce water resources</i>				3,9	11,2	22,7	65,0	20,0	37,5	14,3



# Limiting issues of aquaculture development in the BSR

Limiting issues of aquaculture development in the Baltic Sea region	Percentage of respondents fully or to a large degree agreeing with the statement							
	By stakeholder groups				By macro-regions of the BSR			
	Aquaculture and fish industry	Fisheries and rural administration	Research & education	Environmental stakeholders	Scandinavian countries	Baltic countries	Finland incl. Åland	
<i>The Baltic Sea provide good coastal and in-land farm sites for a growing aquaculture production.</i>	88,0	100,0	86,3	50,0	90,0	91,3	78,6	
<i>Due to its harmful environmental impacts the amount of aquaculture production should be reduced in the Baltic Sea Region.</i>	4,0	0,0	11,6	45,0	13,3	13,6	13,1	
<i>The availability and the terms of environmental licenses are not excluding a profitable production.</i>	14,0	0,0	25,0	55,0	13,3	40,0	16,7	
<i>The production of the Baltic Sea Region has no chance to compete with cheap imported fish.</i>	24,0	20,0	29,5	30,0	20,0	63,6	19,0	
<i>The accessibility to good farm sites is very difficult or expensive.</i>	58,0	40,0	38,6	42,1	23,3	50,0	52,4	
<i>Due to the extremely concentrated gross trade the access to the market is hard for local producers.</i>	44,0	75,0	47,7	45,0	40,0	48,4	48,8	
<i>There is not political support for the aquaculture industry in my country.</i>	82,0	35,0	61,4	20,0	46,7	68,1	59,5	
<i>The various subsidies are a competitive advantage for agriculture compared to aquaculture.</i>	90,0	75,0	70,4	50,0	63,3	81,8	77,4	
<i>The availability of trained labour force for fish farms is insufficient.</i>	56,0	65,0	48,8	20,0	63,3	81,8	35,7	
<i>The marine spatial planning is undeveloped and doesn't take into account the needs of aquaculture.</i>	82,0	75,0	60,4	70,0	70,0	59,1	73,8	
<i>The governmental support and subsidy to aquaculture is sufficient.</i>	36,0	25,0	32,6	45,0	33,3	27,3	36,9	
<i>The aquaculture's role in the eutrophication of the Baltic Sea is insignificant.</i>	83,7	90,0	72,7	26,3	70,0	72,7	72,6	
<i>The application procedure for environmental licenses is laborous and takes too much time.</i>	88,0	85,0	61,4	30,0	70,0	50,0	73,8	
<i>The short license periods and uncertainty of renewal are impeding the long-term planning of the production.</i>	84,0	75,0	77,3	40,0	63,3	54,5	80,9	
<i>The present permitting system has secured equal treatment of all water users.</i>	18,0	20,0	18,7	50,0	13,3	59,1	17,9	
<i>Bigger production licenses are necessary for securing profitability and competitiveness on the sector.</i>	88,0	80,0	68,2	50,0	60,0	68,2	82,1	
<i>The costs of permitting processes and control are unreasonable compared with allowed production.</i>	82,0	65,0	50,0	10,0	66,7	36,4	59,5	
<i>Increase of predators (cormorants, seals etc.) weakens remarkably preconditions of aquaculture.</i>	74,0	60,0	54,5	10,0	43,3	81,8	52,3	



