



# GENIALG

e-Learning course

SUSTAINABLE SEAWEED FARMING PRACTICES

Module 2 - Ecosystem Services of Seaweed Cultivation

*LESSON 2*

*Valuation, Practical Approaches and Challenges Applying Ecosystem Services from Seaweed Cultivation*

© Wouter Visch



This project has received funding from the European Union's Horizon 2020 research and innovation programme under Grant Agreement no. 727892 (GENIALG). This output reflects the views of the author, and the Research Executive Agency (REA) cannot be held responsible for any use which might be made of the information contained therein

[www.genialproject.eu](http://www.genialproject.eu)

# Module 2 - Ecosystem Services of Seaweed Cultivation

## LESSON 2 – Valuation, Practical Approaches and Challenges Applying ES from Seaweed Cultivation



- We naturally tend to equate valuation with pricing, pricing with commodification, and commodification with privatization. In reality:
  - **Value** is what you receive
  - **Price** is what you pay
- If what you receive is from nature, the chances are that it is free, therefore by definition, it has no price.



# Module 2 - Ecosystem Services of Seaweed Cultivation

## LESSON 2 – Valuation, Practical Approaches and Challenges Applying ES from Seaweed Cultivation



- Some argue that monetization, by revealing the economic contribution of nature and its services, can heighten public awareness and bolster conservation efforts
- Others go beyond such broad conceptual calculations and seek to establish tradable prices for ecosystem services, claiming that markets can achieve what politics has not.



# Module 2 - Ecosystem Services of Seaweed Cultivation

## LESSON 2 – Valuation, Practical Approaches and Challenges Applying ES from Seaweed Cultivation



### MONETIZATION

- Measuring into monetary terms by ascribing monetary values and economic quantities to what nature delivers in terms of ecosystem services and biodiversity
- For monetization to be truly useful it needs to look much more at a local level, at a much more reflective level where communities, businesses, towns, cities are involved



# Module 2 - Ecosystem Services of Seaweed Cultivation

## LESSON 2 – Valuation, Practical Approaches and Challenges Applying ES from Seaweed Cultivation



### VALUATION

- A valuation does not need to be economic valuation as there are different types of values.
- The need to value nature and its services, what we call ecosystem services, has become quite an interesting new area to be explored by policy makers, by businesses, and by Non-Governmental organizations (NGOs).
- The purpose of **valuation** is to provide knowledge about the value of ecosystems and their services holistically and beyond the obvious economic benefits of seaweed biomass in the market



# Module 2 - Ecosystem Services of Seaweed Cultivation

## LESSON 2 – Valuation, Practical Approaches and Challenges Applying ES from Seaweed Cultivation



### VALUATION

- An estimation of the worth of something, especially one carried out by a professional valuer
- **IPBES Conceptual Framework definitions:** Valuation of the components of nature and its benefits, adopting an inclusive approach to values (cultural, health, economic, holistic, etc.), in ways that allow decision-makers to understand how valuation would change under different scenarios.



