

Deliverable D4.2

***Multi Criteria Decision Analysis - MCDA survey***

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Responsible for Deliverable: COISPA, Giuseppe Lembo

Collaboration to the MCDA survey:

Giuseppe Lembo, COISPA; Alfred Jokumsen, DTU; Åsa Espmark, Nofima; Jean-Paul Blancheton, Ifremer; Maria Teresa Spedicato, COISPA; Pierluigi Carbonara, COISPA; Pirjo Honkanen, Nofima; Wout Abbink, IMARES

Collaboration to the MCDA analysis:

Giuseppe Lembo, Isabella Bitetto, Maria Teresa Facchini, Maria Teresa Spedicato, COISPA

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## Summary

Aim of the second stakeholder meeting held in Rotterdam on October 19-20 2015, back to back to the European Aquaculture Conference, was to assess multi-stakeholders knowledge, experience and perception on key issues for the economic development of organic aquaculture. To this purpose a survey on the current EU regulatory framework for the organic aquaculture was carried out.

Whether in our daily lives or in professional settings, there are typically multiple conflicting criteria that need to be evaluated in making decisions. Multi Criteria Decision Analysis (MCDA) is a discipline of operations research that explicitly considers multiple criteria in decision-making environments.

There are several techniques belonging to the MCDA, among which we used the Analytical Hierarchy Process (AHP). Such technique facilitates the in depth analysis of important issues/goals (e.g. feed, environment etc.), breaking these into smaller components for evaluating interests/alternatives (e.g. protein source, fat source, amino acid profile, fatty acid profile, feed utilization, growth rate, discharge of nitrogen and phosphorus, etc.) and finally integrating each component according to a process of ranking, weighting and calculating a score.

The stakeholder categories invited to take part in the survey were: consumers, retailers, researchers, organic farmers together with experts from the organic certification bodies, the aquaculture associations, the environmental NGOs, the feed industry and Public Institutions.

Participants were requested to answer anonymously a questionnaire with a number of closed questions concerning the following eighteen subject areas: 1) Institutional framework; 2) Consumer perception; 3) Environmental interactions; 4) Fish health and welfare; 5) Control provision; 6) Production rules; 7) Legislative framework; 8) Production systems; 9) Product quality; 10) Product ecological quality; 11) Energy use; 12) Recycling; 13) Environmental impact; 14) Quality of water; 15) Quality of feed; 16) Quality of the rearing environment; 17) Physiological condition; 18) Husbandry practices.

A glossary of the terms used in the survey was made available, in order to ensure a homogeneous interpretation/understanding of the questions among all the participants of the survey.

## Introduction

The overall vision of the OrAqua project is to facilitate economic growth of the organic aquaculture sector in Europe, supported by science based regulations and in line with organic principles and consumer confidence.

Aim of the second stakeholder meeting held in Rotterdam on October 19-20 2015, back to back to the European Aquaculture Conference, was to assess multi-stakeholders knowledge, experience and perception on key issues for the economic development of organic aquaculture.

To this purpose a survey on the current EU regulatory framework for the organic aquaculture was carried out.

Conflicting approaches to the wide range of multidisciplinary and complex organic farming issues may challenge stakeholders having different backgrounds and knowledge and maybe conflicting objectives and preferences of specific farming issues (feed, welfare, environment, economic etc.), related to the EU regulation. These challenging issues were addressed using the Multi Criteria Decision Analysis (MCDA) as a tool to facilitate informed decisions of choices among alternatives and hence to balance conflicting approaches to the specific organic farming issues.

MCDA technique facilitates the in depth analysis of important issues/goals (e.g. feed, environment etc.), breaking these into smaller components for evaluating interests/alternatives (e.g. protein source, fat source, amino acid profile, fatty acid profile, feed utilization, growth rate, discharge of nitrogen and phosphorus etc.) and finally integrating each component according to a process of ranking, weighting and calculating a score.

As in the “real world” situations, solutions to alternatives are reached as compromise solutions, resulting from trade-offs between various (sometime) conflicting objectives of the stakeholders and decision makers, through negotiations to reach a consensus. This involves seeking “optimal solutions” to multiple alternatives such as prioritising between fish health/welfare and farm economics/competitiveness, etc. All the above should balance within the framework of the organic principles.

