

Carbon Binding Blue Black Sea 2025

**The Result Report of the
Survey Conducted within the
Scope of the BlueC Project
on the Evaluation of
Perspectives and Raising
Awareness Regarding the
Integration of Seagrasses
into National Environmental
Impact Assessment (EIA)
Legislation**

JULY

1. Overview

Seagrasses are ecosystems composed of flowering plants rooted in the seabed and have significant ecological and economic importance in coastal regions. They play a vital role in combating climate change due to their carbon sequestration capacity. They also serve as essential habitats and food sources for numerous marine species. Seagrasses also provide important ecosystem services such as preventing coastal erosion, improving water quality, and supporting fisheries. However, they are threatened by human activities such as coastal development, overfishing, and pollution.

Environmental Impact Assessment (EIA) is a process that assesses, monitors, and regulates the potential permanent or temporary environmental impacts of new projects and developments. It considers alternative solutions and incorporates the views, concerns, and suggestions of all relevant stakeholders, covering pre-operation, operation, and post-operation phases.

This study was conducted to evaluate opinions on the inclusion of seagrasses in EIA procedures under national legislation and to raise public awareness on the subject.

1.1. Research Objective and Scope

The main objective of this research is to determine the knowledge, awareness, and perceptions of stakeholders living in the Thrace region and the areas along the Black Sea coast regarding seagrass meadows. This study aims to reveal the current attitudes of the public and decision-makers towards the protection of seagrass meadows and sustainable coastal management, and to form opinions on the integration of seagrass meadows into EIA processes.

1.2. Research Model

This study is a **survey model** conducted within the scope of quantitative research methods. The model aims to reveal the current attitudes and awareness levels of different stakeholder groups and public using a **descriptive** approach.

1.3. Research Partnership and Field Process

The research was conducted in collaboration with **Tekirdağ Namık Kemal University**, the lead partner of the BlueC project. The field process lasted approximately **1.5 months**, during which the questionnaire was administered through both face-to-face field interviews and in a meeting format with public institutions. The study areas and target groups were determined with scientific consultancy support from the Tekirdağ Namık Kemal University.

1.4. Study Areas and Stakeholders

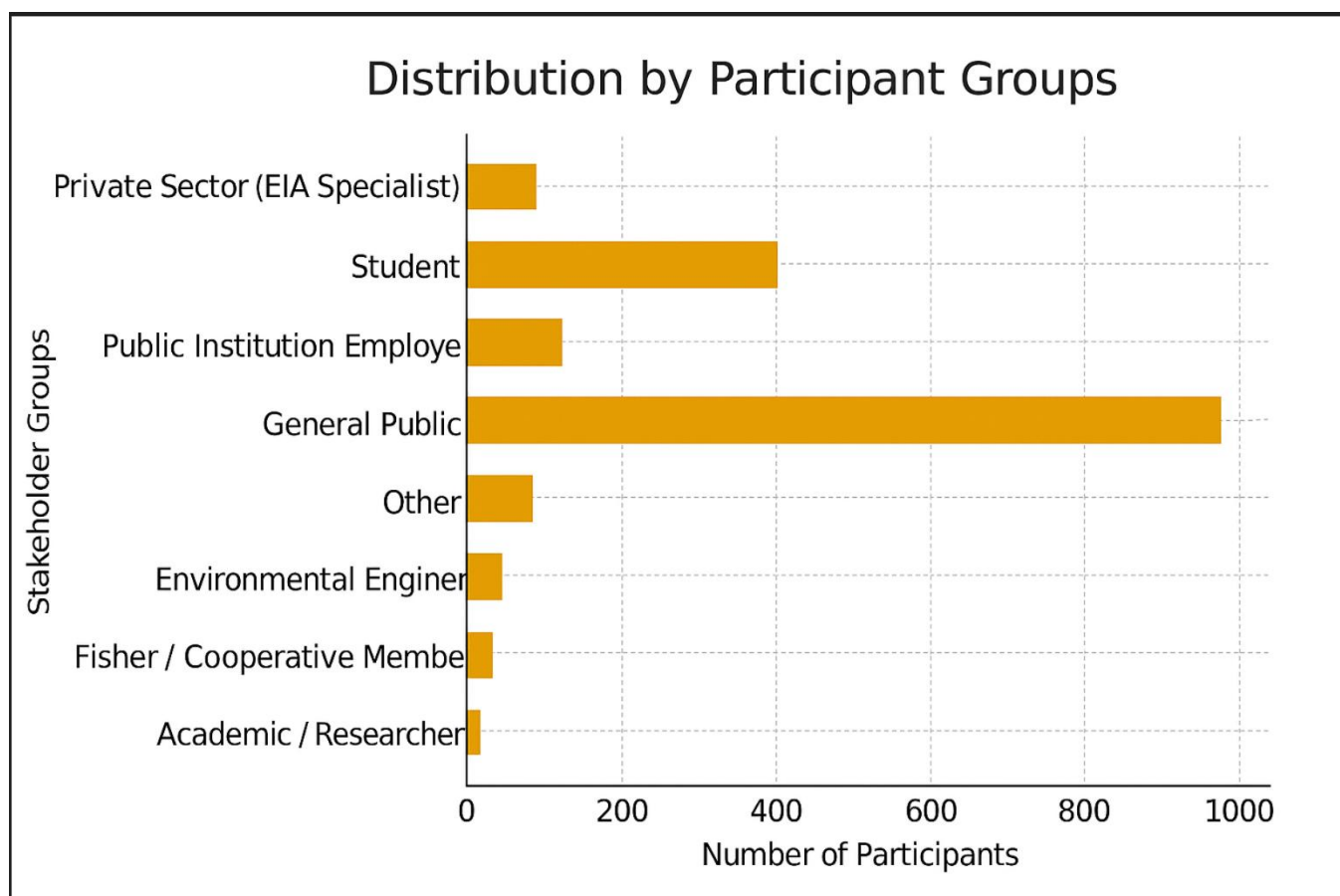
The study areas were determined considering the potential for seagrass distribution and regional interaction. Interviews were conducted with the following institutions and stakeholders:

1. Kiyıköy and İğneada Fishermen's Cooperatives and fishermen
2. Tekirdağ, Kiyıköy, İğneada Port Authority Directorates

3. Tekirdağ Provincial Directorate of Environment, Urbanization, and Climate Change
4. Kırklareli Provincial Directorate of Environment, Urbanization, and Climate Change
5. DSI (State Hydraulic Works) Edirne Regional Directorate
6. Municipalities of Tekirdağ, Kırklareli, Kiyıköy, and İğneada
7. The public of Tekirdağ, Kırklareli, Kiyıköy, and İğneada
8. Coast Guard Commands (Tekirdağ, Kiyıköy, İğneada)
9. Namık Kemal University, Department of Environmental Engineering
10. Namık Kemal University, Department of Maritime and Port Management (Vocational School of Social Sciences)

1.5. Population and Sample

The population of the research consists of stakeholder groups that are directly or indirectly related to marine ecosystems on the Black Sea coast. Since it was not possible to reach the entire population, the **purposive sampling** method was used. A total of **1,572** participants were interviewed.



1.6. Data Collection Tool and Application Method

An **online survey form** was used as the data collection tool. The questionnaire was administered face-to-face via a **tablet** and completed using the **distribute-collect** method during meetings held with public employees.

1.7. Data Analysis

The collected data were analyzed using the **SPSS** program. **Descriptive statistics** (frequency, percentage, mean, standard deviation) were utilized in the analysis. Furthermore, difference analyses (e.g., t-test, ANOVA) were performed according to stakeholder groups.

1.8. Ethical Principles

Throughout the research process, attention was paid to the principles of **voluntariness, confidentiality, and anonymity**. The purpose of the research was explained to the participants, and **informed consent** was obtained. The research was carried out in accordance with the ethical principles of Tekirdağ Namık Kemal University.

2. METHOD

This study is made of two sections:

2.1 Analysis of the Legislation:

- The EIA Regulation which is currently in effect in Turkey, and the national legislations about Coastal Law and Biodiversity have been examined.
- The existence and binding nature of the open references regarding Seagrasses have been analysed.

2.2 Survey Conduction:

- Participant Profile: 1572 Participants (Government officials, students, general public, fishers, researchers)
- Method: Online and in-person surveys
- Survey Sections: Awareness, Level of Knowledge, Perception of Legislation, Priority of Protection

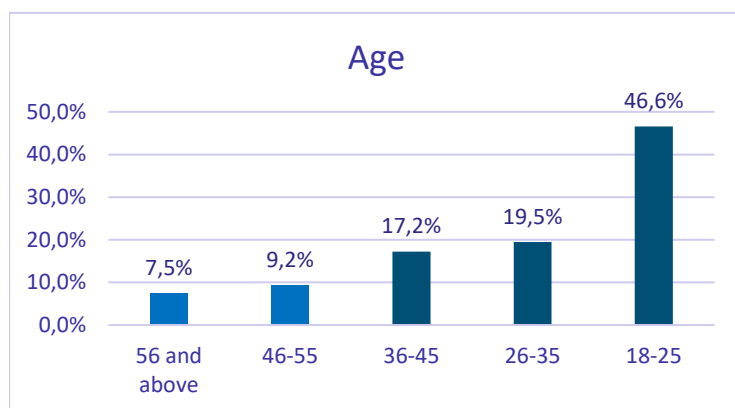
3. FINDINGS

3.1 Legislation Analysis Findings:

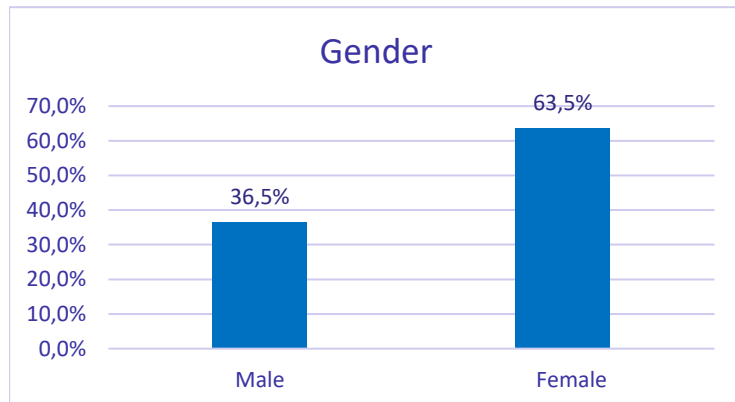
- Seagrasses are indirectly regarded as wetlands and sensitive ecosystems in the EIA Regulations, but aren't defined explicitly.
- It has been observed that the sensitivity regarding Seagrass is being overlooked in EIA processes regarding coastal urbanizations.
- Training should be arranged as required to inform the public on this matter.
- The importance of Seagrasses regarding carbon emissions should be emphasized more.