# Limiting issues of aquaculture development in the BSR

Limiting issues of aquaculture development in the Baltic Sea region	Percentage of respondents fully or to a large degree agreeing with the statement								
	By stakeholder groups				By macro-regions of the BSR				
	Aquaculture and fish industry	Fisheries and rural administration	Research & education	Environmental stakeholders	Scandinavian countries	Baltic countries	Finland incl. Åland		
<i>The Baltic Sea provide good coastal and in-land farm sites for a growing aquaculture production.</i>	88,0	100,0	86,3	50,0	90,0	91,3	78,6		
<i>Due to its harmful environmental impacts the amount of aquaculture production should be reduced in the Baltic Sea Region.</i>	4,0	0,0	11,6	45,0	13,3	13,6	13,1		
<i>The availability and the terms of environmental licenses are not excluding a profitable production.</i>	14,0	0,0	25,0	55,0	13,3	40,0	16,7		
<i>The production of the Baltic Sea Region has no chance to compete with cheap imported fish.</i>	24,0	20,0	29,5	30,0	20,0	63,6	19,0		
<i>The accessibility to good farm sites is very difficult or expensive.</i>	58,0	40,0	38,6	42,1	23,3	50,0	52,4		
<i>Due to the extremely concentrated gross trade the access to the market is hard for local producers.</i>	44,0	75,0	47,7	45,0	40,0	48,4	48,8		
<i>There is not political support for the aquaculture industry in my country.</i>	82,0	35,0	61,4	20,0	46,7	68,1	59,5		
<i>The various subsidies are a competitive advantage for agriculture compared to aquaculture.</i>	90,0	75,0	70,4	50,0	63,3	81,8	77,4		
<i>The availability of trained labour force for fish farms is insufficient.</i>	56,0	65,0	48,8	20,0	63,3	81,8	35,7		
<i>The marine spatial planning is undeveloped and doesn't take into account the needs of aquaculture.</i>	82,0	75,0	60,4	70,0	70,0	59,1	73,8		
<i>The governmental support and subsidy to aquaculture is sufficient.</i>	36,0	25,0	32,6	45,0	33,3	27,3	36,9		
<i>The aquaculture's role in the eutrophication of the Baltic Sea is insignificant.</i>	83,7	90,0	72,7	26,3	70,0	72,7	72,6		
<i>The application procedure for environmental licenses is laborous and takes too much time.</i>	88,0	85,0	61,4	30,0	70,0	50,0	73,8		
<i>The short license periods and uncertainty of renewal are impeding the long-term planning of the production.</i>	84,0	75,0	77,3	40,0	63,3	54,5	80,9		
<i>The present permitting system has secured equal treatment of all water users.</i>	18,0	20,0	18,7	50,0	13,3	59,1	17,9		
<i>Bigger production licenses are necessary for securing profitability and competitiveness on the sector.</i>	88,0	80,0	68,2	50,0	60,0	68,2	82,1		
<i>The costs of permitting processes and control are unreasonable compared with allowed production.</i>	82,0	65,0	50,0	10,0	66,7	36,4	59,5		
<i>Increase of predators (cormorants, seals etc.) weakens remarkably preconditions of aquaculture.</i>	74,0	60,0	54,5	10,0	43,3	81,8	52,3		



# Traditional methods in managing the adverse effects

Traditional methods in managing the adverse effects		Percentage of respondents considering the method very or fairly effective						
Method		By stakeholder groups				By macro-regions of the BSR		
		Aquaculture and fish industry	Fisheries and rural administration	Research & education	Environmental stakeholders	Scandinavian countries	Baltic countries	Finland incl. Åland
<i>Cutting off the production of existing farms.</i>		4,0	15,0	9,1	35,0	16,7	13,4	9,5
<i>Closing of farms in unfavorable or conflict-sensitive sites.</i>		30,0	36,8	43,2	85,0	50,0	40,1	40,5
<i>Consolidation of marine farms to bigger units in more exposed off-shore sites.</i>		46,0	70,0	53,3	60,0	46,7	22,7	64,3
<i>Further reduction of nutrient contents in fish feeds.</i>		24,0	30,0	27,9	35,0	13,3	31,8	30,9
<b><i>More effective effluent treatment systems to on-land / flow-through farms.</i></b>		50,0	50,0	67,5	75,0	66,7	81,2	50,0
<i>Breeding of fish strains for more effective feed conversion.</i>		46,0	50,0	58,2	22,2	63,3	63,6	35,7
<i>Development of more accurate feeders and feeding strategies and processes.</i>		50,0	60,0	63,7	50,0	76,7	86,3	40,5



# New approaches in environmental management

New approaches in environmental management				Percentage of respondents considering the approach very or fairly useful						
				By stakeholder groups				By macro-regions of the BSR		
Method				Aquaculture and fish industry	Fisheries and rural administration	Research & education	Environmental stakeholders	Scandinavian countries	Baltic countries	Finland incl. Åland
<i>Use of marine spatial planning in the inventory and reservation of aquaculture areas, where the conflicts with other resource users (coastal and in-land) are minimal.</i>				80,0	85,0	81,8	80,0	90,0	72,7	79,7
<i>Within the total production capacity of the reserved areas production licenses can be issued without heavy case-specific assessment.</i>				72,0	70,0	52,2	20,0	60,0	36,4	60,7
<i>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.</i>				68,0	75,0	72,7	40,0	60,0	54,5	71,4
<i>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.</i>				68,0	70,0	61,4	5,0	56,7	31,8	61,9
<i>Producers who carry out or organize catch-out of over-dense low-value fish stocks for nutrient removal, will be compensated by higher production volumes.</i>				64,0	65,0	61,4	25,0	53,3	36,4	63,1
<i>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.</i>				80,0	80,0	81,8	65,0	90,0	77,3	73,8



# Perspectives of the future of aquaculture in the BSR

Perspectives of the future of aquaculture in the BSR				Percentage of respondents fully or to a large degree agreeing with the statement						
Statement				By stakeholder groups				By macro-regions of the BSR		
				Aquaculture and fish industry	Fisheries and rural administration	Research & education	Environmental stakeholders	Scandinavian countries	Baltic countries	Finland incl. Åland
<i>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.</i>				0,0	0,0	2,3	15,0	3,3	0,0	4,8
<i>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.</i>				7,8	0,0	2,3	15,0	3,3	8,7	6,0
<i>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.</i>				92,2	100,0	95,3	70,0	93,4	91,3	89,2