Typically, a unique optimal solution for such alternatives does not exist, and it is necessary to use stakeholder’s preferences to differentiate between solutions. Indeed, the information from the first stakeholder event, held in Istanbul, together with the results of the scientific literature review carried out so far, have been used to build the methodological basis of the present survey.

The survey participation of consumers, retailers, researchers, organic farmers together with experts from the organic certification bodies, the aquaculture associations, the environmental NGOs, the feed industry and the Public Institutions will provide a useful feedback on how to improve the European regulation of organic aquaculture.

Participants were requested to answer anonymously a questionnaire with a number of closed questions concerning the following eighteen subject areas: 1) Institutional framework; 2) Consumer perception; 3) Environmental interactions; 4) Fish health and welfare; 5) Control provision; 6) Production rules; 7) Legislative framework; 8) Production systems; 9) Product

quality; 10) Product ecological quality; 11) Energy use; 12) Recycling; 13) Environmental impact; 14) Quality of water; 15) Quality of feed; 16) Quality of the rearing environment; 17) Physiological condition; 18) Husbandry practices.

In addition, interested parties had the possibility to submit free contributions by answering an open question and/or sending an e-mail to a dedicated mailbox.

## Materials and methods

Whether in our daily lives or in professional settings, there are typically multiple conflicting criteria that need to be evaluated in making decisions. Multi Criteria Decision Analysis (MCDA) is a discipline of operations research that explicitly considers multiple criteria in decision-making environments. There are several techniques belonging to the MCDA, among which the Analytical Hierarchy Process (AHP).

The AHP was developed by Saaty (1990; 2008) and is a popular technique for analysing and supporting decisions in which multiple and competing objectives are involved and multiple alternatives are available. It is based on three principles: decomposition, comparative judgment and synthesis of priorities.

In the AHP, the first step is that a complex decision problem is decomposed into simpler decision problems to form a decision hierarchy. The advantage to decompose the decision problem into a hierarchy is consisting in getting more easily comprehended sub-problems, each of one can be analysed independently. When developing a hierarchy, the top level is the ultimate goal of the decision. The hierarchy decreases from the general to the more specific, until a level of attributes is reached. Each level must be linked to the next higher level. Once the decomposition is completed, cardinal rankings for objectives and alternatives are required. This is done by using pairwise comparisons which reduce the complexity of decision making since two components are considered at a time. The final step is to combine the relative weights of the levels obtained in the previous step to produce composite weights. This is done by means of a sequence of multiplications of the matrices of relative weights at each level of the hierarchy.

As a matter of fact, the different criteria and sub-criteria are usually characterized by different importance levels, which need to be included into the evaluation. These are obtained by assigning a weight to each criterion. Weighting represents a critical stage aimed at including into the analysis the experts' judgment.

AHP converts the human expert judgment into numerical values that can be processed allowing diverse and often incommensurable elements to be compared to one another in a rational and consistent way.

The main steps for AHP are 5:

- 1) Identification of criteria and indicators (identification of the hierarchy).
- 2) Questionnaire with pairwise comparisons in order to collect preferences of a certain number of experts about the criteria and the indicators.
- 3) Transformation of pairwise comparison into weights vector for criteria and indicators by means of the principal eigenvector method (Saaty, 2003).
- 4) Calculation of composite weight for each indicator (Saaty, 2008);
- 5) Group decision making (synthesis of the prioritization performed for the different experts).

In the AHP the pairwise comparisons in a judgment matrix are considered to be adequately consistent if the corresponding consistency ratio (CR) is less than or equal to 10% (Saaty, 1980). Otherwise the answers could lead to inconsistent results in the AHP.

## Practical information on the survey

The information from the first stakeholder event, held in Istanbul, together with the results of the scientific literature review carried out so far, have been used to build the basis of the present survey.

Stakeholders had the possibility to choose the way of taking part to the survey:

1. Through a web-based platform, by connecting to the following link <http://www.coispa.eu/oraqua-survey/index.php> then entering username and password distributed at the front desk.
2. Or answering the questionnaire picked up at the front desk.

Stakeholders were asked to assign a score from 1 to 5, according to their preference, to the pairwise comparisons in the survey.

Some examples are given below.