# Module 2 - Ecosystem Services of Seaweed Cultivation

## LESSON 2 – Valuation, Practical Approaches and Challenges Applying ES from Seaweed Cultivation



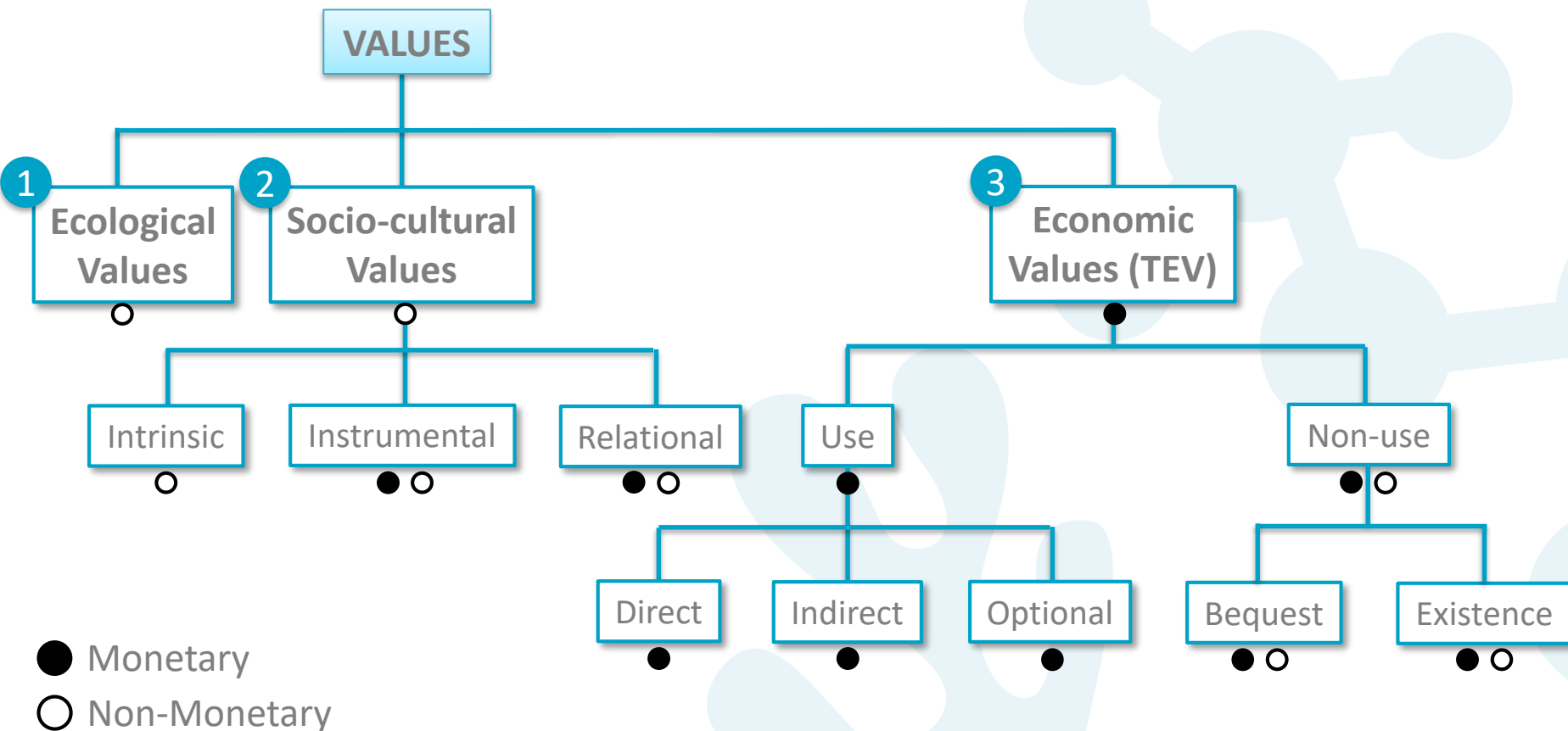
The word **'value'** can refer to a principle associated with a given worldview or cultural context, a preference someone has for a particular state of the world, the importance of something for itself or for others, or simply a measure.



# Module 2 - Ecosystem Services of Seaweed Cultivation

## LESSON 2 – Valuation, Practical Approaches and Challenges Applying ES from Seaweed Cultivation

### 1 DIMENSION OF VALUE





# Module 2 - Ecosystem Services of Seaweed Cultivation

## LESSON 2 – Valuation, Practical Approaches and Challenges Applying ES from Seaweed Cultivation

### 1 DIMENSION OF VALUE



#### 1 Ecological Values

Include functional integrity, health or resilience of an ecosystem to sustain life. Complex to measure in preferences terms. These are important indicators to determine critical thresholds and minimum requirements for ecosystem service provision

#### 2 Socio-Cultural Values

Embrace the way all ecosystem service values are culturally constructed and contextualised and overall influences our behaviour towards managing and using ecosystems.



# Module 2 - Ecosystem Services of Seaweed Cultivation

## LESSON 2 – Valuation, Practical Approaches and Challenges Applying ES from Seaweed Cultivation

### 1 DIMENSION OF VALUE

#### 2 Socio-Cultural Values

- **Intrinsic Value** - Refers to the value of an ecosystem regardless of people, or in other words “the sense of value that exists independently of human valuations”
- **Instrumental Value** - Refers to how an ecosystem and its services directly contribute to the beneficiaries’ wellbeing by directly utilizing them (i.e. recreation)
- **Relational Value** - Refers to the way people relate to nature, the values of the social capital in relation with nature (i.e., social rules, regulations, even legislation and the market)



# Module 2 - Ecosystem Services of Seaweed Cultivation

## LESSON 2 – Valuation, Practical Approaches and Challenges Applying ES from Seaweed Cultivation

### 1 DIMENSION OF VALUE

#### 3 Economic Values (TEV)

Reflects the importance of a system in monetary terms:

##### ■ Use Values – Market goods and services

- **Direct use** – Direct benefits from use of primary goods

*Provisioning services: timber, food, medicinal, fresh water*

*Cultural services: recreation, tourism*

- **Indirect use** – Benefits from secondary goods and services

*Provisioning services: fresh water, medicinal products*

*Regulating services: carbon capture and storage, erosion control*

- **Option value** – Option for future use (direct or indirect) of goods and services



# Module 2 - Ecosystem Services of Seaweed Cultivation

## LESSON 2 – Valuation, Practical Approaches and Challenges Applying ES from Seaweed Cultivation

### 1 DIMENSION OF VALUE

#### 3 Economic Values (TEV)

Reflects the importance of a system in monetary terms:

- **Non-Use Values** - Non-market goods and services
  - **Bequest value** – Value for future generations
    - Provisioning services: fresh water*
    - Regulation services: carbon capture and storage, air quality*
    - Cultural services: recreation, scenery and landscape*
  - **Existence value** – Value of existence without use or consumption
    - Cultural services: scenery and landscape, community identity and integrity, spiritual value, wildlife and biodiversity*