3.2 Survey Results :

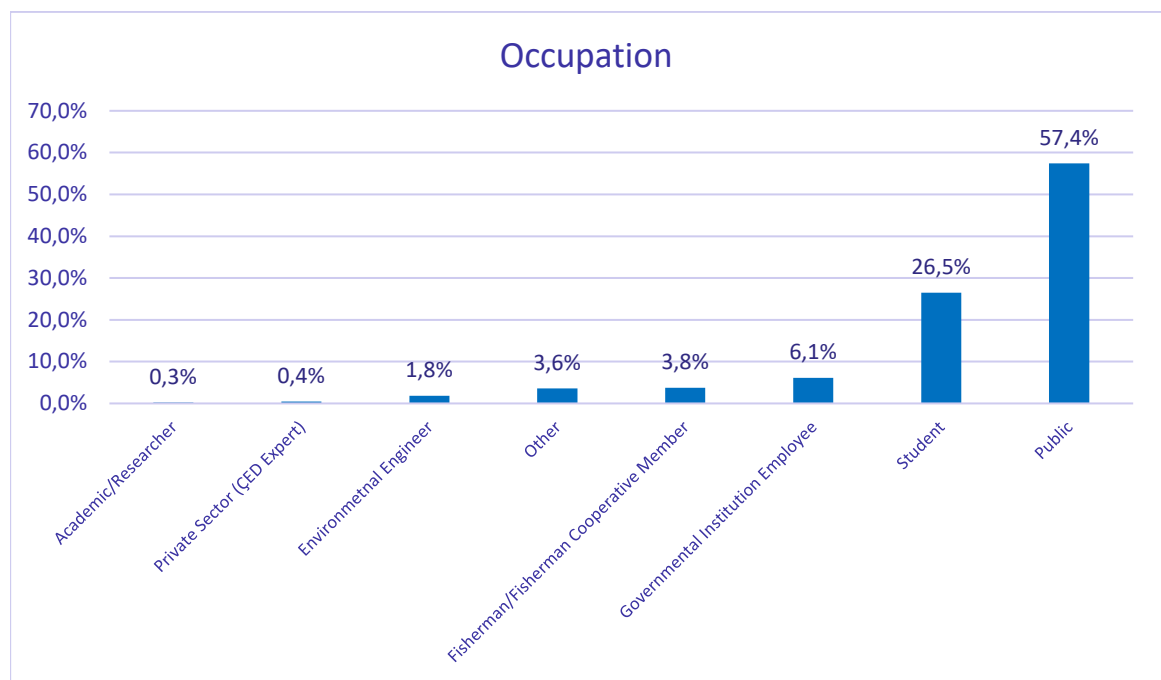
DEMOGRAPHICS



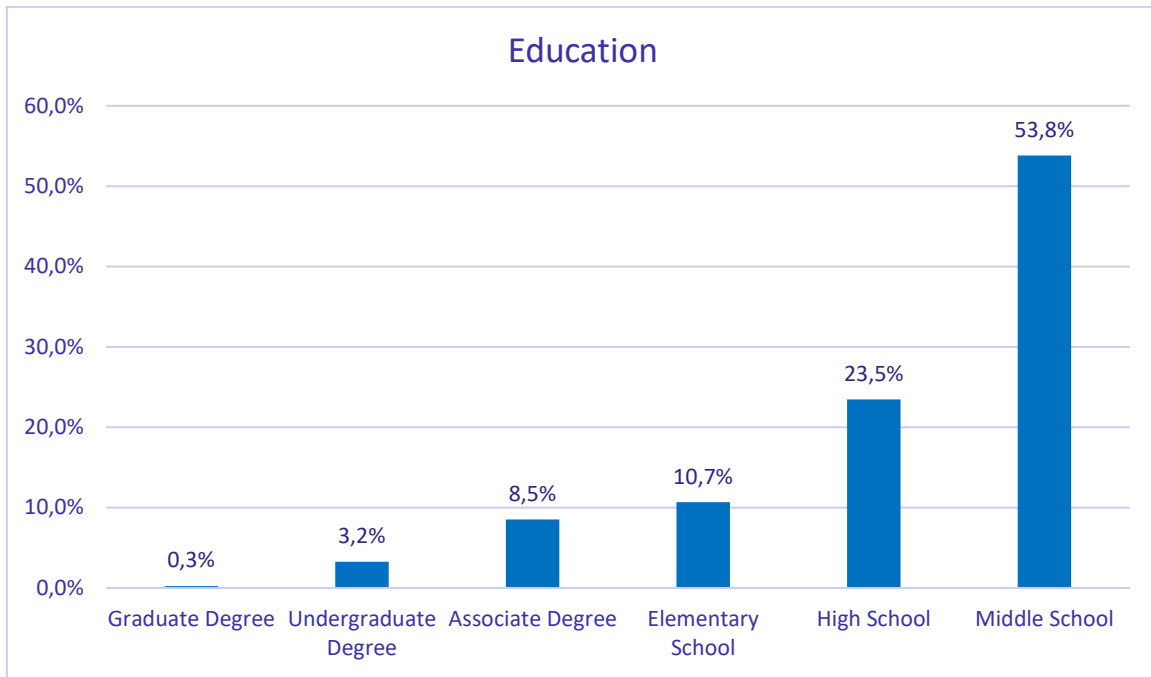
n =1572 Average Age: 31,95



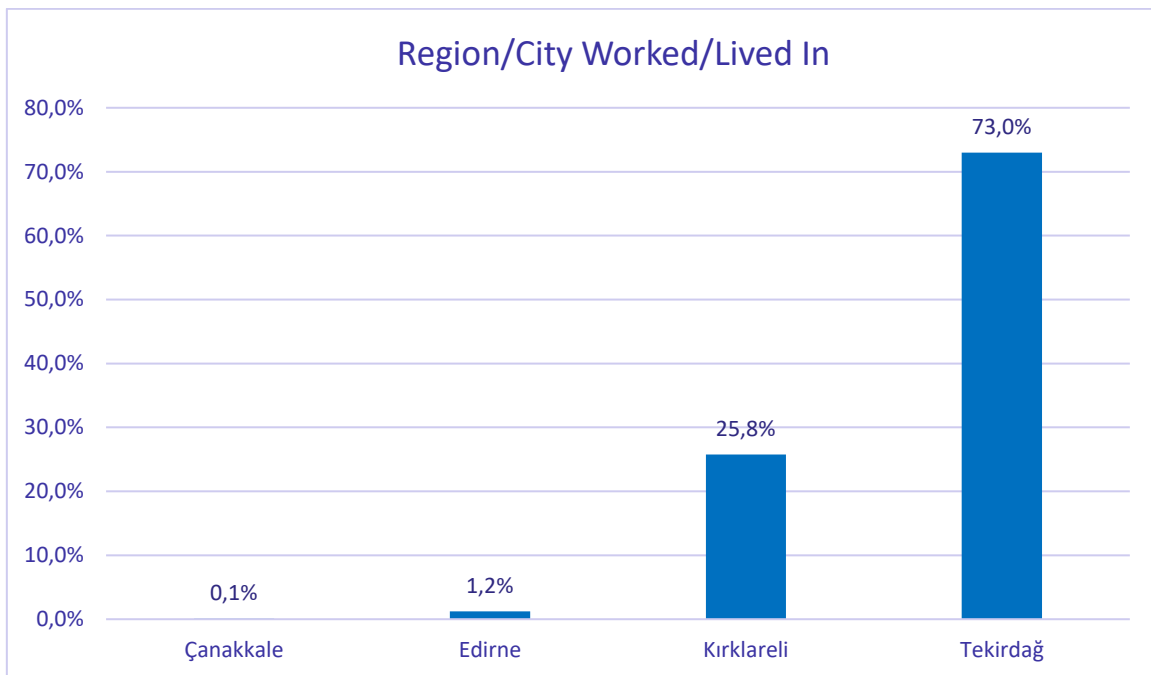
n =1572



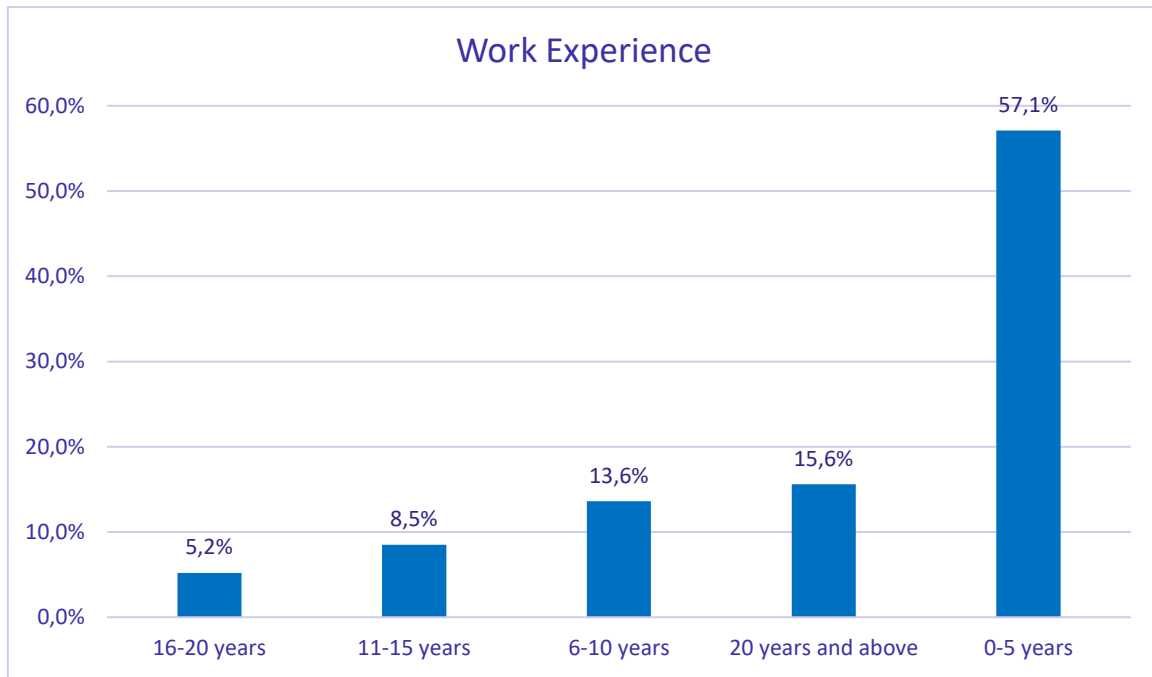
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n=1572

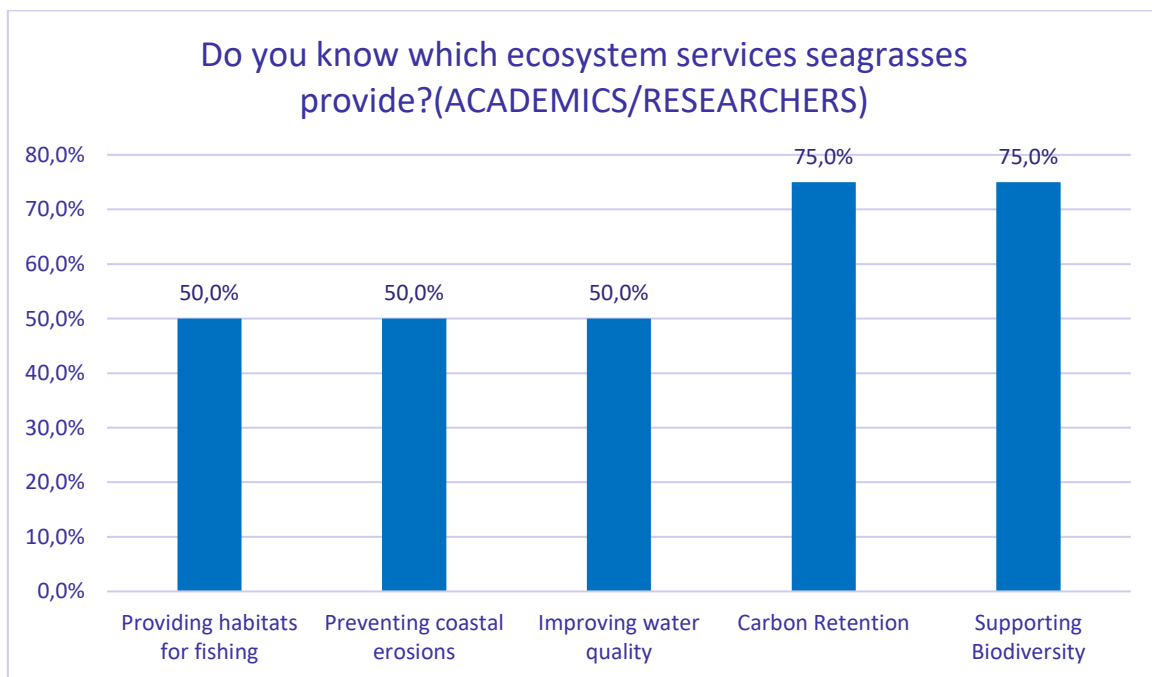


With n=1572 %73, participants from Tekirdağ have been surveyed the most.

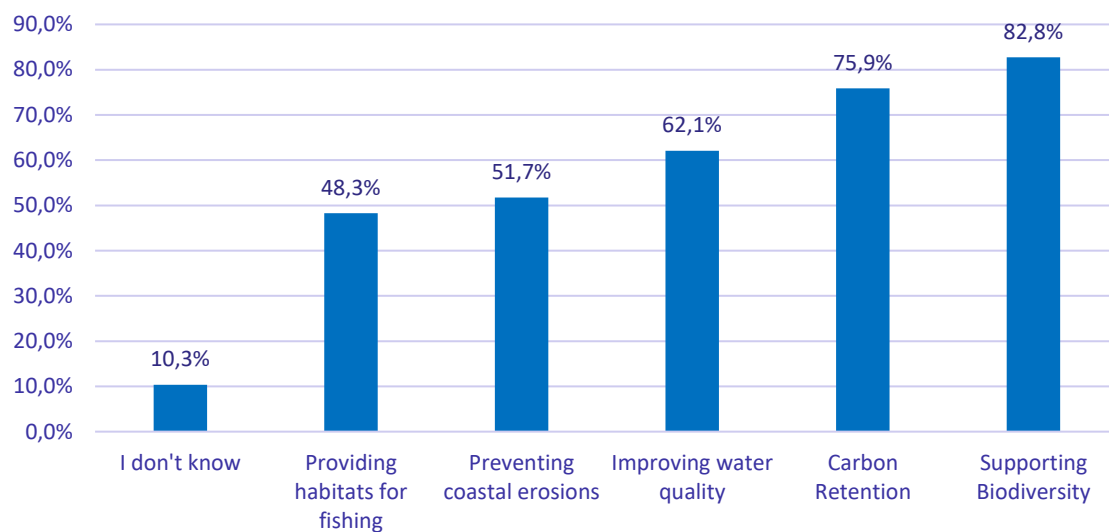


n=1572

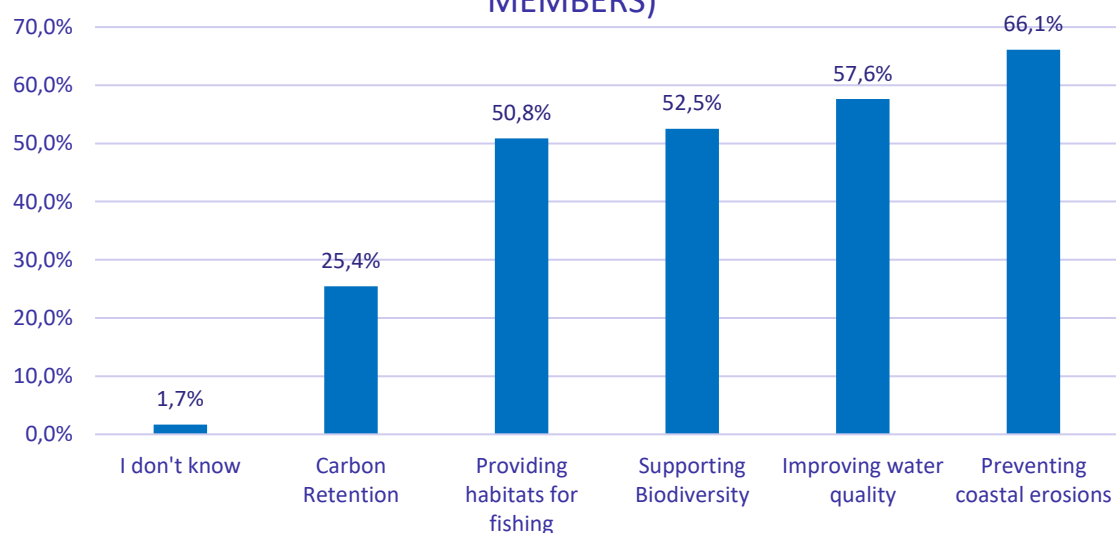
LEVEL OF KNOWLEDGE REGARDING SEAGRASSES



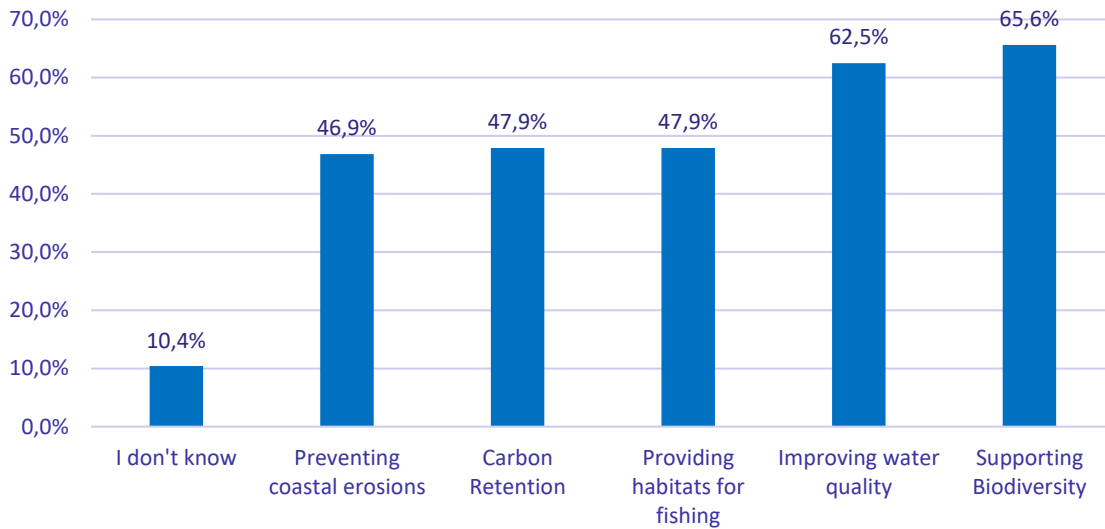
Do you know which ecosystem services seagrasses provide?(ENVIRONMENTAL ENGINEERS)



