Individual entrepreneur
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ANALYTICAL REPORT

based on the results of a study on the prospects for integrating the issue of seagrass protection into Ukraine's national environmental impact assessment (EIA) legislation and raising public awareness

November – December 2025

PLAN

RESEARCH PROGRAMME (METHODOLOGY)

From 21 November to 15 December 2025, a quantitative study was conducted to assess the views of the public and stakeholders regarding the inclusion of seagrass conservation issues in EIA procedures under national legislation and to raise public awareness of this issue, for which the relevant Agreement No. 47x-25 of 21 November 2025 was concluded between the State Institution 'Institute of Marine Biology of the National Academy of Sciences of Ukraine' (Client) and Individual Entrepreneur Denys Mykolaiovych Podiachev (Contractor) [1] .

The main objectives of the study were to:

1) assess public awareness of the role of seagrasses in combating climate change;
2) to investigate public awareness of the protection of seagrass beds, which are threatened with extinction due to the development of coastal infrastructure, fishing and human activities;
3) ascertain public perceptions of government initiatives and decisions regarding environmental impact assessment *(hereinafter referred to as EIA)*;
4) to identify public expectations regarding the activities of public authorities in the field of EIA procedures;
5) to investigate the need to incorporate seagrass conservation into EIA procedures under national legislation and to raise public awareness of this issue.

Data collection method:

- face-to-face interviews with residents of Odesa and/or other settlements adjacent to the Black Sea coast aged 15 and over (city dwellers) – up to 1,200 respondents in total.
- A combined survey (in person or by telephone) of representatives of stakeholders (expert groups) – a total of up to 300 respondents.

For the selection of participants in the expert groups, the survey employed a comprehensive coverage method (based on place of work or study). To select respondents in the 'city dwellers' category, the method of complete coverage was applied using survey control points.[2] Street locations with high foot traffic were selected as control points, distributed evenly across the map of Odesa (excluding the city centre).

Structure of the expert group sample *(clarification of the respondent selection method)*:

- ➢ lecturers and students of Odesa I. I. Mechnikov National University, the Ministry of Education and Science of Ukraine, and Odesa State Agrarian University *(complete coverage of students and lecturers from relevant faculties).*
- ➢ staff of the Ukrainian Scientific Centre for Marine Ecology and the Institute of Market and Economic-Ecological Research of the National Academy of Sciences of Ukraine *(full coverage).*
- ➢ staff of the Department of Ecology and Natural Resources of the Odesa Regional Administration
  (using a comprehensive coverage method).

[1] Denys Mykolaiovych Podiachev, an individual entrepreneur, is the owner of the trademark 'UkrSocStandart marketing agency', on behalf of which he provides market research and public opinion polling services.

[2] To refer to permanent residents of a particular locality, settlement, etc., the concept of 'residents' was applied, which is atypical in sociological research practice.

- upper-secondary school pupils (*in the first stage, a random computerised selection of schools; in the second stage, a comprehensive survey).*

A total of 1,502 people were surveyed, of whom 1,171 were residents of the city of Odesa or other settlements adjacent to the Black Sea coast, and 331 were students and teachers, secondary school pupils, as well as academics and civil servants.

Categories	**Number**	
City residents	1,171	• residents of Odesa – 1,160 people • residents of Mykolaiv – 11 people
students, lecturers	123	• Odesa I. I. Mechnikov National University – 48 people • Odesa State Agrarian University (OSAU) – 34 people (students) • Odesa Polytechnic National University – 12 people • Odesa National University of Economics – 2 people
pupils from secondary schools	119	• Secondary School No. 36 • Secondary School No. 69
academics, relevant civil servants	89	• Odesa Regional State Administration – 28 people • Odesa State Agrarian University (OSAU) – 27 people (scientists) • Institute for Market and Economic-Ecological Research of the National Academy of Sciences of Ukraine (IMER NASU) – 21 people • Ukrainian Scientific Centre for Marine Ecology (USCME) – 21 people • National Natural Park "Beloberezhya Sviatoslava"– 11 people • Kuialnytskyi National Nature Park – 2 people
Total	1,502	

Main research hypotheses:

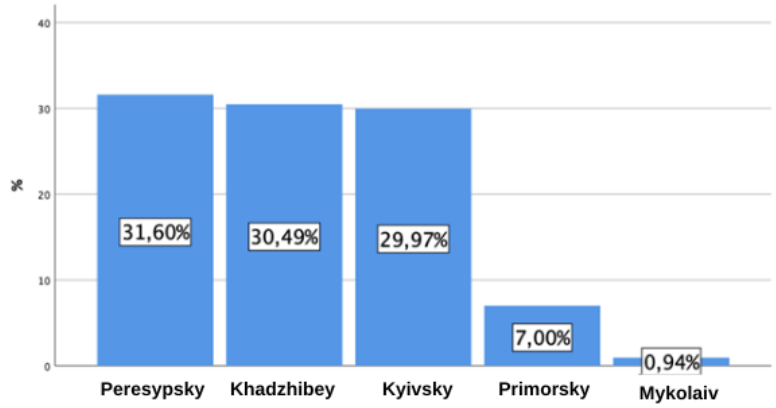
- membership of expert groups is the most influential factor in assessing public awareness of seagrass conservation and EIA processes;
- expert groups as a whole will demonstrate a higher level of awareness of seagrass conservation issues compared to city dwellers (the general public),
- among expert groups, scientists and relevant civil servants will demonstrate a higher level of awareness of seagrass conservation issues.

MAIN SECTION (RESULTS)

I. SOCIO-DEMOGRAPHIC PROFILE OF THE 'POPULATION' CATEGORY

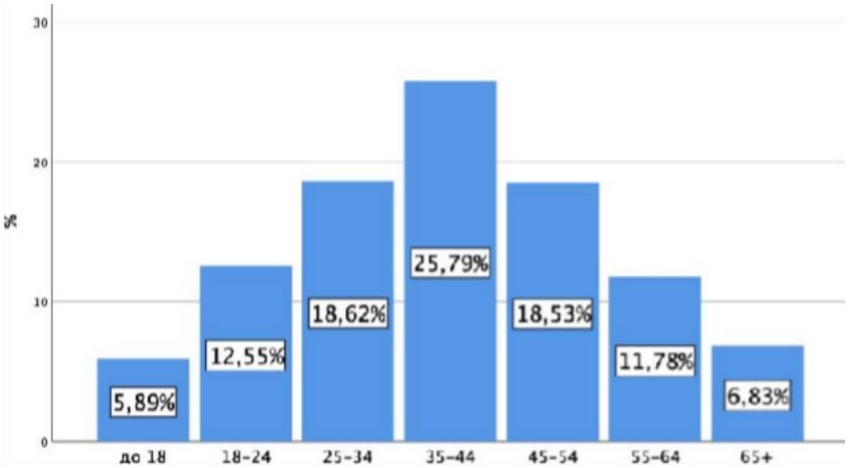
1. District

	Frequencies	%
Peresypsky District (Odesa)	370	31.6
Khadzhibey District (Odesa)	357	30.5
Kyivsky District (Odesa)	351	30.0
Primorsky District (Odesa)	82	7.0
Mykolaiv	11	0.9
Total	**1171**	**100.0**



2. Age

	Frequency	%
up to 18	69	5.9
18–24	147	12.6
25–34	218	18.6
35–44	302	25.8
45–54	217	18.5
55–64	138	11.8
65	80	6.8
Total	**1171**	**100.0**



3. Gender

Among the representatives of this category, 750 women (64%) and 421 men (36%) were surveyed.

4. Education

Among the respondents in this category, 675 had secondary vocational education (57.6%) and 491 had higher education (41.9%).

5. Occupation

45% of respondents in this category disclosed their occupation. Among the most common responses were: unemployed, sales assistants, sole traders, drivers, teachers, cooks, cashiers and environmental engineers.

II. CLARIFICATION OF THE QUALIFICATION CHARACTERISTICS OF THE RESPONDENTS'

1. Gender

Across all categories of respondents, with the exception of school pupils, women accounted for over 60% of the total.