# Module 2 - Ecosystem Services of Seaweed Cultivation

## LESSON 2 – Valuation, Practical Approaches and Challenges Applying ES from Seaweed Cultivation

### WHY IS IT IMPORTANT TO VALUATE NATURE?



- Monetary and non-monetary valuation shall elicit “hidden” biodiversity values for better decision-making
- Looking at the value of what nature provides to us, most of which is free, is also a way for us to understand how we distance ourselves from nature - How we need to reconnect, perhaps using the means of valuation as a formal mechanism
- In the end, we can only integrate values in environmental governance, not services, or ecological processes and functions — ultimately it is the societal importance ascribed to nature that matters



# Module 2 - Ecosystem Services of Seaweed Cultivation

## LESSON 2 – Valuation, Practical Approaches and Challenges Applying ES from Seaweed Cultivation

### WHY IS IT IMPORTANT TO VALUATE NATURE?



- Some ES are traded and valued on markets that are identified as provisioning services for example timber or seaweed biomass. But many are not, such as regulation or supporting services (e.g. oxygen production or carbon storage, deliver by seaweed forest)
- Therefore, there is no price signal that indicates scarcity of this ecosystem services and there are weak incentives for individual conservation, or sustainable use efforts of the resources
- Under this paradigm, valuation of Ecosystem Services can serve as an indicator of sustainable use of resources



# Module 2 - Ecosystem Services of Seaweed Cultivation

## LESSON 2 – Valuation, Practical Approaches and Challenges Applying ES from Seaweed Cultivation

### 2 METHODS FOR ESTIMATION OF VALUE



- Different methods and techniques have been applied and reviewed for the estimations of values
- There is a list of methods and techniques explored to be used for **monetary** and **non-monetary** valuation specifically for seaweed farming

#### MONETARY VALUATION

Estimate the value in monetary terms and from neo-classical economics. The common result from the application of monetary valuation techniques is expressed in a currency for a specific area and period of time

#### NON-MONETARY VALUATION

Include quantitative and qualitative research techniques, deliberative and participatory approaches, individual and focus group-based activities and methods expressing preferences in non-monetary but quantifiable terms



# Module 2 - Ecosystem Services of Seaweed Cultivation

## LESSON 2 – Valuation, Practical Approaches and Challenges Applying ES from Seaweed Cultivation

### 2 METHODS FOR ESTIMATION OF VALUE



#### NON-MONETARY VALUATION

- Among all the benefits from seaweed aquaculture, there is included a non-material component that contributes to our human well-being, beyond the obvious economic benefits of seaweed biomass in the market
- Social and ecological values of ecosystems are referred to as non-material benefits that are, by definition, intangible and subjective. Since there are no obvious markets for those benefits (hence, price), quantifying the value and supply of these services is done by assessing this subjectivity





# Module 2 - Ecosystem Services of Seaweed Cultivation

## LESSON 2 – Valuation, Practical Approaches and Challenges Applying ES from Seaweed Cultivation

### 2 METHODS FOR ESTIMATION OF VALUE



#### NON-MONETARY VALUATION

- Non-monetary valuation techniques aim to explore the beliefs, motivations and sociodemographic factors that influence individual and social choices to obtain information about people's relationship with the environment
- Subgroups of Non-Monetary Valuation (NMV) techniques according to methodological similarities in data collection are in the next slide



# Module 2 - Ecosystem Services of Seaweed Cultivation

## LESSON 2 – Valuation, Practical Approaches and Challenges Applying ES from Seaweed Cultivation

### 2 METHODS FOR ESTIMATION OF VALUE



#### NON-MONETARY VALUATION

- Economic and social benefits that do not have a market value, but the value of the socio-environmental benefits can be estimated in non monetary terms (ranking, preferences, importance, interest...) by using deliberative and participatory processes to elicit information from stakeholders