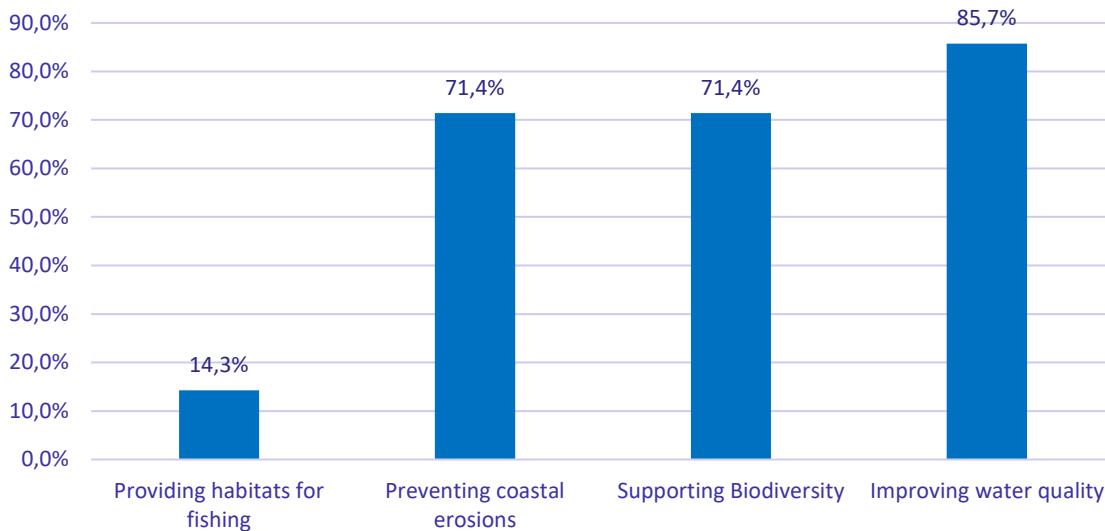
Do you know which ecosystem services seagrasses provide?(FISHERMAN/FISHERMAN COOPERATIVE MEMBERS)



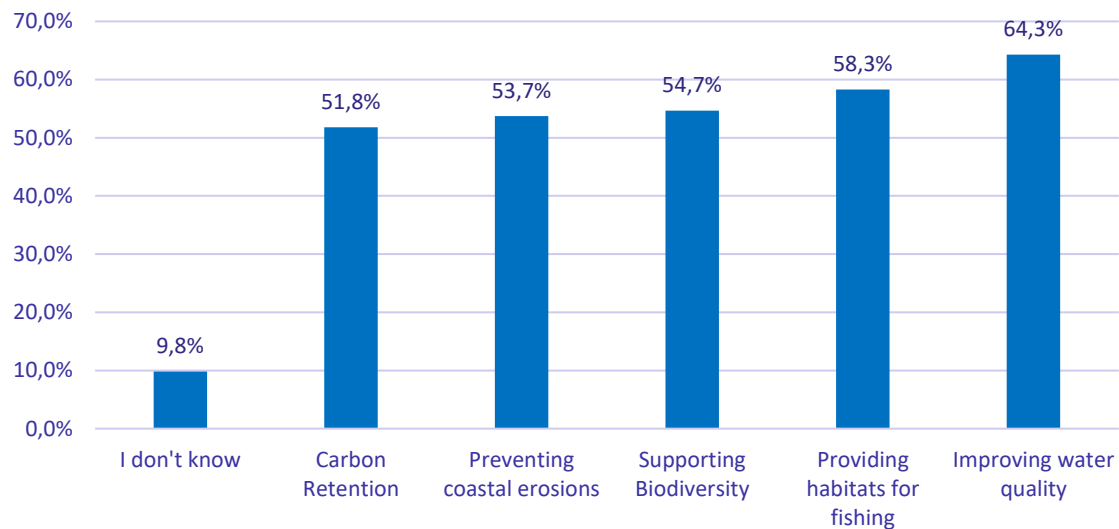
Do you know which ecosystem services seabeds provide? (GOVERNMENTAL INSTITUTION EMPLOYEES)



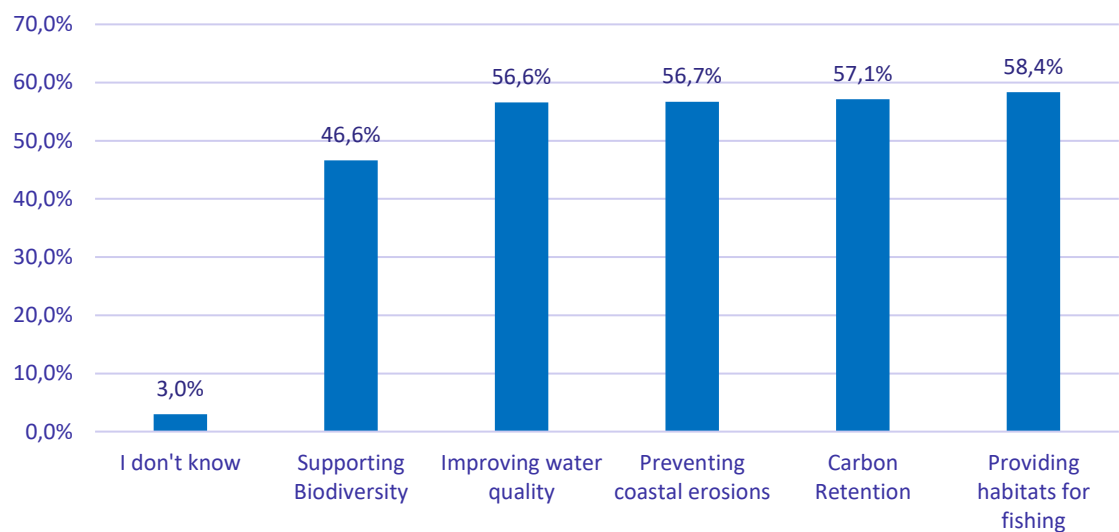
Do you know which ecosystem services seagrasses provide? (PRIVATE SECTOR(EIA EXPERT))

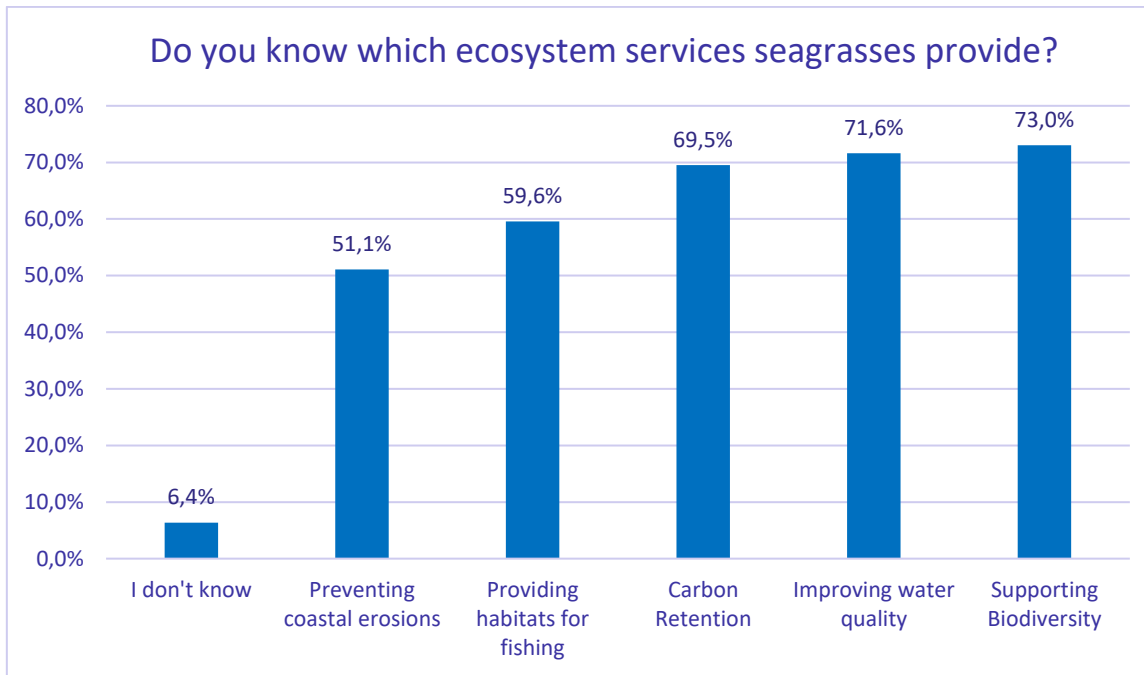


Do you know which ecosystem services seagrasses provide? (STUDENTS)

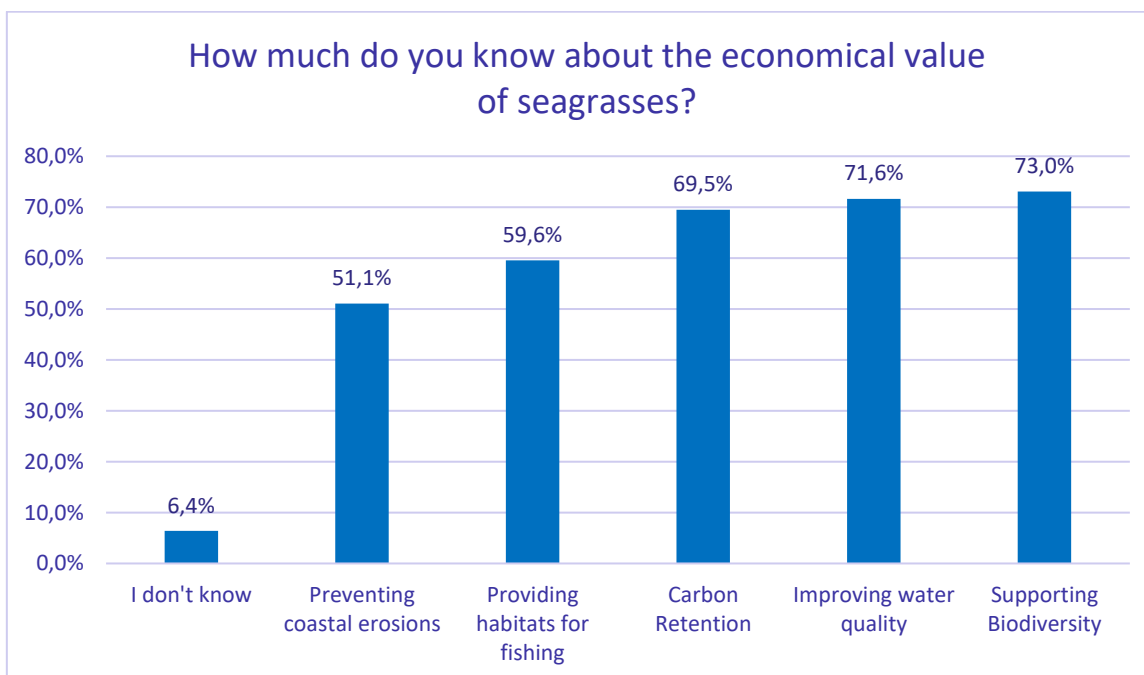


Do you know which ecosystem services seagrasses provide? (PUBLIC)

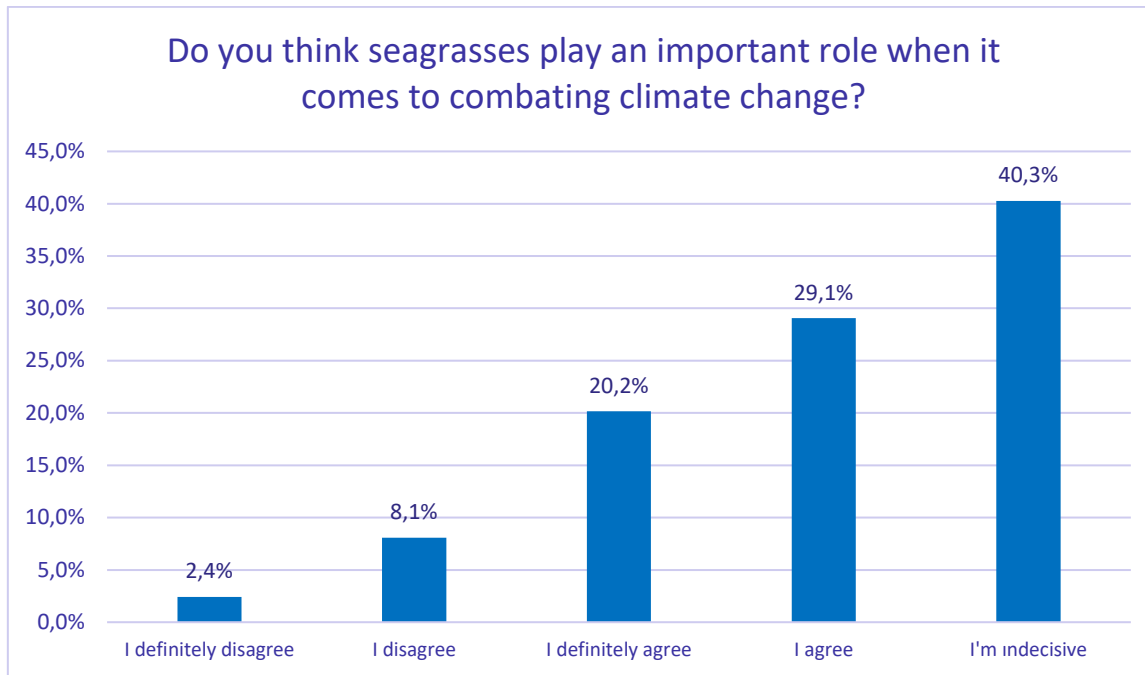




The ecosystem service seagrasses provide the most is supporting “biodiversity” (% 73).