### Example n°1

If the stakeholder consider the subject “Institutional framework” of *equal importance* of the subject “Consumer perception” he/she can tick the box 1:

**How important do you consider the following subjects to promote the development of the organic aquaculture?**

**Assign a score from 1 to 5 on either side of the scale for each pair below to indicate how important the first issue is compared to the second one, or vice versa, by ticking the relevant box**

	5	4	3	2	1	2	3	4	5	
Institutional framework					X					Consumer perception

### Example n°2

If the stakeholder consider instead the subject “Consumer perception” *much more important* than the subject “Institutional framework” he/she can tick the box 4 on the right:

**How important do you consider the following subjects to promote the development of the organic aquaculture?**

**Assign a score from 1 to 5 on either side of the scale for each pair below to indicate how important the first issue is compared to the second one, or vice versa, by ticking the relevant box**

	5	4	3	2	1	2	3	4	5	
Institutional framework								X		Consumer perception

**Example n°3**

In case the stakeholder consider the subject “Institutional framework” *much more important* than the subject “Consumer perception” he/she can tick the box 4 on the left:

**How important do you consider the following subjects to promote the development of the organic aquaculture?**

**Assign a score from 1 to 5 on either side of the scale for each pair below to indicate how important the first issue is compared to the second one, or vice versa, by ticking the relevant box**

	5	4	3	2	1	2	3	4	5	
Institutional framework		X								Consumer perception

Depending on how much a subject is consider more important than the other, each stakeholder has the option to tick one of the boxes, on the right or on the left, from 1 to 5, following the scale in the table below:

Relative importance	Score
Equally important	1
Little more important	2
More important	3
Much more important	4
Exceptionally more important	5

The aim of the survey is to generate relevant and robust recommendations for the improvement of the EU regulation and to enhance economic development of the **European organic aquaculture** sector. Therefore, answering the questions in the survey is of paramount importance to keep in mind that the survey is dealing with organic and not conventional aquaculture. Consequently, what is fine or acceptable for the conventional aquaculture might not be appropriate for the organic one.

## Glossary

A glossary of the terms used in the survey has been created in order to ensure an homogeneous interpretation/understanding of the questions among all the participants.

1	Additives	Here are intended in the general meaning of processing aids and other substances/ingredients used for processing food, approved by Regulation (EC) N° 889/2008.
2	Allopathic treatments	Drugs for the treatment of disease (e.g. antibiotics).
3	Amino acids	Amino acids are the building blocks of proteins. A carefully balanced profile and an adequate amount of amino acids in the diets are critical for the welfare and growth of the fish.
4	Biosecurity procedures	Biosecurity in aquaculture consists of practices that minimize the risk of introducing an infectious disease and spreading it to the animals at a facility and the risk that diseased animals or infectious agents will leave a facility and spread to other sites and to other susceptible species.
5	Certification body	Body accredited by the authorities of each Country to carry out inspections at the aquaculture farms on compliance with the EU organic regulations.
6	Chemicals	Here are intended, in a general sense, as chemically synthesised products, which the EU regulation only allows to a very limited extend.
7	Consumer perception	Consumer's opinion regarding the principles and regulations of the organic production.
8	Control provisions	The qualitative/quantitative checks/controls carried out on organic farms, raw materials and organic products.

9	Derogation	The suspension of the application of a specific part of the organic regulation, under documented exceptional circumstances and given by a National authority.
10	Energy use	The practice and/or attitude of organic farms towards renewable energy and the environmental performance assessment.
11	Environmental impact	The impact of the organic farms on the surrounding environment.
12	Environmental interactions	The relationships (e.g. impacts) between organic farms and the environment, as well as the attitude to environmentally friendly behaviour.
13	Equivalence	The Commission may recognise third countries whose system of organic production complies with principles and production rules <b>equivalent</b> to those of the EU organic regulations and whose control measures are of <b>equivalent</b> effectiveness to those of the EU organic regulations.
14	Escapes	The fish escaped from the farm cages at sea or from land-based tanks and ponds, which could generate genetic drift, i.e mix of genes in the wild populations.
15	Following periods	Following is a routine disease management measure for resting or restoring the local environment/production area, at the end of a production cycle, carried out prior to the introduction a new population.
16	Feed efficiency	The most efficient utilization of the feed (i.e. high performance in terms of growth and minimum waste)
17	Fish health and welfare	A condition which mitigates stress caused by farming conditions and ensures that the physiological needs of the fish are met.
18	Grading procedures	Sorting or grading live fish are practices that optimizes production by reducing cannibalism, decreasing size variability among harvested fish, and improving feed conversion efficiency.
19	Physiological conditions	The physiological health conditions of the farmed animals.