see the next slides for examples  
developed in the GENIALG project



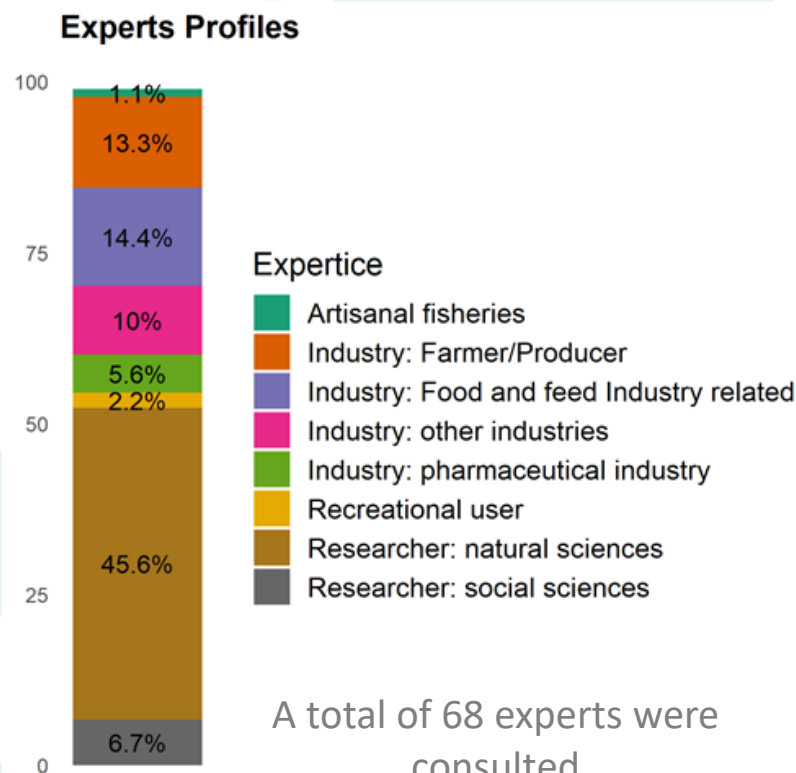
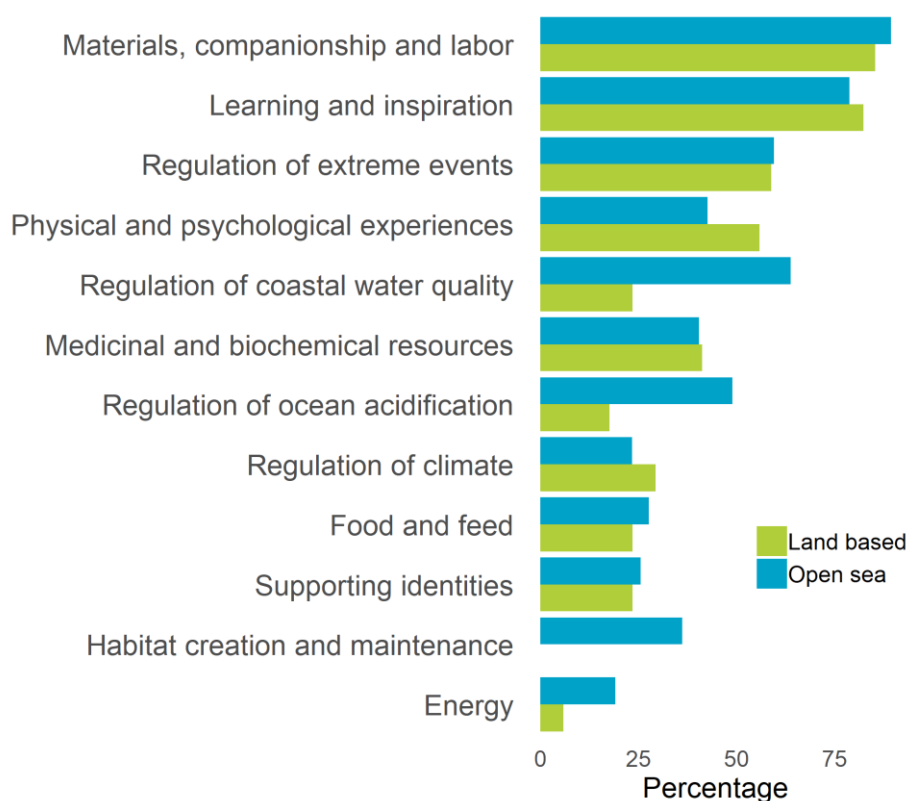
# Module 2 - Ecosystem Services of Seaweed Cultivation

## LESSON 2 – Valuation, Practical Approaches and Challenges Applying ES from Seaweed Cultivation

### IDENTIFICATION OF NCPs FROM SEAWEED FARMING



### NON-MONETARY VALUATION - Expert Survey + Literature Review



# Module 2 - Ecosystem Services of Seaweed Cultivation

LESSON 2 – Valuation, Practical Approaches and Challenges Applying ES from Seaweed Cultivation

## IDENTIFICATION OF NCPs FROM SEAWEED FARMING



## NON-MONETARY VALUATION - Expert Survey + Literature Review

### MAIN CONCLUSIONS

- The NCPs from Open-sea and Land-based farming are different
  - More important NCPs for Open-sea are food and feed, regulation of ocean acidification and habitat maintenance
  - More important NCPs for Land-based are the medicinal and genetic resources, food and feed and regulation of fresh water and coastal water