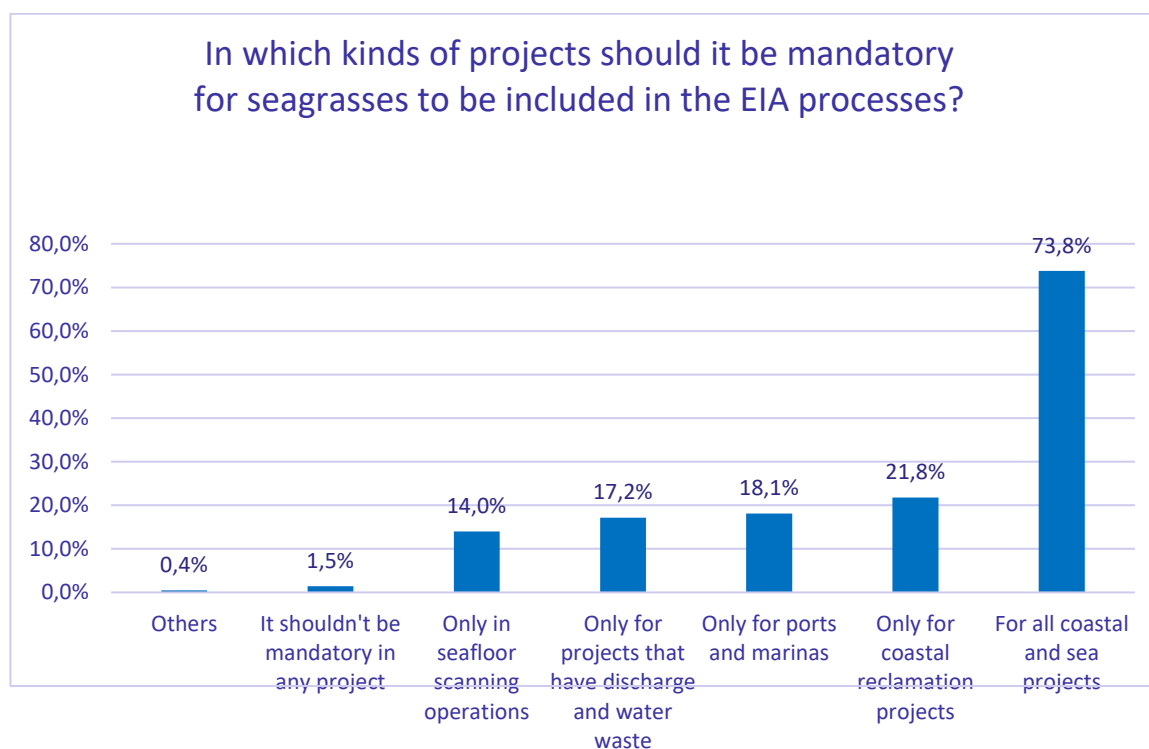
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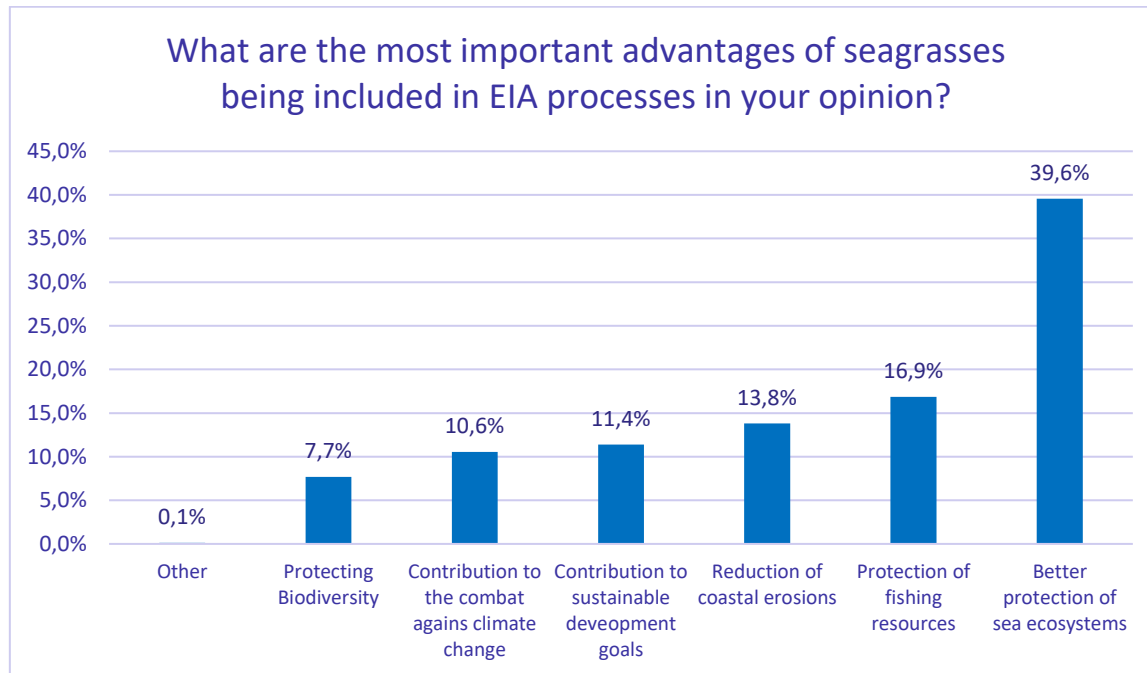
The percentage of those who "I agree" and "I definitely agree" that seagrasses have an important role on climate change is 50.1%. The percentage of those who answered "I am indecisive" is 40.3%.

T2B=49,2% B2B=10,5% Mean=2,10

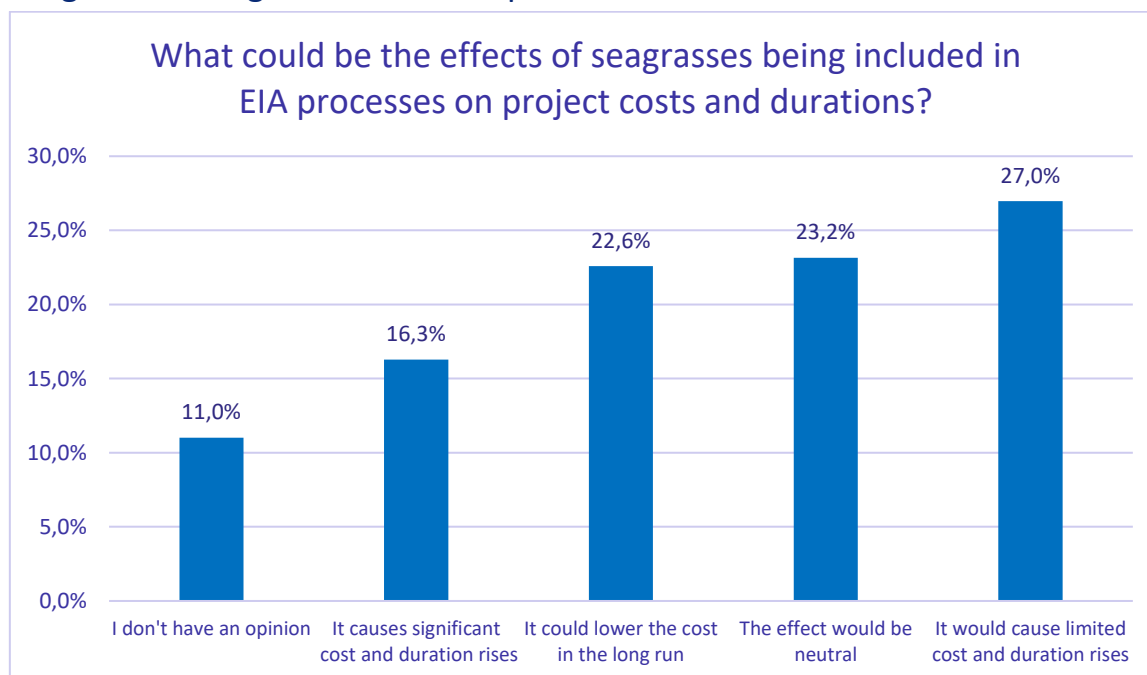
INTEREST AND AWARENESS RATES REGARDING SEAGRASSES



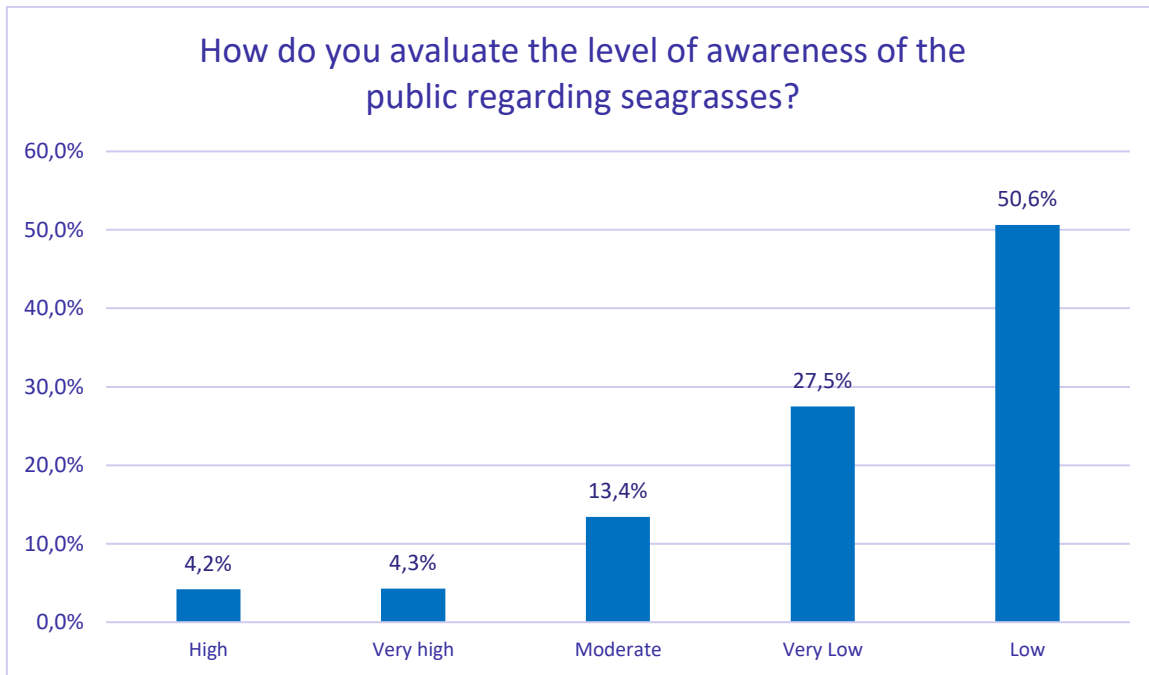
It was stated that seagrasses should be included in the EIA processes for “all coastal and sea projects”(73,8).



“Better protection of sea ecosystems” is the most important advantage of seagrasses being included in EIA processes.

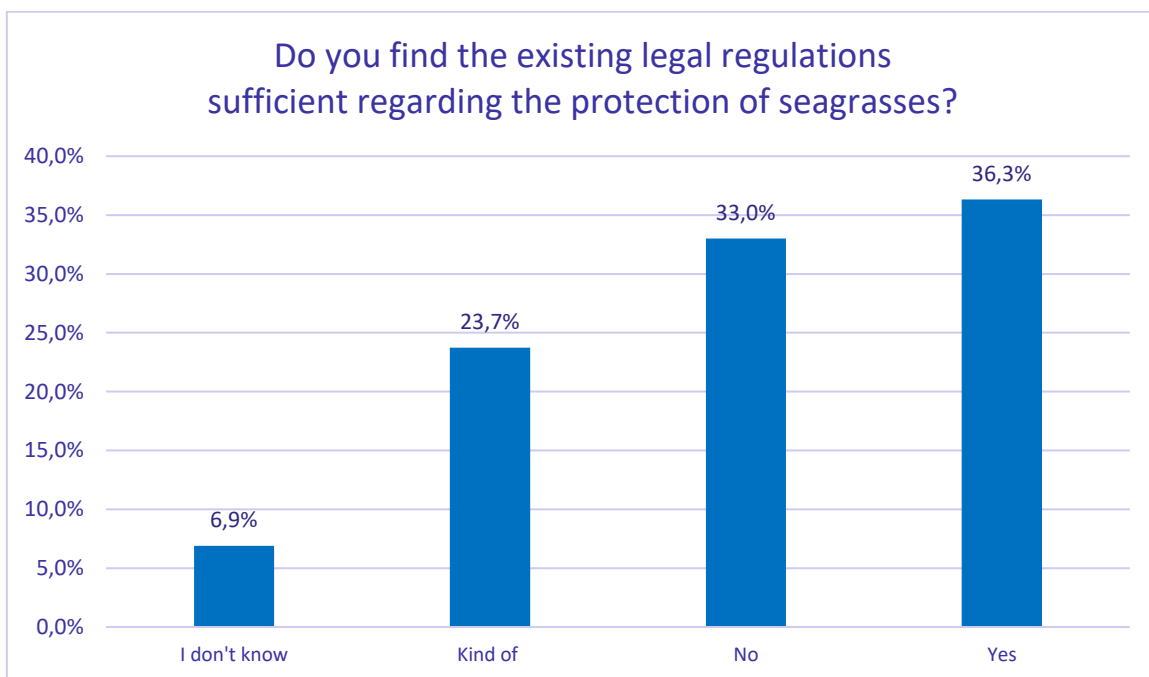


The impact of including seagrasses in the EIA processes on cost and duration is "It would cause limited cost and duration increase" (27%).