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20	Hormones	Substances to promote growth or to control reproduction (e.g. induction or synchronisation of ovulation) or to produce mono-sex populations.
21	Husbandry practices	The practical farming management activities.
22	IMTA	Integrated multi-trophic aquaculture (IMTA) is an intensive and synergistic cultivation, which uses water-born nutrients and energy transfer. Multi-trophic means here that the various species occupy different trophic levels.
23	Institutional framework	The social, economic and legislative background/basis along with the framework of production standards and controls.
24	LCA	Life-cycle assessment (LCA), also known as life-cycle analysis, is a technique to assess environmental impacts associated with all the stages of a product's life.
25	Legislative framework	The EU organic regulations along with the actions to support the implementation and development of organic aquaculture, undertaken by Member States and EU.
26	Movements restriction of live animals	Restrictions on the movement of live animals between countries and regions are based on the “Directive 2006/88/EC on animal health requirements for aquaculture animals and products thereof, and on the prevention and control of certain diseases in aquatic animals”.
27	Nutrients	Nitrogen and phosphorus are nutrients that are natural parts of aquatic ecosystems, but when too much nitrogen and phosphorus enter the environment (i.e. rivers, lakes, coastal waters) it may have detrimental impact on the ecological systems and can lead to illnesses and death of large numbers of fish.
28	Parallel production	Parallel production is the rearing of organic and non-organic fish of the same species in the same production units (in the current EU Regulation it is allowed for fish and bees but not for livestock).

29	Product qualities	Non exhaustive examples are: no chemicals, additives, hormones used; good appearance; good smell; good taste; good texture.
30	Product ecological qualities	Non exhaustive examples are: environmental friendly; animal friendly; sustainable; local/domestic production.
31	Production rules	The whole set of production rules that may distinguish the organic aquaculture from the conventional one.
32	Production systems	The different physical aquaculture production systems with regard to the use of technology, the relations with the environment and the intensity.
33	Quality of feed	The nutritional characteristics and palatability of the feed.
34	Quality of the rearing environment	The dimension and the physical characteristics of the different production systems, as well as their relationships with the environment (e.g. outdoor production systems, natural vegetation on land-water interface, etc.).
35	Quality of water	The qualitative and quantitative characteristics of the water in the aquaculture farms.
36	RAS	Closed recirculation aquaculture system (RAS) means a facility where aquaculture takes place within an enclosed environment on land or on a vessel involving the recirculation of water, and depending on permanent external energy input to stabilize the environment for the aquaculture animals.
37	Recycled-content product	A product containing or made by recycled components or ingredients.
38	Recycling	The attitude to use recycled or recyclable products and reduce waste.
39	Risk analysis	The assessment of the risk of occurrence of non-compliance with the EU organic regulation, on the basis of which the nature and frequency of the controls shall be determined.

40	Second level control	As a duty of the national authorities to organize audits or inspections of control bodies accredited if necessary. If these control bodies fail to execute properly the tasks delegated to them, the competent authority may withdraw the delegation.
41	Slaughter procedures	Slaughter techniques/procedures should be able to render fish immediately unconscious and insensible to pain.
42	Trimming	Trimming is the waste product of fish processing, which are used for the production of fishmeal and oil. The content of essential amino acids is generally lower in the trimmings, while the high phosphorus content might be in conflict with national environmental legislations.
43	Whole fish	Fish meal and oil, in addition from trimmings, can be made from wild-caught, small marine fish usually deemed not suitable for direct human consumption. The use of the <b>whole fish</b> , in general elevates the content in essential amino acids and reduces the environmental impact of the feed.

## Questionnaire

### General questions

1

What is your geographical region?

Please mark the appropriate box:

Western Europe , Central Europe , Northern Europe , Eastern Europe , Mediterranean Europe , Other .



2

What is your gender?

Please mark the appropriate box:

M  F

3

What is your age?

Please mark the appropriate box:

18-25  26-35  36-50  >50

4

Select your category.

Please mark the appropriate box:

Consumer ; Retailer ; Researcher ; Organic farmer ; Organic certification body ; Aquaculture association ; NGO ; Feed industry ; Public Institution ; Other .