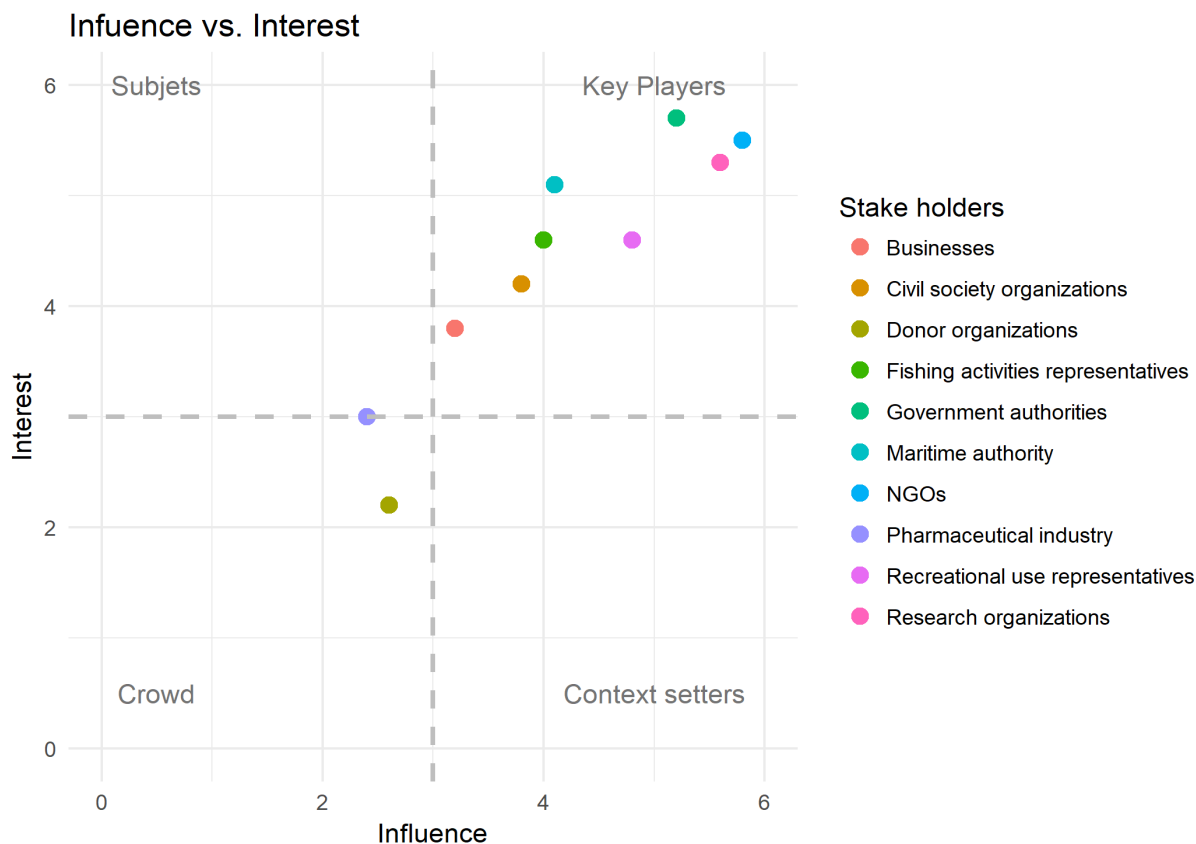
# Module 2 - Ecosystem Services of Seaweed Cultivation

## LESSON 2 – Valuation, Practical Approaches and Challenges Applying ES from Seaweed Cultivation

### IDENTIFICATION OF NCPs FROM SEAWEED FARMING



### NON-MONETARY VALUATION - Stakeholders identified and their role



# Module 2 - Ecosystem Services of Seaweed Cultivation

## LESSON 2 – Valuation, Practical Approaches and Challenges Applying ES from Seaweed Cultivation

### IDENTIFICATION OF NCPs FROM SEAWEED FARMING



### NON-MONETARY VALUATION - Stakeholders identified and their role

#### MAIN CONCLUSIONS

- The Stakeholder Analysis shows most of the stakeholders as “Key players”.
- The strongest relation between Stakeholders and NCPs is between Research Organizations and Learning and Inspiration,
- The Stakeholders that have a higher influence over NCPs are Government authorities and Research Organizations.



# Module 2 - Ecosystem Services of Seaweed Cultivation

## LESSON 2 – Valuation, Practical Approaches and Challenges Applying ES from Seaweed Cultivation

### IDENTIFICATION OF NCPs FROM SEAWEED FARMING



### NON-MONETARY VALUATION - Stakeholder workshops

- **General Objective** - To value of the non-material benefits from seaweed farming involving the Stakeholders participation and perceptions. The focus question is: **How do we value Nature?**
- **Characteristics:**
  - One day duration, ruled by facilitators
  - Focus Groups, deliberative plenaries and individual pools
  - Stakeholder participating: Producers, Researchers and Consultants, Seaweed industry, Recreational users, Recreational anglers, Artisanal fishermen, Community based organizations (NGOs, local associations concern about management decisions, Government authorities, Maritime authorities)



# Module 2 - Ecosystem Services of Seaweed Cultivation

## LESSON 2 – Valuation, Practical Approaches and Challenges Applying ES from Seaweed Cultivation

### IDENTIFICATION OF NCPs FROM SEAWEED FARMING



### NON-MONETARY VALUATION - Stakeholder workshops

- Developed activities and methods:
  - Non-monetary valuation (Q-method for subjectivity analysis)
  - Aesthetic valuation on land/sea-scape (Assessment on perceptions)
  - Quantitative valuation (Multi-Criteria Evaluation Deliberation)
  - Future Visions analysis



This project has received funding from the European Union's Horizon 2020 research and innovation programme under Grant Agreement no. 727892 (GENIALG). This output reflects the views of the author, and the Research Executive Agency (REA) cannot be held responsible for any use which might be made of the information contained therein