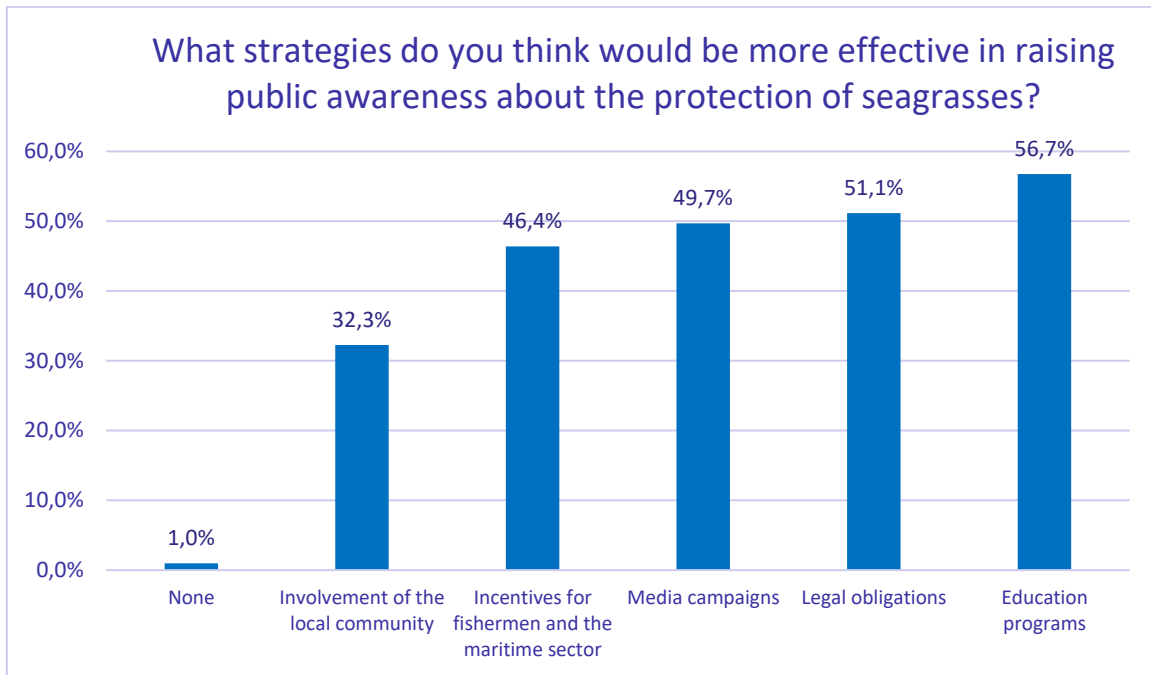


50.6% of participants believe that public awareness of seagrasses is "low".

T2B=8,5% B2B=78,1% Mean=2,02

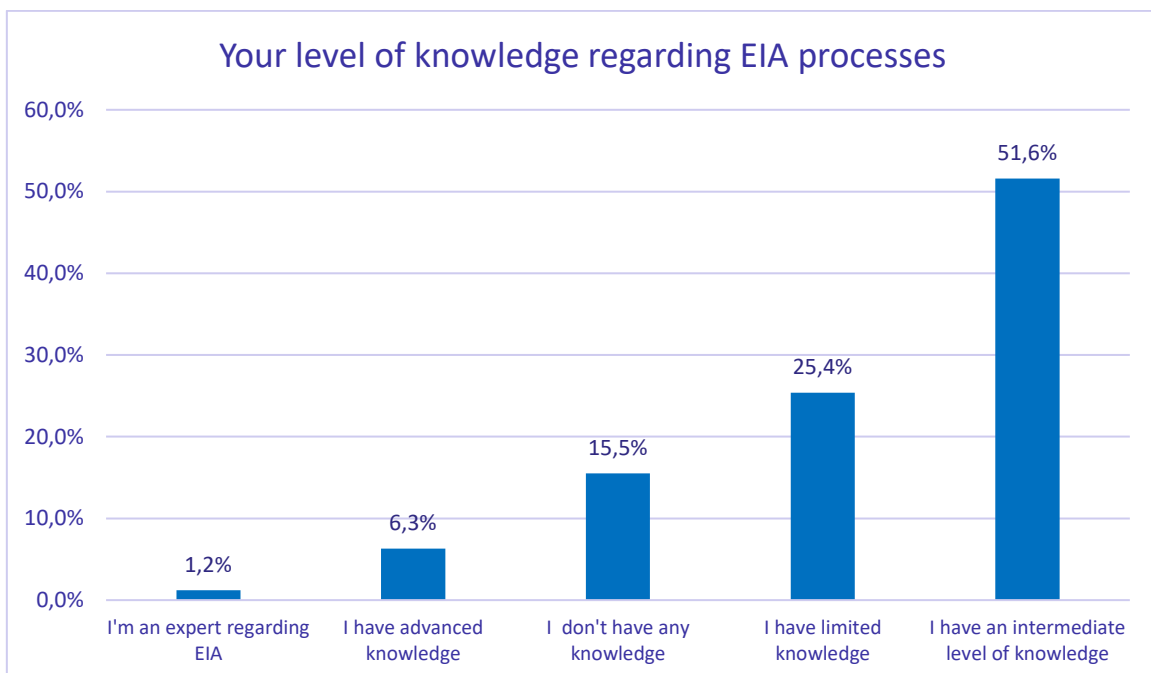


There are those who find the existing legal regulations for the protection of seagrasses 'Yes' (%36.3) sufficient.

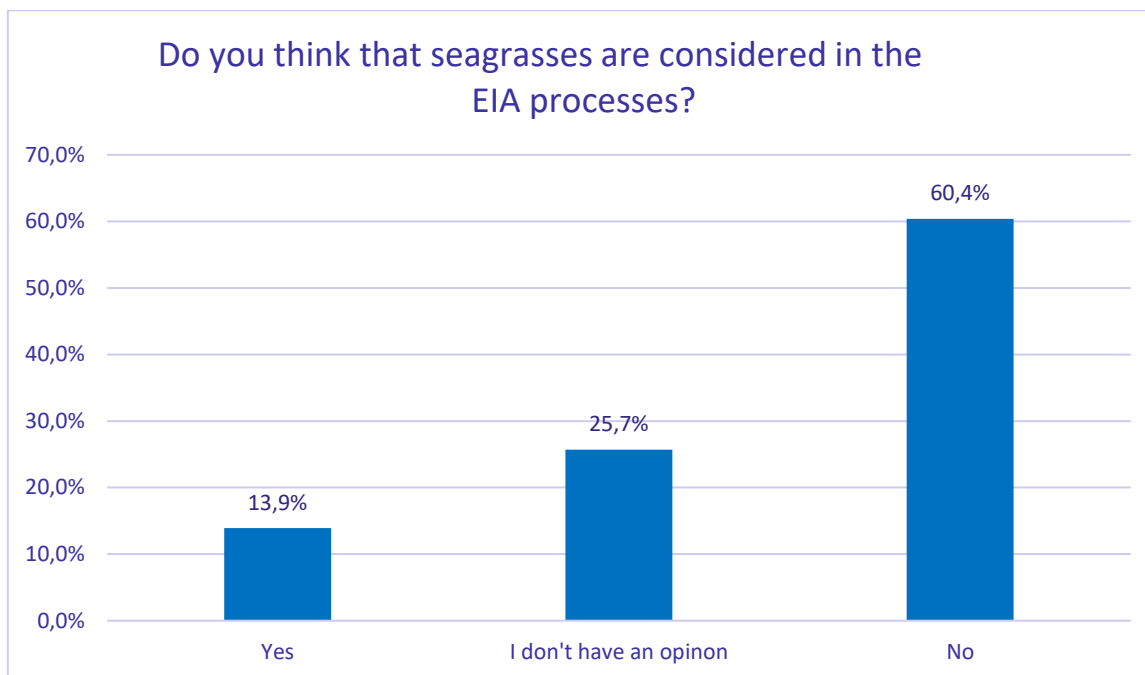


Public awareness through 'Education programs' (56.7%) have been highlighted regarding the protection of seagrasses.

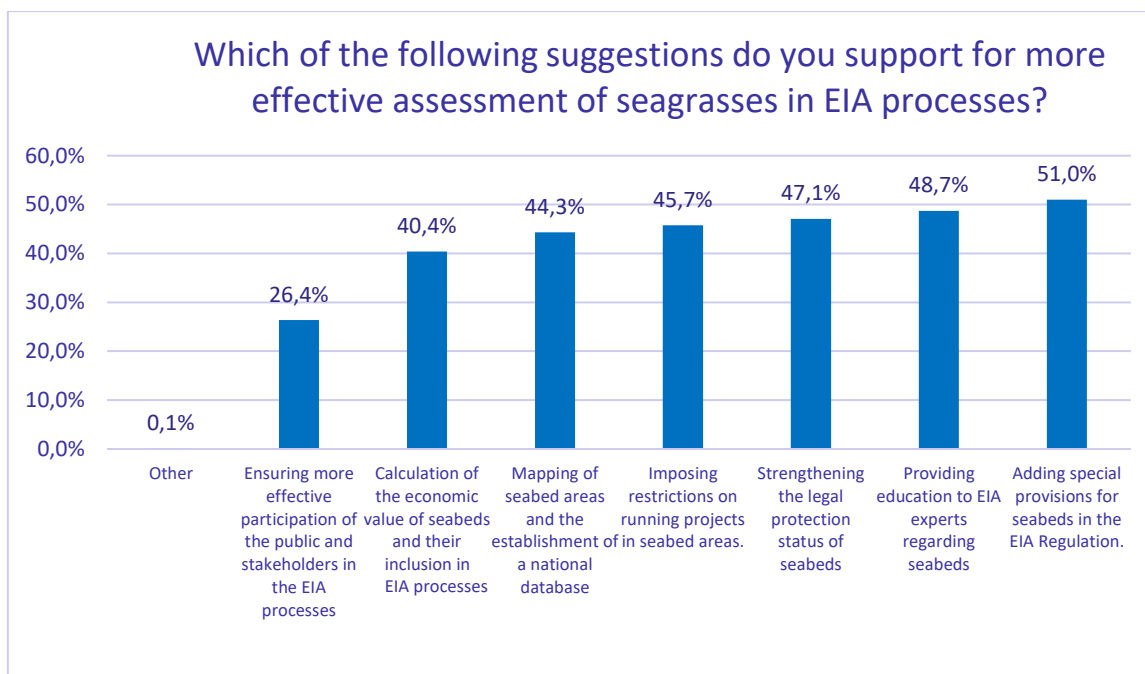
SEAGRASSES EIA AND LEGISLATION KNOWLEDGE LEVEL



While 84.5% of respondents had varying levels of knowledge about EIA processes, 15.5% said they had "no knowledge at all".

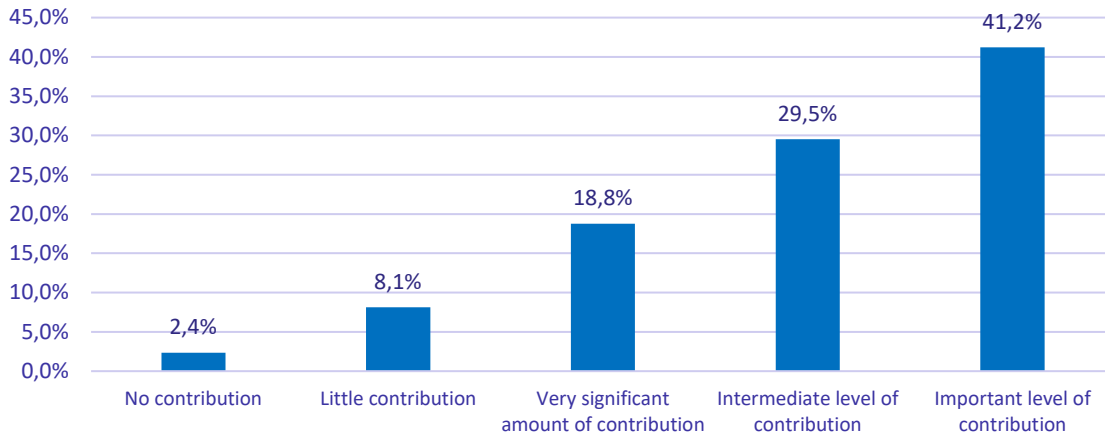


60.4% of those surveyed believe that seagrass are not considered EIA processes.



"Addition special provisions for seagrasses" (51%) have been highlighted regarding seagrasses being assessed more effectively in EIA processes.

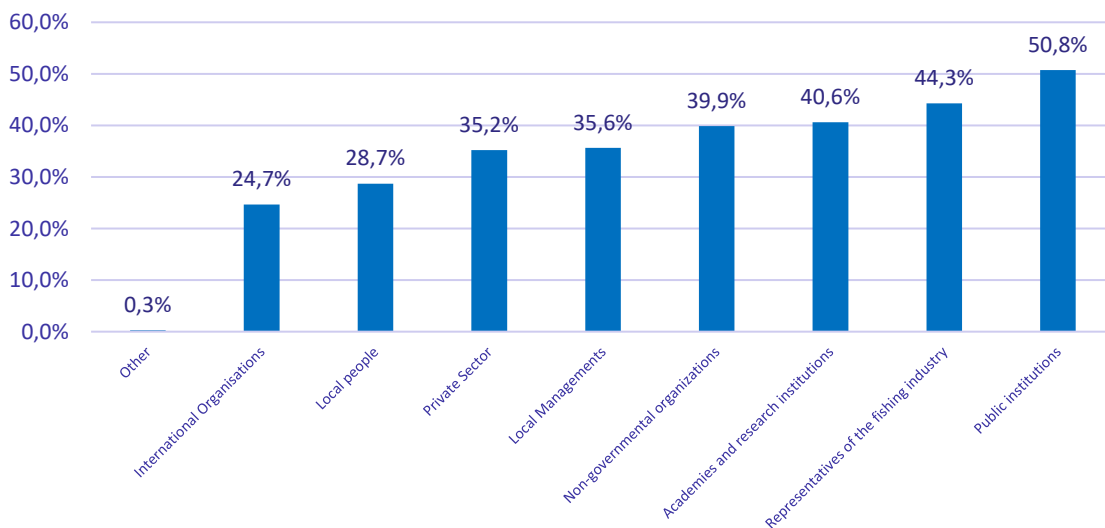
To what extent do you think including seagrass in EIA processes will contribute to the protection of coastal and marine ecosystems?