**Main objective: Economic development of organic aquaculture**

**1° Level of pairwise comparisons**

**How important do you consider the following subjects to promote the development of the organic aquaculture?**

**Assign a score from 1 to 5 on either side of the scale for each pair below to indicate how important the first issue is compared to the second one, or vice versa, by ticking the relevant box**

	5	4	3	2	1	2	3	4	5	
Institutional framework										Consumer perception
Institutional framework										Environmental interactions
Institutional framework										Fish health and welfare
Consumer perception										Environmental interactions
Consumer perception										Fish health and welfare
Environmental interactions										Fish health and welfare

## 2° Level of pairwise comparisons

**How important do you consider the elements grouped in the following tables, in order to characterise each of the subjects below highlighted in yellow? Assign a score from 1 to 5 on either side of the scale for each pair below to indicate how important the first issue is compared to the second one, or vice versa, by ticking the relevant box**

Institutional framework										
	5	4	3	2	1	2	3	4	5	
Control provisions										Production rules
Control provisions										Legislative framework
Production rules										Legislative framework
Consumer perception										
	5	4	3	2	1	2	3	4	5	
Production systems										Product quality
Production systems										Product ecological quality
Product quality										Product ecological quality
Environmental interaction										
	5	4	3	2	1	2	3	4	5	
Energy use										Recycling
Energy use										Environmental impact
Recycling										Environmental impact
Fish health and welfare										
	5	4	3	2	1	2	3	4	5	
Quality of water										Quality of feed
Quality of water										Quality of the rearing environment
Quality of water										Physiological condition
Quality of water										Husbandry practices
Quality of feed										Quality of the rearing environment
Quality of feed										Physiological condition
Quality of feed										Husbandry practices
Quality of the rearing environment										Physiological condition
Quality of the rearing environment										Husbandry practices
Physiological condition										Husbandry practices

### 3° Level of pairwise comparisons

**Assign a score from 1 to 5 on either side of the scale for each pair below to indicate how important the first issue is compared to the second one, or vice versa, by ticking the relevant box**

Which of the following actions do you consider most appropriate/relevant in order to make the “Control provisions” more effective? Please compare each of the pairs

If you think you do not have sufficient knowledge to answer this question, please tick the following box and move to the next question



	5	4	3	2	1	2	3	4	5	
Apply controls based on risk analysis										Apply checks on products/materials based on risk analysis
Apply controls based on risk analysis										Apply controls at farm and checks on raw materials and organic product once a year
Apply controls based on risk analysis										Strengthen the second level controls on the certification bodies
Apply controls based on risk analysis										Enforce the homogeneity of the control system among countries and certification bodies
Apply checks on products/materials based on risk analysis										Apply controls at farm and checks on raw materials and organic product once a year
Apply checks on products/materials based on risk analysis										Strengthen the second level controls on the certification bodies
Apply checks on products/materials based on risk analysis										Enforce the homogeneity of the control system among countries and certification bodies
Apply controls at farm and checks on raw materials and organic product once a year										Strengthen the second level controls on the certification bodies
Apply controls at farm and checks on raw materials and organic product once a year										Enforce the homogeneity of the control system among countries and certification bodies
Strengthen the second level controls on the certification bodies										Enforce the homogeneity of the control system among countries and certification bodies

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Which of the following actions do you consider most appropriate/relevant in order to make the "Production rules" more effective? Please compare each of the pairs.											
If you think you do not have sufficient knowledge to answer this question, please tick the following box and move to the next question											<input type="checkbox"/>
	5	4	3	2	1	2	3	4	5		
Reinforce separation criteria between organic and conventional farms										Prohibit parallel production in the same farm	
Reinforce separation criteria between organic and conventional farms										Itemize the procedures for the separation of organic and conventional production into the same farm	
Reinforce separation criteria between organic and conventional farms										Set a monitoring system of the environmental pollution	
Reinforce separation criteria between organic and conventional farms										Set a monitoring system of contamination from conventional product/materials	
Prohibit parallel production in the same farm										Itemize the procedures for the separation of organic and conventional production into the same farm	
Prohibit parallel production in the same farm										Set a monitoring system of the environmental pollution	
Prohibit parallel production in the same farm										Set a monitoring system of contamination from conventional product/materials	
Itemize the procedures for the separation of organic and conventional production into the same farm										Set a monitoring system of the environmental pollution	
Itemize the procedures for the separation of organic and conventional production into the same farm										Set a monitoring system of contamination from conventional product/materials	
Set a monitoring system of the environmental pollution										Set a monitoring system of contamination from conventional product/materials	