[www.genialproject.eu](http://www.genialproject.eu)



# Module 2 - Ecosystem Services of Seaweed Cultivation

## LESSON 2 – Valuation, Practical Approaches and Challenges Applying ES from Seaweed Cultivation

### IDENTIFICATION OF NCPs FROM SEAWEED FARMING



### NON-MONETARY VALUATION - Stakeholder workshops

#### Q-method - a quantitative express method

- Q-method provides a foundation for the systematic study of subjectivity, a person's viewpoint, opinion, beliefs, attitude
- It combines qualitative and quantitative research to reveal different social perspectives and it has been used in socio-environmental studies
- Example: Participants sort statements according to how those statements fit into their beliefs and understandings



# Module 2 - Ecosystem Services of Seaweed Cultivation

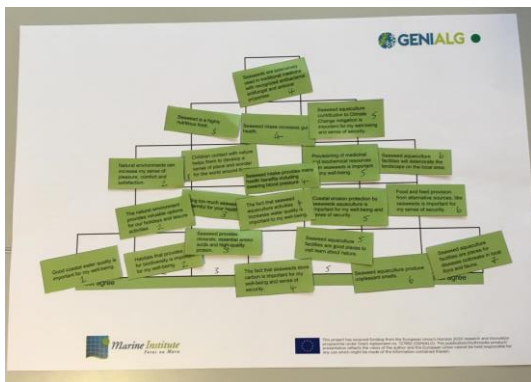
LESSON 2 – Valuation, Practical Approaches and Challenges Applying ES from Seaweed Cultivation

## IDENTIFICATION OF NCPs FROM SEAWEED FARMING



## NON-MONETARY VALUATION - Stakeholder workshops

### Q-method - a quantitative express method



This project has received funding from the European Union's Horizon 2020 research and innovation programme under Grant Agreement no. 727892 (GENIALG). This output reflects the views of the author, and the Research Executive Agency (REA) cannot be held responsible for any use which might be made of the information contained therein

[www.genialproject.eu](http://www.genialproject.eu)

# Module 2 - Ecosystem Services of Seaweed Cultivation

## LESSON 2 – Valuation, Practical Approaches and Challenges Applying ES from Seaweed Cultivation

### IDENTIFICATION OF NCPs FROM SEAWEED FARMING



### NON-MONETARY VALUATION - Stakeholder workshops

#### Aesthetic valuation - a quantitative express method

- In order to value the aesthetic of marine landscape we use a perception-based assessment, which is a subjective approach
- It focuses on an individual as the perceiving subject with his/her feelings, needs and imagination
- The perception-based approach uses choices, rankings or ratings (usually based on photographs)
- Example: 20 paired pictures: - participants chose the one you prefer (A or B)



# Module 2 - Ecosystem Services of Seaweed Cultivation

## LESSON 2 – Valuation, Practical Approaches and Challenges Applying ES from Seaweed Cultivation

### IDENTIFICATION OF NCPs FROM SEAWEED FARMING



### NON-MONETARY VALUATION - Stakeholder workshops

#### **Multi-Criteria Deliberative Evaluation (MCDE) – deliberative and quantitative**

- It allows comparison of ecological objectives with socio-cultural and economic ones in a structured and shared framework
- In general, a MCDE seeks to identify the preferences or weights the stakeholders assign to the various criteria
- There are two MCDE methods:
  - 1) Multi-Attribute Value Theory
  - 2) Rank-Based methods
- Example: Participants are asked to assign numerical weightings to reflect the relative importance of each appraisal criterion (see next slide)



# Module 2 - Ecosystem Services of Seaweed Cultivation

## LESSON 2 – Valuation, Practical Approaches and Challenges Applying ES from Seaweed Cultivation

### IDENTIFICATION OF NCPs FROM SEAWEED FARMING



### NON-MONETARY VALUATION - Stakeholder workshops

#### Multi-Criteria Deliberative Evaluation (MCDE) – deliberative and quantitative



In which component of the ecosystem would you invest for each value?

	<b>Seaweed aquaculture components</b>	<i>Habitat and Biodiversity</i>	<i>Carbon Storing</i>	<i>Nutrient Uptake (water quality)</i>	<i>Coastal Protection from floods and storms</i>	<i>Seaweed biomass</i>	<i>Sea/Land-scape</i>	<i>Learning and new technologies development</i>	<i>Supporting identities</i>
Economic values	Indirect values (e.i jobs creation)								
	Opportunity values (future projection)								
Social values	Instrumental value (well-being and recreation)								
	Social and community structure value								
Ecological values	Existence and Inheritance value								



# Module 2 - Ecosystem Services of Seaweed Cultivation

LESSON 2 – Valuation, Practical Approaches and Challenges Applying ES from Seaweed Cultivation

## IDENTIFICATION OF NCPs FROM SEAWEED FARMING



## NON-MONETARY VALUATION - Stakeholder workshops

### Future Vision – qualitative expressed method

- Some important questions as an example:
  - How do you imagine the future of seaweed aquaculture in your region?
  - If you could achieve all your wishes, what future do you envisage for algae production?
  - What do you want to see in 10 years?