The inclusion of seagrasses in the EIA processes makes an "important level of contribution" (%41,2) to the protection of coastal and marine ecosystems.

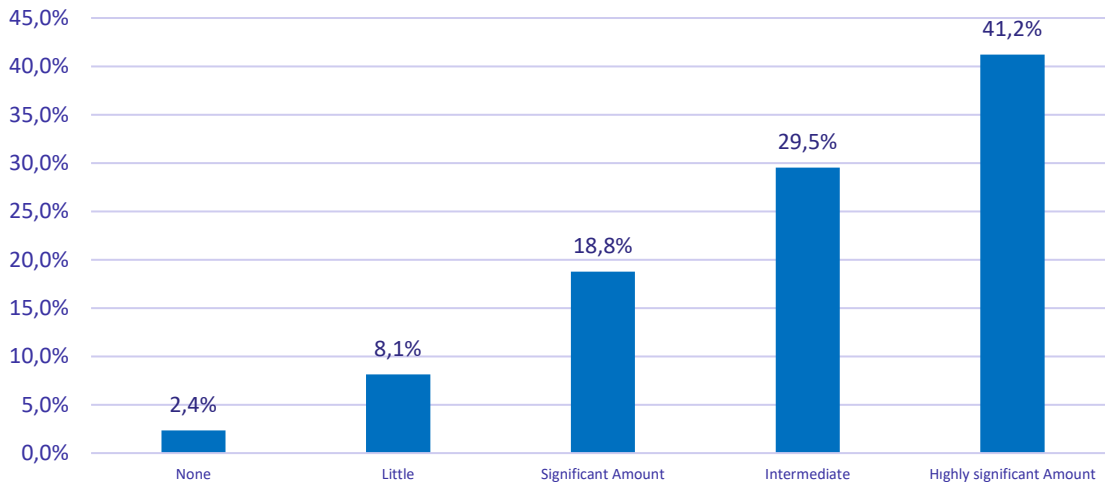
T2B=60% B2B=10,5% Mean=3,66

Who should be the most important stakeholders in the process of including seagrasses in the EIA processes?



In the inclusion of seagrass meadows in environmental impact assessment processes, the share of "public institutions" should be 50.8%. However, it was emphasized that the influence of other stakeholders is also important.

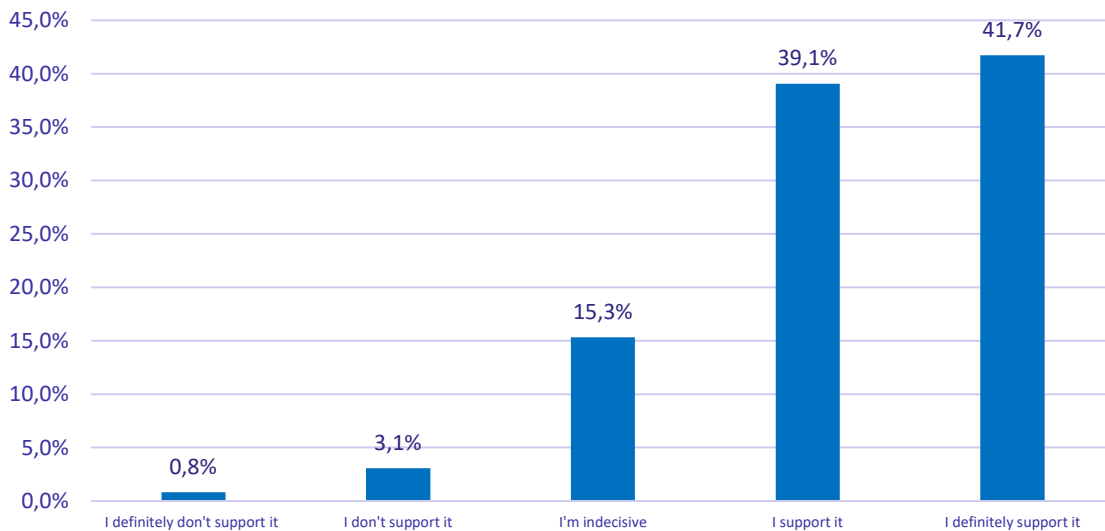
To what extent would the inclusion of seagrasses in the EIA processes contribute overall to environmental protection policies?



The inclusion of seagrasses in the EIA processes would have a "Highly significant amount" (41.2%) of contribution to environmental protection policies.

T2B=60% B2B=10,5% Mean=3,68

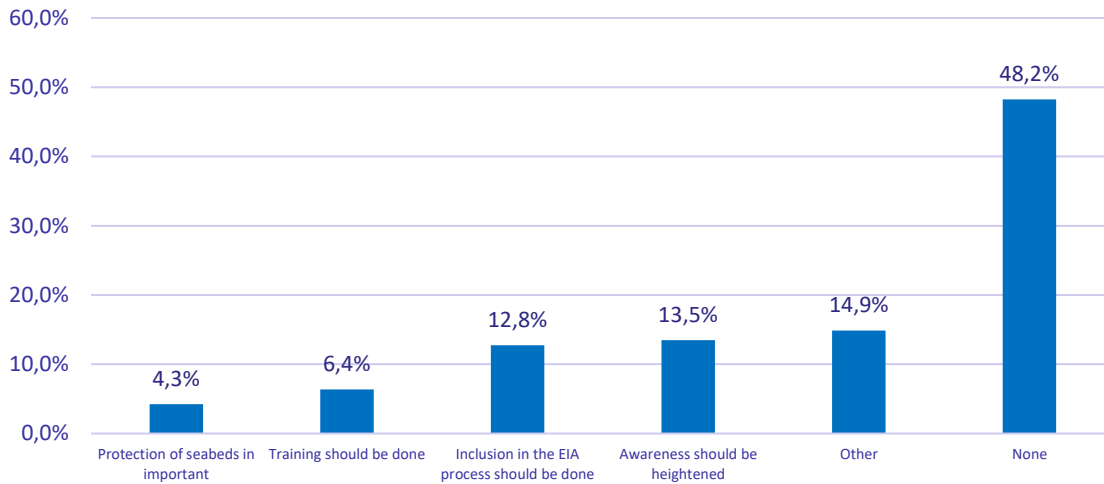
What is your general approach to the inclusion of seagrasses in EIA processes?



"I definitely support" (%41.7) and "I support it" (%39,1) the inclusion of seagrasses in the EIA processes.

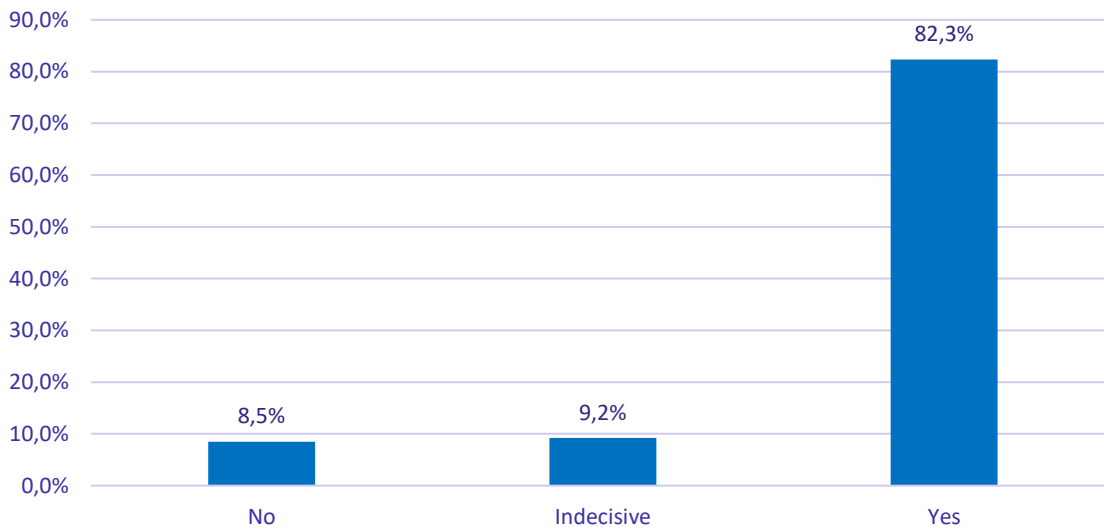
T2B=80,8% B2B=3,9% Mean=3,85

Please specify any other opinions and suggestions you would like to add regarding the inclusion of seagrasses in the EIA processes.



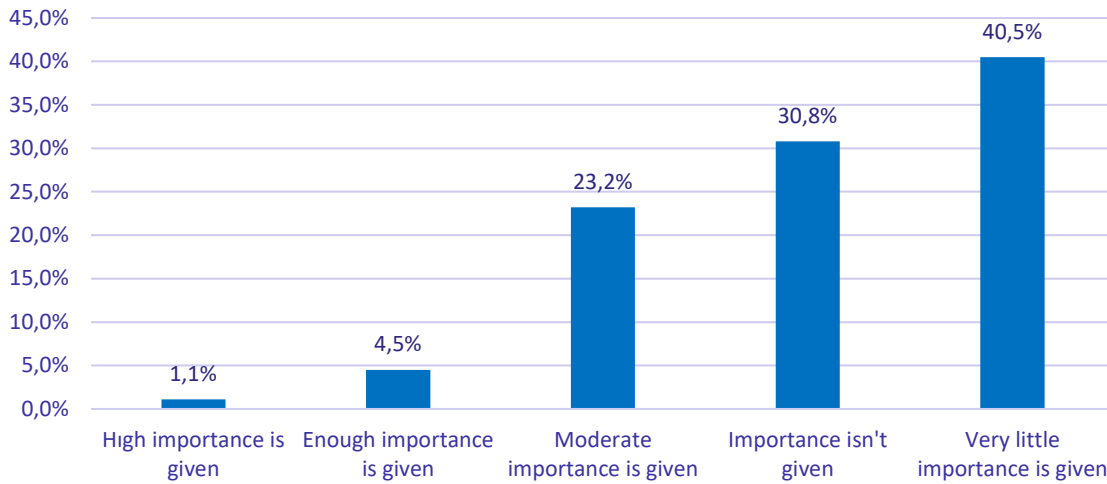
The inclusion of seagrasses in the EIA process would “Heighten the awareness” (%13,5).

Do you think there should be specific criteria for the protection of seagrasses in the EIA processes?



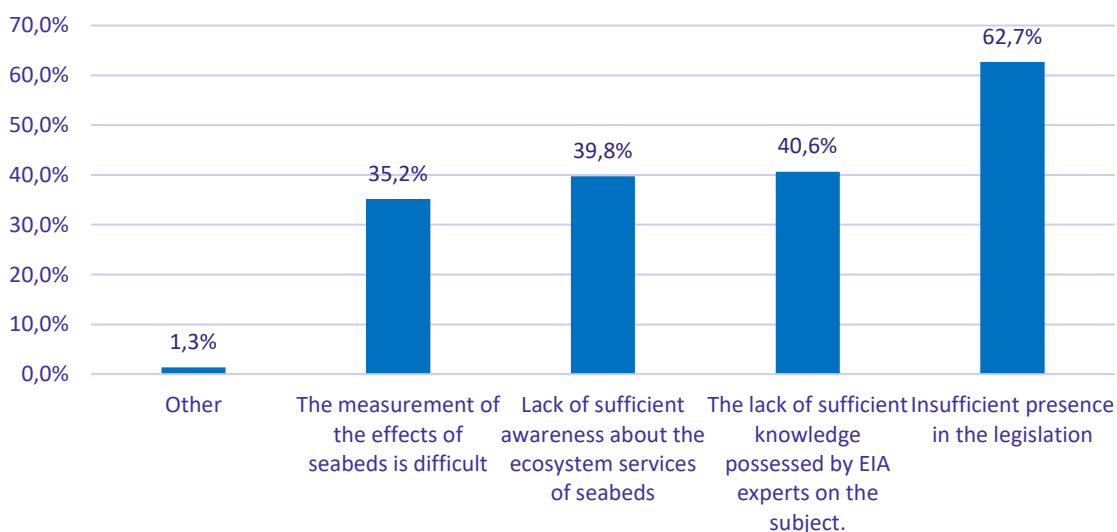
Those who wish for the existence of specific criteria for the protection of seagrasses in EIA processes constitute 82.3%.

Do you think that enough importance is given to seagrasses during the EIA processes for coastal projects (ports, marinas, coastal filling, etc.) in Turkey?



In the coastal projects in Turkey, it has been observed that seagrasses were regarded with very little importance at a rate of 40.5% in the EIA processes.