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Which of the following actions do you consider most relevant in order to establish a more appropriate "Legislative framework"? Please compare each of the pairs.										
If you think you do not have sufficient knowledge to answer this question, please tick the following box and move to the next question										<input type="checkbox"/>
	5	4	3	2	1	2	3	4	5	
Reinforce European/national support to programs for developing organic aquaculture										Set ethical and social rules in the EU Regulation on organic aquaculture
Reinforce European/national support to programs for developing organic aquaculture										Allow margins to member states to adapt the EU Regulation at the national level
Reinforce European/national support to programs for developing organic aquaculture										Revise the rules of equivalence among the EU Regulation and other organic regulations
Reinforce European/national support to programs for developing organic aquaculture										Allow derogations for exceptional circumstances under the National Authority control
Set ethical and social rules in the EU Regulation on organic aquaculture										Allow margins to member states to adapt the EU Regulation at the national level
Set ethical and social rules in the EU Regulation on organic aquaculture										Revise the rules of equivalence among the EU Regulation and other organic regulations
Set ethical and social rules in the EU Regulation on organic aquaculture										Allow derogations for exceptional circumstances under the National Authority control
Allow margins to member states to adapt the EU Regulation at the national level										Revise the rules of equivalence among the EU Regulation and other organic regulations
Allow margins to member states to adapt the EU Regulation at the national level										Allow derogations for exceptional circumstances under the National Authority control
Revise the rules of equivalence among the EU Regulation and other organic regulations										Allow derogations for exceptional circumstances under the National Authority control

Which of the following "Production systems" do you consider more in line with the organic principles? Please compare each of the pairs.										
If you think you do not have sufficient knowledge to answer this question, please tick the following box and move to the next question										<input type="checkbox"/>
	5	4	3	2	1	2	3	4	5	
Medium-low density system										Ponds rearing
Medium-low density system										IMTA
Medium-low density system										Cage at sea
Medium-low density system										Medium-high density system
Medium-low density system										RAS
Ponds rearing										IMTA
Ponds rearing										Cage at sea
Ponds rearing										Medium-high density system
Ponds rearing										RAS
IMTA										Cage at sea
IMTA										Medium-high density system
IMTA										RAS
Cage at sea										Medium-high density system
Cage at sea										RAS
Medium-high density system										RAS

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Which of the following “Product qualities” do you feel are more desirable in the organic products? Please compare each of the pairs.										
If you think you do not have sufficient knowledge to answer this question, please tick the following box and move to the next question										<input type="checkbox"/>
	5	4	3	2	1	2	3	4	5	
No chemicals used										No or limited additives allowed
No chemicals used										No hormones used
No chemicals used										Good smell
No chemicals used										Good taste
No chemicals used										Good texture
No chemicals used										Good appearance
No or limited additives allowed										No hormones used
No or limited additives allowed										Good smell
No or limited additives allowed										Good taste
No or limited additives allowed										Good texture
No or limited additives allowed										Good appearance
No hormones used										Good smell
No hormones used										Good taste
No hormones used										Good texture
No hormones used										Good appearance
Good smell										Good taste
Good smell										Good texture
Good smell										Good appearance
Good taste										Good texture
Good taste										Good appearance
Good texture										Good appearance

Which of the following “Product ecological qualities” do you feel are more desirable in the organic products? Please compare each of the pairs.										
If you think you do not have sufficient knowledge to answer this question, please tick the following box and move to the next question										<input type="checkbox"/>
	5	4	3	2	1	2	3	4	5	
Environmental friendly										Animal friendly
Environmental friendly										Sustainable
Environmental friendly										Local/domestic production
Animal friendly										Sustainable
Animal friendly										Local/domestic production
Sustainable										Local/domestic production

Which of the following actions do you consider most important in order to establish a more appropriate "Energy use"? Please compare each of the pairs.											
If you think you do not have sufficient knowledge to answer this question, please tick the following box and move to the next question											<input type="checkbox"/>
	5	4	3	2	1	2	3	4	5		
Assess environmental performance by method such as LCA											Set the allowable ratio between renewable and non-renewable energy consumption
Assess environmental performance by method such as LCA											Prohibit non-renewable energy for heating or cooling water
Assess environmental performance by method such as LCA											Promote the use of renewable energy
Set the allowable ratio between renewable and non-renewable energy consumption											Prohibit non-renewable energy for heating or cooling water
Set the allowable ratio between renewable and non-renewable energy consumption											Promote the use of renewable energy
Prohibit non-renewable energy for heating or cooling water											Promote the use of renewable energy