This project has received funding from the European Union's Horizon 2020 research and innovation programme under Grant Agreement no. 727892 (GENIALG). This output reflects the views of the author, and the Research Executive Agency (REA) cannot be held responsible for any use which might be made of the information contained therein

[www.genialproject.eu](http://www.genialproject.eu)

# Module 2 - Ecosystem Services of Seaweed Cultivation

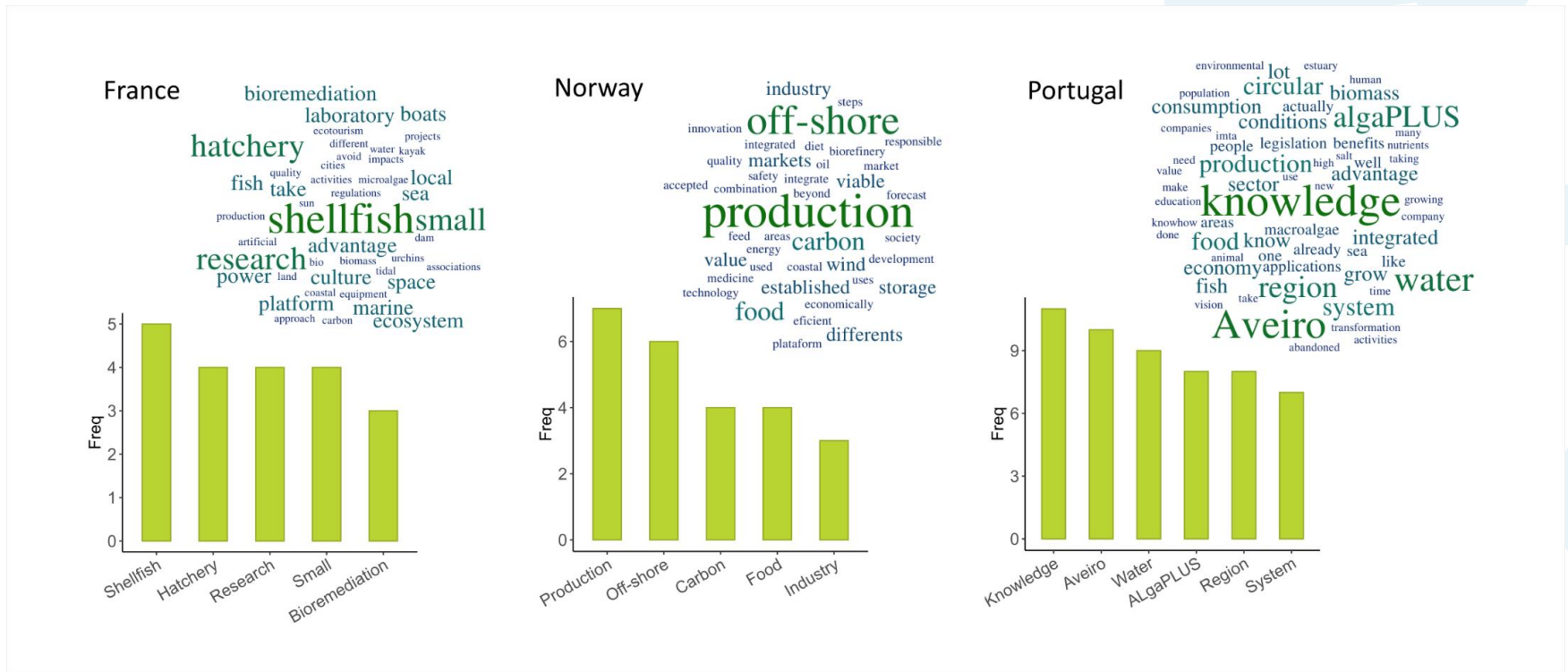
## LESSON 2 – Valuation, Practical Approaches and Challenges Applying ES from Seaweed Cultivation

### IDENTIFICATION OF NCPs FROM SEAWEED FARMING



### NON-MONETARY VALUATION - Stakeholder workshops

#### Future Vision – qualitative expressed method



# Module 2 - Ecosystem Services of Seaweed Cultivation

## LESSON 2 – Valuation, Practical Approaches and Challenges Applying ES from Seaweed Cultivation

### 2 METHODS FOR ESTIMATION OF VALUE



#### NON-MONETARY VALUATION

- The choice among NMV methods should depend on several factors:
  - 1) The capabilities and the sociocultural context of the communities involved
  - 2) The institutions and the value-systems held by stakeholders
  - 3) The needs and purposes of the decision-makers and of the project concerned
  - 4) The commitment and capacity of the researchers and practitioners who carry out the valuation process
  - 5) The main characteristics of the decision-making process affected (i.e., number of relevant stakeholders, the level of conflicts, etc.)