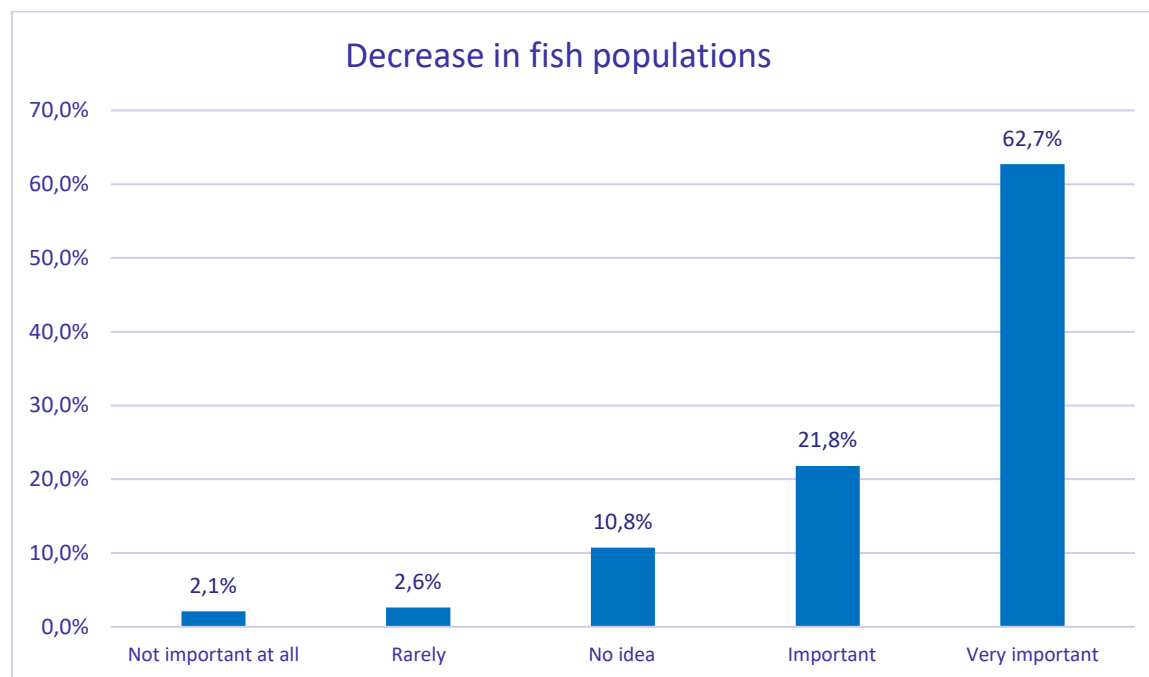
What do you think are the main reasons for the neglect of seagrasses in EIA processes?



The main reason for the lack of consideration of seagrasses in the EIA processes is their "insufficient presence in the legislation" (62.7%).

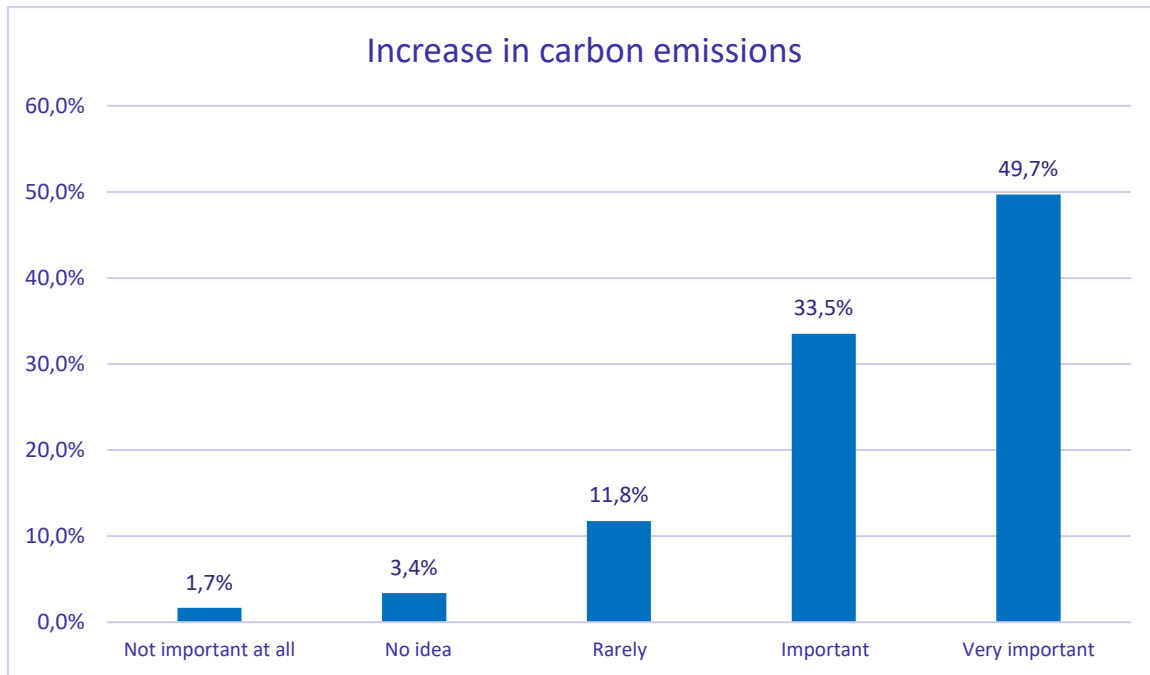
PRIORITY LEVEL REGARDING THE PROTECTION OF SEAGRASSES

How important do you find the following consequences of the disappearance of seagrass



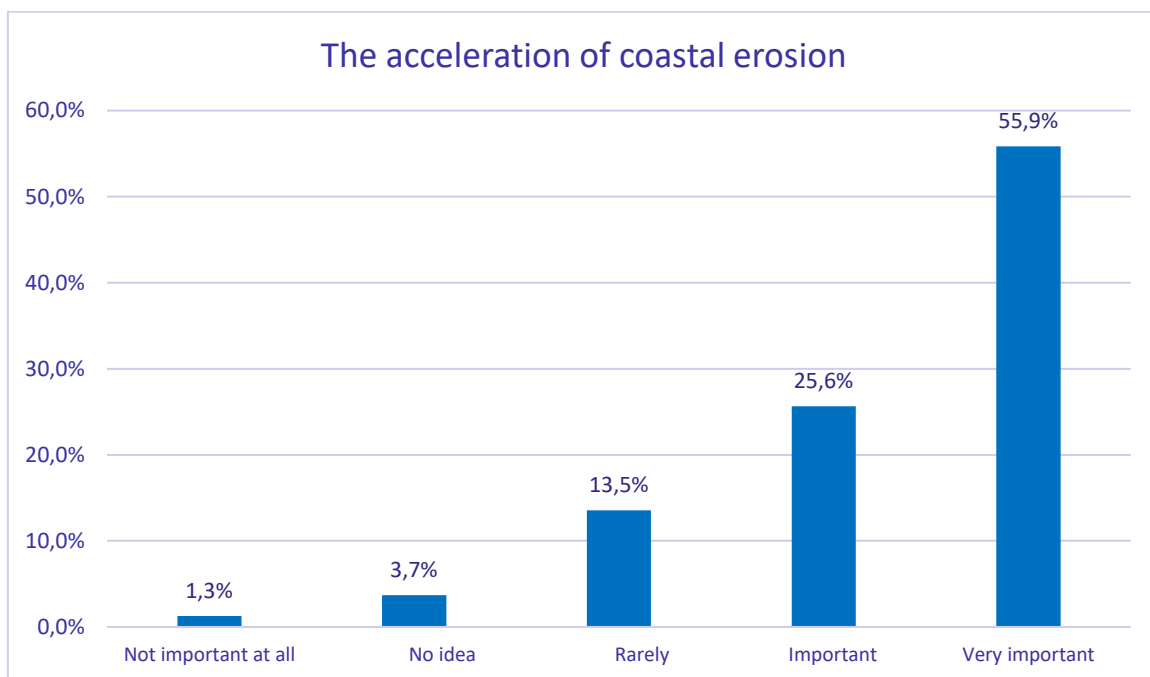
The disappearance of seagrass is 'Very important'(%62,7) in regards to 'Decrease in fish populations'.

T2B=84,5% B2B=4,7% Mean=4,40



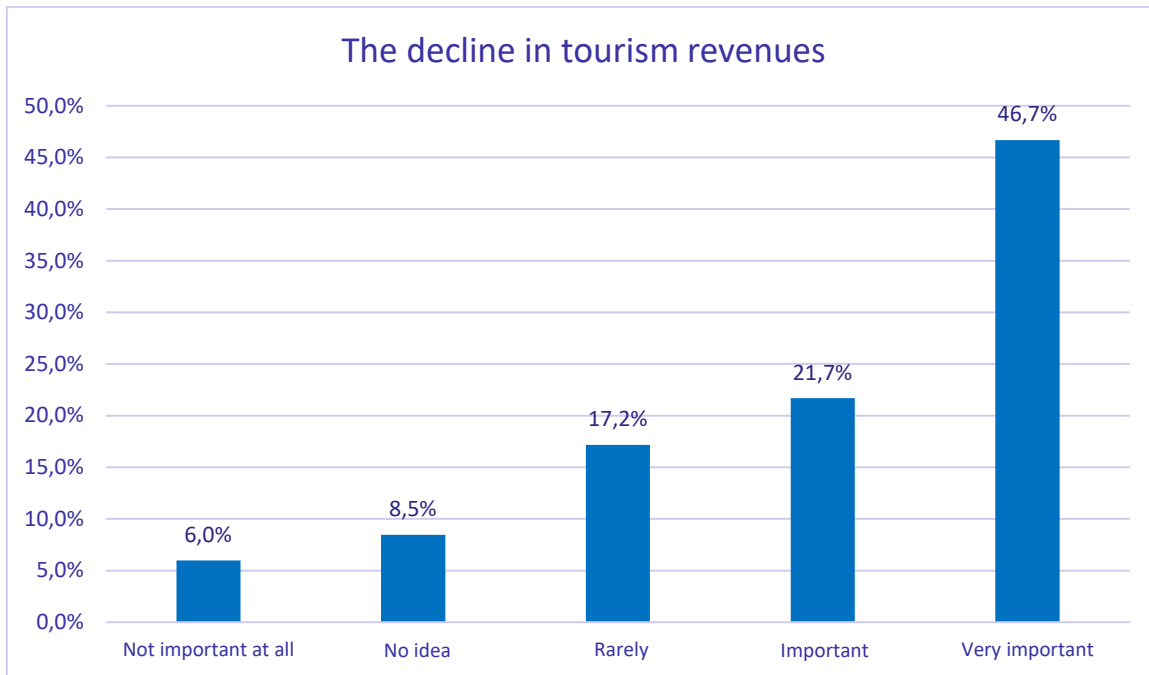
The disappearance of seagrasses is 'Very important'(49.7%) in terms of the 'Increase in carbon emissions'.

T2B=83,2% B2B=5% Mean=4,26



The disappearance of seagrasses is "very important"(%55.9) in the "acceleration of coastal erosion".

T2B=81,5% B2B=5% Mean=4,31

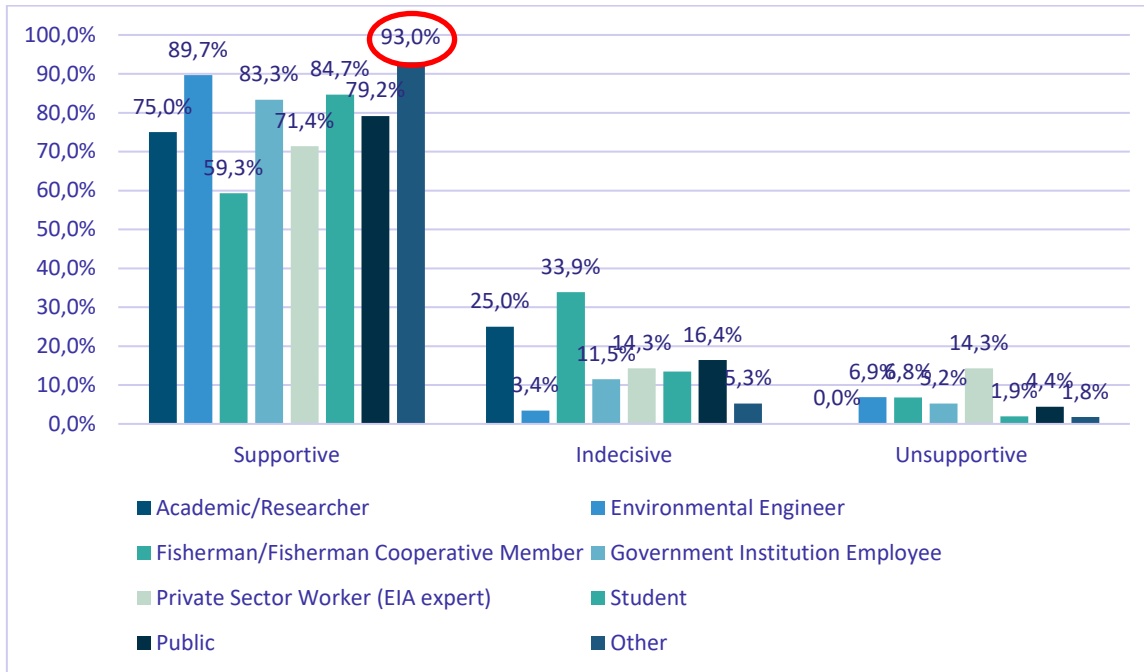


The decrease in tourism revenues is "very important" (%46.7) in the disappearance of seagrasses.