Which of the following "Recycling" activities do you consider more effective to reduce waste? Please compare each of the pairs.											
If you think you do not have sufficient knowledge to answer this question, please tick the following box and move to the next question											<input type="checkbox"/>
	5	4	3	2	1	2	3	4	5		
Prefer recycled-content product										Prefer recyclable product	
Prefer recycled-content product										Maintain and repair products	
Prefer recycled-content product										Look for products that use less packaging	
Prefer recyclable product										Maintain and repair products	
Prefer recyclable product										Look for products that use less packaging	
Maintain and repair products										Look for products that use less packaging	

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Which of the following practices do you consider more appropriate in order to limit the “ <i>Environmental impact</i> ” in the organic aquaculture? Please compare each of the pairs.										
If you think you do not have sufficient knowledge to answer this question, please tick the following box and move to the next question										<input type="checkbox"/>
	5	4	3	2	1	2	3	4	5	
Increase feed efficiency										Improve systems to prevent escapes
Increase feed efficiency										Use natural filter beds, settlement ponds, biological or mechanical filters
Increase feed efficiency										Prevent dispersion of chemicals and antibiotics
Increase feed efficiency										Allow RAS for on-growing phase
Increase feed efficiency										Use feed from sustainable fishery <b><i>certified</i></b>
Improve systems to prevent escapes										Use natural filter beds, settlement ponds, biological or mechanical filters
Improve systems to prevent escapes										Prevent dispersion of chemicals and antibiotics
Improve systems to prevent escapes										Allow RAS for on-growing phase
Improve systems to prevent escapes										Use feed from sustainable fishery <b><i>certified</i></b>
Use natural filter beds, settlement ponds, biological or mechanical filters										Prevent dispersion of chemicals and antibiotics
Use natural filter beds, settlement ponds, biological or mechanical filters										Allow RAS for on-growing phase
Use natural filter beds, settlement ponds, biological or mechanical filters										Use feed from sustainable fishery <b><i>certified</i></b>
Prevent dispersion of chemicals and antibiotics										Allow RAS for on-growing phase
Prevent dispersion of chemicals and antibiotics										Use feed from sustainable fishery <b><i>certified</i></b>
Allow RAS for on-growing phase										Use feed from sustainable fishery <b><i>certified</i></b>

Which of the following measures do you consider more appropriate in order to keep the “ <i>Quality of water</i> ” under control in the organic aquaculture farms? Please compare each of the pairs.										
If you think you do not have sufficient knowledge to answer this question, please tick the following box and move to the next question										<input type="checkbox"/>
	5	4	3	2	1	2	3	4	5	
Set threshold limits for oxygen										Set threshold limits for nutrients
Set threshold limits for oxygen										Set minimum water flow rate
Set threshold limits for oxygen										Set threshold limits for stocking density
Set threshold limits for nutrients										Set minimum water flow rate
Set threshold limits for nutrients										Set threshold limits for stocking density
Set minimum water flow rate										Set threshold limits for stocking density

**European Organic Aquaculture - Science-based recommendations for further development of the EU regulatory framework and to underpin future growth in the sector**

Which of the following measures do you consider more appropriate in order to ensure the “Quality of feed” in the organic aquaculture farms? Please compare each of the pairs.											
If you think you do not have sufficient knowledge to answer this question, please tick the following box and move to the next question											<input type="checkbox"/>
	5	4	3	2	1	2	3	4	5		
Allow trimmings from conventional aquaculture										Allow trimmings from conventional fishery	
Allow trimmings from conventional aquaculture										Use trimmings from sustainable fishery	
Allow trimmings from conventional aquaculture										Allow fish meal/oil from whole fish	
Allow trimmings from conventional aquaculture										Allow synthetic amino acids	
Allow trimmings from conventional aquaculture										Allow only amino acids obtained by fermentation or other organic procedures	
Allow trimmings from conventional fishery										Use trimmings from sustainable fishery	
Allow trimmings from conventional fishery										Allow fish meal/oil from whole fish	
Allow trimmings from conventional fishery										Allow synthetic amino acids	
Allow trimmings from conventional fishery										Allow only amino acids obtained by fermentation or other organic procedures	
Use trimmings from sustainable fishery										Allow fish meal/oil from whole fish	
Use trimmings from sustainable fishery										Allow synthetic amino acids	
Use trimmings from sustainable fishery										Allow only amino acids obtained by fermentation or other organic procedures	
Allow fish meal/oil from whole fish										Allow synthetic amino acids	
Allow fish meal/oil from whole fish										Allow only amino acids obtained by fermentation or other organic procedures	
Allow synthetic amino acids										Allow only amino acids obtained by fermentation or other organic procedures	