# Module 2 - Ecosystem Services of Seaweed Cultivation

## LESSON 2 – Valuation, Practical Approaches and Challenges Applying ES from Seaweed Cultivation

### 2 METHODS FOR ESTIMATION OF VALUE



#### NON-MONETARY VALUATION

##### Ethical implications on participatory approaches:



Using participatory processes to elicit, save and analyse information from stakeholders has **ethical requirements** that need to be acknowledged and must follow the pertinent regulations:

- General Data Protection Regulation from the European Union
- It is necessary to have the approval from an ethical committee in the country where methodologies are applied or developed
- Intellectual Property Committee (IPR) also needs to be informed about what is going to be done involving people for research purposes.



# Module 2 - Ecosystem Services of Seaweed Cultivation

## LESSON 2 – Valuation, Practical Approaches and Challenges Applying ES from Seaweed Cultivation

### 2 METHODS FOR ESTIMATION OF VALUE

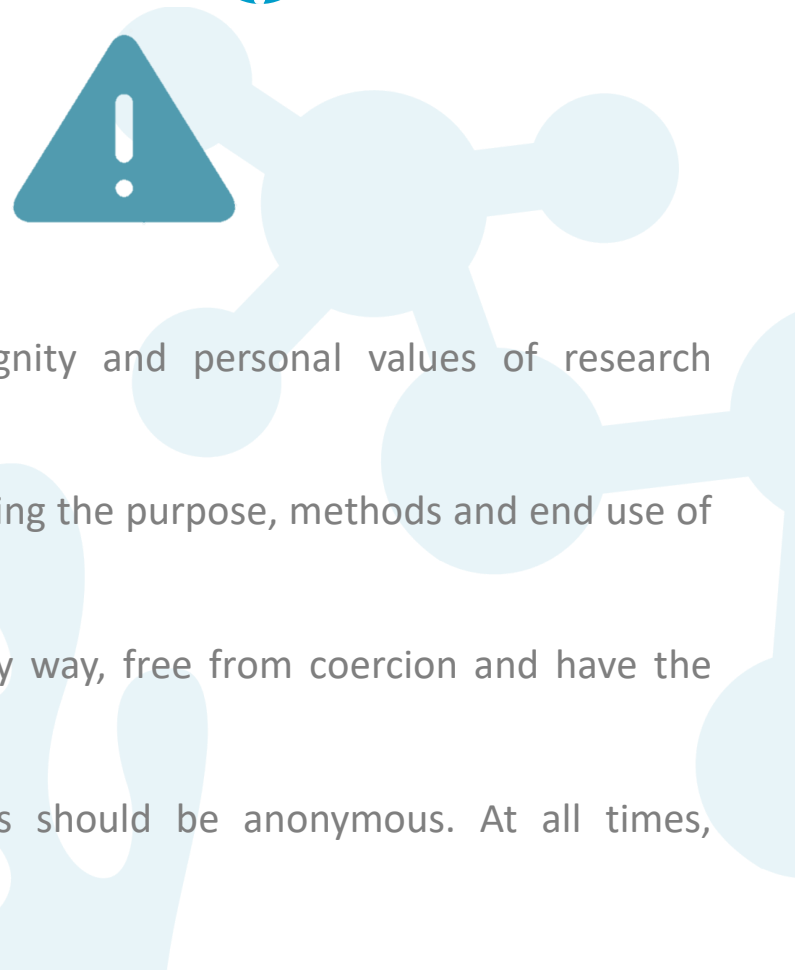


#### NON-MONETARY VALUATION

##### Ethical implications on participatory approaches:

The Key Principles of Ethical Research are:

- The emotional and physical well-being, rights, dignity and personal values of research participants should be secured
- Research participants should be fully informed regarding the purpose, methods and end use of the research
- Research participants must participate in a voluntary way, free from coercion and have the right to withdraw at any time
- Normally, information provided by the participants should be anonymous. At all times, confidentiality must be assured.



# Module 2 - Ecosystem Services of Seaweed Cultivation

## LESSON 2 – Valuation, Practical Approaches and Challenges Applying ES from Seaweed Cultivation




**Valuing ES and incorporating those values into decision-making processes will help in:**

- Evaluating the impacts of development policies and policy interventions
- Comparing the real cost-effectiveness of an investment
- Evaluating trade-offs between different management options and choosing between competing uses
- Assessing liability for damage to the environment
- Creating markets for ES in order to mobilize financial resources, e.g., global carbon market and PES
- Awareness building and communication to the public on the overall contribution of ES to social and economic well-being





  
**LESSON 2 OF  
MODULE 2  
FINISHED**

**Find out more**  
[www.genialgproject.eu](http://www.genialgproject.eu)

**Follow Us**  
 [@GENIALG\\_EU](https://twitter.com/GENIALG_EU)  
 [@GENIALGproject](https://facebook.com/GENIALGproject)

**Contact us**



This project has received funding from the European Union's Horizon 2020 research and innovation programme under Grant Agreement no. 727892 (GENIALG). This output reflects the views of the author, and the Research Executive Agency (REA) cannot be held responsible for any use which might be made of the information contained therein