T2B=68,4% B2B=14,4% Mean=3,95

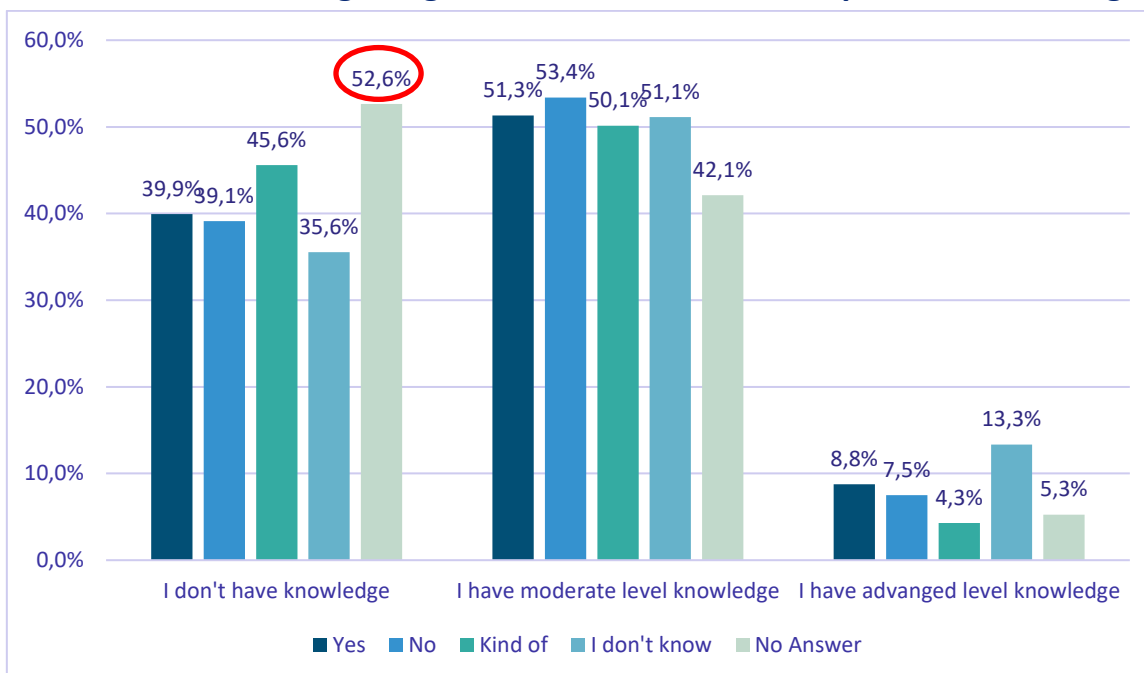
4. Further Analysis :

The relation between occupation and the inclusion of seagrasses in EIA processes



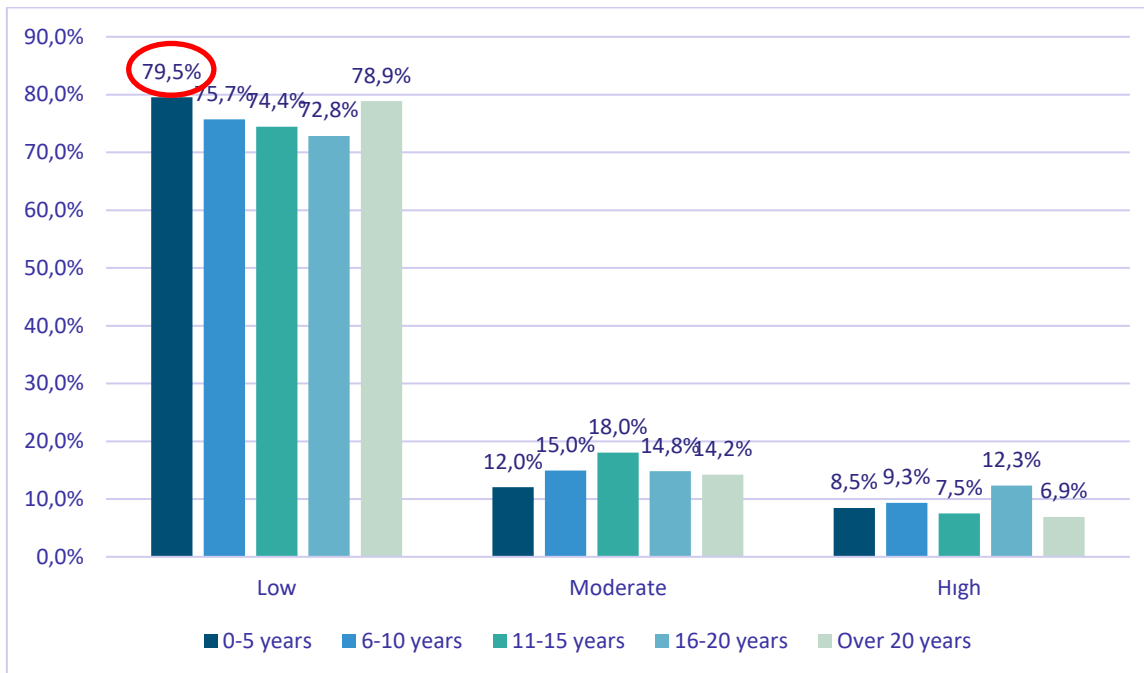
The group that supports the inclusion of seagrasses in the EIA processes the most is the 'Environmental Engineers' (93%).

The relationship between the level of information regarding the EIA processes and those who find the legal regulations sufficient for the protection of seagrasses.



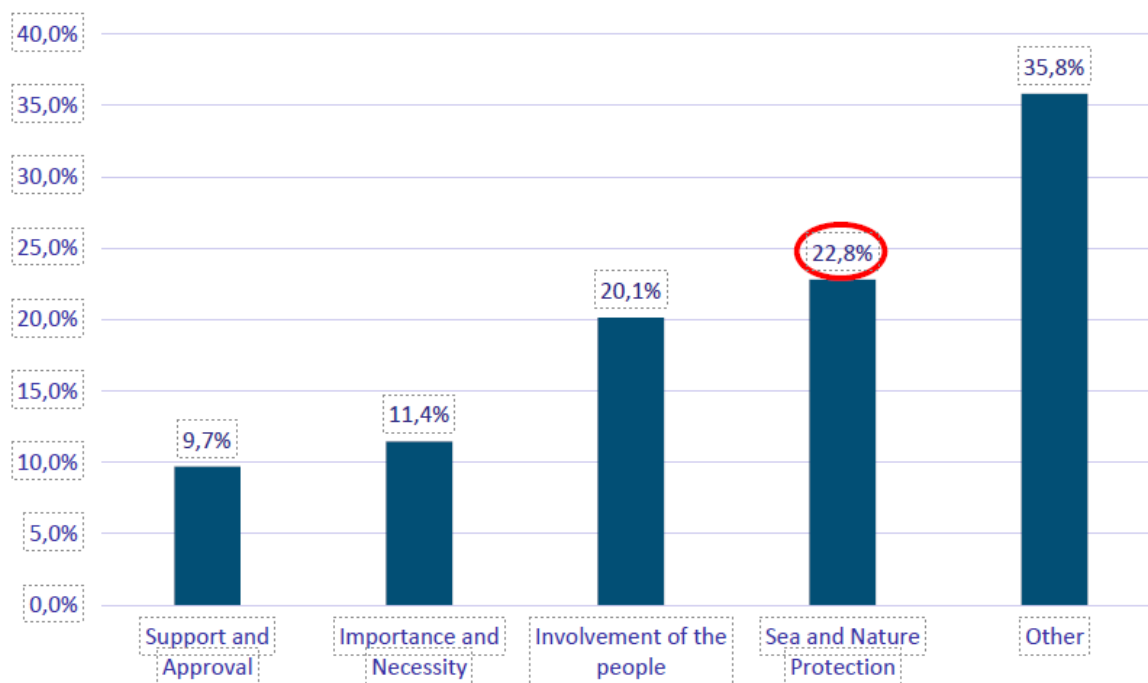
Among those who stated "I don't have knowledge" regarding the EIA processes, 52.6% found the legal regulations concerning seagrasses to be sufficient by answering "Yes."

The relationship between participants' opinions on public awareness level regarding seagrasses and their work experience.



79.5% of those with 0-5 years of experience, and approximately the same percentage of those with longer experience, stated that the public has a low level of awareness regarding seagrasses.

Percentage Distribution of Responses Supporting the Protection of Seagrasses



The percentage of those who support the protection of seagrass for the protection of the sea and nature is 22.8%. The need for public participation in seagrass conservation activities was also expressed with a similar participation rate.

5. RESULTS AND RECOMMENDATIONS

This survey, conducted to assess opinions on the inclusion of seagrass meadows in environmental impact assessment procedures under national legislation and to raise public awareness on the subject, selected expert public officials, students, private sector representatives active in environmental issues, and local community groups.

The "students" participating in the survey were selected from students studying environmental engineering, maritime studies, and fisheries at universities in the region. The "community" participants were selected from among the residents of the region. While this group were not fishermen or members of fishing cooperatives, some were members of fishing families and lived in these areas. They lived directly and indirectly in coastal and near-coastal settlements. The vast majority of survey participants had knowledge and opinions regarding the positive contributions of seagrass meadows to various ecosystems, primarily biodiversity, but also carbon reduction, improved water quality, improved fish habitats, and reduced coastal erosion.

5.1. Findings regarding participants' knowledge and awareness levels concerning seagrasses and EIA processes.

- The participants' knowledge level regarding which ecosystems seagrasses serve is quite sufficient. The vast majority of participants are aware that seagrasses are species that:

- Support biodiversity,
- Reduce carbon emissions,
- Improve water quality,
- Prevent coastal erosion,
- Protect fish habitats in marine ecosystems.

Looking at the occupational distribution of the participants, the percentage of those who know that seagrasses make a positive contribution to the marine ecosystem is given below:

- 100% of academics/researchers
- 89.7% of environmental engineers
- 98.3% of fishermen/members of fishing cooperatives
- 89.6% of public institution employees
- 85.7% of private sector employees
- 90.2% of students
- 97% of the public

- The vast majority of those surveyed (public employees, students, members of the public, fishermen/members of fishing cooperatives, etc.) stated that seagrasses make positive contributions to various ecosystems, primarily biodiversity, but also carbon reduction, improved water quality, enhanced fish habitats, and reduced coastal erosion.

- The vast majority of respondents (93.4%) stated that seagrasses have economic value due to their potential for protecting marine ecosystems, reducing coastal erosion, and lowering carbon emissions. In addition, the vast majority of participants stated that the disappearance of seagrass meadows could lead to:
 - A significant decrease in fish populations,
 - An increase in carbon emissions,
 - Accelerated coastal erosion,
 - A decrease in tourism revenue.
- The vast majority of participants (84.5%) stated that they had moderate (51.6%), limited (25.4%), advanced (62.3%), and expert (1.2%) knowledge about EIA processes. Only 15.5% of the participants stated that they had no knowledge about EIA processes.
- The vast majority of participants (91.5%) stated that public awareness of seagrasses is not at a sufficient level. The levels of public awareness regarding seagrasses are given below:
 - 27.5% of participants stated that awareness is "very low,"
 - 50.6% stated that awareness is "low,"
 - 13.4% stated that awareness is "medium."
 To increase public awareness of seagrasses, the following strategies were found to be effective:
 - Educational programs (56.7%),
 - Legal obligations (51.5%),
 - Media campaigns (49.7%),
 - Incentives for fishermen and the maritime sector (46.4%),
 - Ensuring local participation (32.3%).
- The vast majority of participants (98.5%) stated that the inclusion of seagrass meadows in the EIA processes should be mandatory for all marine and coastal projects, including coastal reclamation, marina and port projects, wastewater discharge projects, and seabed dredging projects.

- 89.5% of participants stated that including seagrasses in EIA processes would contribute to their protection. 41.2% of participants indicated this contribution would be "significant," 29.5% "moderate," and 18.8% "very significant."
- The view has emerged that including seagrass meadows in EIA processes will also contribute to "environmental protection policies." The vast majority of participants (97.6%) stated that this contribution would be at varying levels, as shown below:
 - 8.1% of participants stated a "small" contribution,
 - 29.5% of participants stated a "moderate" contribution,
 - 41.2% of participants stated a "moderate" contribution.
- According to 94.4% of participants, the importance of seagrass meadows is not sufficiently considered in the Environmental Impact Assessment (EIA) processes of projects such as ports, marinas, and coastal rehabilitation in Turkey. The most important reasons for neglecting seagrass meadows in EIA processes include:
 - Insufficient legal regulations (62.7%),
 - Insufficient knowledge level of EIA experts (62.7%),
 - Insufficient awareness of the contribution of seagrass meadows to the ecosystem (62.7%),
 - Difficulties in measuring the impacts of seagrass meadows.
- Regarding the impact of including seagrass meadows in EIA processes on project costs and completion times, the following opinions emerged:
 - Limited costs and extended project durations (27%),
 - Reduced costs in the long term (22.6%),
 - Significantly increased project costs and durations (16.3%),
 - Neutral impact on project costs and durations (22.6%).
- However, despite all this, it was stated that including seagrass meadows in EIA processes would lead to:
 - Better protection of marine ecosystems (39.6%),
 - Protection of fish resources (19.6%),
 - Reduction of coastal erosion (13.8%),
 - Contribution to sustainable development goals (11.4%),
 - Contribution to the fight against climate change (10.6%),
 - Protection of biodiversity (7.7%).

5.2. Findings regarding participants' opinions on the inclusion of seagrasses in EIA processes.

- Only 36.6% of participants believe that current laws are sufficient for the protection of seagrass meadows. However, the majority of participants (98.5%) stated that seagrass meadows should be included in EIA processes; that they should be included in EIA reports prepared for marine, coastal reclamation, marina and port, dredging and wastewater projects.
- The survey results indicate that "adding special provisions for seagrasses" is a key suggestion for more effective evaluation of seagrasses in Environmental Impact Assessment (EIA) processes.
- In the processes of including seagrass meadows in Environmental Impact Assessment (EIA) procedures, the view that the following should contribute together has emerged:
 - public institutions,
 - the fishing industry,
 - academia and researchers,
 - non-governmental organizations,
 - local administrators,
 - the private sector,
 - local people, and
 - international organizations.

Among these institutions, public institutions, academia and researchers, and the fishing industry are expected to contribute more. Participants supported the contributions of these stakeholders to varying degrees.

5. CONCLUSION and RECOMMENDATIONS

- **Public awareness of seagrasses:** The vast majority of participants (91.5%) stated that public awareness of seagrasses is not at a sufficient level. To increase public awareness about seagrass meadows, it is suggested that the following strategies would be effective:
 - Educational programs,
 - Legal obligations,
 - Media campaigns,
 - Incentives for fishermen and the maritime sector,
 - Strategies to ensure the participation of local people.
- **Legislative Clarity:** Seagrasses must be **explicitly defined** in the EIA Regulation, and concrete assessment criteria must be established. The survey conducted has revealed that the inclusion of seagrass meadows in the Environmental Impact Assessment (EIA) processes should be mandatory for all marine and coastal projects, including coastal reclamation, marina and port projects, wastewater discharge projects, and seabed dredging projects. It is recommended that any changes to the EIA legislation should include the inclusion of all these projects in the EIA processes.
- **Effective Strategies:** It is suggested that the following strategies will be more effective in evaluating seagrass meadows more effectively in EIA processes:
 - Adding special provisions for seagrasses in the EIA Regulation
 - Providing education to EIA experts regarding seabeds
 - Strengthening the legal protection status of seabeds
 - Imposing restrictions on running projects in seabed areas
 - Mapping of seabed areas and the establishment of a national database
 - Calculation of the economic value of seabeds and their inclusion in environmental impact assessment processes
 - Ensuring more effective participation of the public and stakeholders in the EIA processes
- The biological monitoring criteria within the Environmental Impact Assessment (EIA) process need to be revised to explicitly include seagrasses.

Photos from the Survey









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