**European Organic Aquaculture - Science-based recommendations for further development of the EU regulatory framework and to underpin future growth in the sector**

Which of the following measures do you consider more appropriate in order to ensure the “Quality of the rearing environment” in the organic aquaculture farms? Please compare each of the pairs.										
If you think you do not have sufficient knowledge to answer this question, please tick the following box and move to the next question										<input type="checkbox"/>
	5	4	3	2	1	2	3	4	5	
Set minimal volumes of the rearing tanks										Allow on-growing rearing only in outdoor containment/production systems
Set minimal volumes of the rearing tanks										Use bottom and/or banks of the land based rearing tanks of natural earth
Set minimal volumes of the rearing tanks										Use cage at sea
Allow on-growing rearing only in outdoor containment/production systems										Use bottom and/or banks of the land based rearing tanks of natural earth
Allow on-growing rearing only in outdoor containment/production systems										Use cage at sea
Use bottom and/or banks of the land based rearing tanks of natural earth										Use cage at sea

**European Organic Aquaculture - Science-based recommendations for further development of the EU regulatory framework and to underpin future growth in the sector**

Which of the following measures do you consider more appropriate in order to ensure good “Physiological condition” to the fish in the organic aquaculture farms? Please compare each of the pairs.											
If you think you do not have sufficient knowledge to answer this question, please tick the following box and move to the next question											<input type="checkbox"/>
	5	4	3	2	1	2	3	4	5		
Allow more than two courses of allopathic treatments per year										Monitor fish behaviour and fin damages or other injuries	
Allow more than two courses of allopathic treatments per year										Allow unlimited use of oxygen	
Allow more than two courses of allopathic treatments per year										Keep stocking density at a safer level	
Allow more than two courses of allopathic treatments per year										Strengthen the movements restriction of live animals between Countries and regions	
Monitor fish behaviour and fin damages or other injuries										Allow unlimited use of oxygen	
Monitor fish behaviour and fin damages or other injuries										Keep stocking density at a safer level	
Monitor fish behaviour and fin damages or other injuries										Strengthen the movements restriction of live animals between Countries and regions	
Allow unlimited use of oxygen										Keep stocking density at a safer level	
Allow unlimited use of oxygen										Strengthen the movements restriction of live animals between Countries and regions	
Keep stocking density at a safer level										Strengthen the movements restriction of live animals between Countries and regions	

**European Organic Aquaculture - Science-based recommendations for further development of the EU regulatory framework and to underpin future growth in the sector**

Which of the following actions do you consider most appropriate/relevant in order to make the “Husbandry practices” more in line with the organic principles? Please compare each of the pairs.										
If you think you do not have sufficient knowledge to answer this question, please tick the following box and move to the next question										<input type="checkbox"/>
	5	4	3	2	1	2	3	4	5	
Reinforce fallowing periods										Restrict the grading procedures
Reinforce fallowing periods										Improve slaughter procedures
Reinforce fallowing periods										Set limits for the stocking density during transport
Reinforce fallowing periods										Set limits for the transport duration and the water quality
Reinforce fallowing periods										Reinforce biosecurity procedures
Restrict the grading procedures										Improve slaughter procedures
Restrict the grading procedures										Set limits for the stocking density during transport
Restrict the grading procedures										Set limits for the transport duration and the water quality
Restrict the grading procedures										Reinforce biosecurity procedures
Improve slaughter procedures										Set limits for the stocking density during transport
Improve slaughter procedures										Set limits for the transport duration and the water quality
Improve slaughter procedures										Reinforce biosecurity procedures
Set limits for the stocking density during transport										Set limits for the transport duration and the water quality
Set limits for the stocking density during transport										Reinforce biosecurity procedures
Set limits for the transport duration and the water quality										Reinforce biosecurity procedures

**THANK YOU VERY MUCH FOR THE COLLABORATION**

**If you want to make comments or provide suggestions, please, use the following space or send an e-mail to [coispa@coispa.it](mailto:coispa@coispa.it)**

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