	City dwellers (residents)	Students, teachers	school pupils	researchers, civil servants	**In total**
Women	750	77	53	55	**935**
Men	421	46	66	34	**567**
Total	**1171**	**123**	**119**	**89**	**1502**

2. Occupation (activity)

Among all three categories of respondents (city dwellers, students, and academics and civil servants), there were individuals who identified themselves as researchers and students, respectively. Representatives of the private sector were found only among city dwellers (the most common response in this category).

	city dwellers (ordinary citizens)	students, lecturers	school pupils	academics, civil servants	**Overall**
researcher	28	39	0	40	**107**
environmental engineer	4	0	0	0	**4**
fisherman/member of a fishing cooperative	34	0	0	0	**34**
public sector employee	259	0	0	41	**300**
private sector (air traffic control specialist)	350	0	0	0	**350**
student	209	84	0	8	**301**
the public	286	0	0	0	**286**
Other	1	0	119	0	**120**
Total	**1171**	**123**	**119**	**89**	**1502**

3. Type of institution/organisation

Across all three categories of respondents (city residents, students, and academics and civil servants), there were individuals who identified their place of work as a university or a research institution (RI). All pupils without exception ('school') and some city dwellers (mainly to indicate pensioner or unemployed status) selected this option.

	city dwellers (residents)	students, lecturers	school pupils	scientists, civil servants	**In general**
Government (ministry, regional administration)	257	0	0	41	**298**
university/research university	235	123	0	48	**406**
private sector	411	0	0	0	**411**
non-governmental organisation (NGO)	17	0	0	0	**17**
fishing cooperative	30	0	0	0	**30**
Port administration/operator	14	0	0	0	**14**
Other	205	0	119	0	**324**

Total	**1169**	**123**	**119**	**89**	**1500**

4. Region/city where the respondent works or lives

The largest proportion of people working (living) in Mykolaiv were academics and civil servants – 12.4%.

	city dwellers	students, lecturers	school pupils	scientists, civil servants	**Total**
Odesa	1160	116	119	78	**1473**
Mykolaiv	11	7	0	11	**29**
Total	**1171**	**123**	**119**	**89**	**1502**

5. Professional experience

One in three respondents stated that their professional experience was in the 0–5 year range. The proportion of people with the least professional experience was largely made up of students and pupils.

	Frequency	%
0–5 years	521	34.7
6–10 years	272	18.1
11–15 years	301	20.0
16–20 years	116	7.7
20+ years	292	19.4
Total	**1502**	**100.0**

- All respondents – average value – 2.59 (from 6 to 15 years)
- City dwellers (ordinary residents) – average – 2.72 (aged 11 to 15)
- Academics, civil servants – average score – 3.56 (aged 11 to 20).

	townspeople	Students, teachers	Pupils	Scientists, civil servants	**Overall**
0–5 years	314	84	107	16	**521**
6–10 years	254	2	8	8	**272**
11–15 years	277	7	4	13	**301**
16–20 years	96	6	0	14	**116**
20+ years	230	24	0	38	**292**
Total	**1171**	**123**	**119**	**89**	**1502**

III. ACHIEVEMENT OF THE MAIN OBJECTIVES OF THE RESEARCH

1. Overall level of knowledge about air traffic control processes

65.5% of respondents stated that they had limited knowledge or no knowledge at all.

	Frequency	%
No knowledge	382	25.4
I have limited knowledge	603	40.1
I have average knowledge	439	29.2
I have advanced knowledge	67	4.5
I am an expert in OVD	11	0.7
Total	**1502**	**100.0**

The average response rate among scientists and relevant civil servants is telling (it does not significantly exceed the corresponding figure for the general public and the sample as a whole:

- All respondents – average – 2.15 (I have limited knowledge)
- City dwellers (ordinary residents) – average score – 2.06 (I have limited knowledge)
- Academics, civil servants – average – 2.76 (I have average knowledge).

	City dwellers (ordinary people), %	Students, lecturers, %	Pupils, %	Academics, civil servants, %	**All, %**
I don't know	28.9	19.5	8.4	10.1	25.4
I have limited knowledge	40.1	47.2	38.7	33.7	40.1
I have average knowledge	27.6	22.8	49.6	32.6	29.2
I have advanced knowledge	3.1	9.8	3.4	16.9	4.5
I am an expert in air traffic control	0.3	0.8	-	6.7	0.7

The difference in awareness between the general public and the expert groups is negligible.

	City dwellers, %	Experts (total), %	**All, %**
No knowledge	28.9	13.0	25.4
I have limited knowledge	40.1	40.5	40.1
I have average knowledge	27.6	35.0	29.2
I have advanced knowledge	3.1	9.4	4.5
I am an expert in OVD	0.3	2.1	0.7

2. Which of the following ecosystem services involving seagrasses are known to respondents

Around half of the responses were for the first two options – 'carbon sequestration and climate regulation', as well as 'providing essential habitats for fish'.

All respondents	Responses		%
	Frequency	%	of observations
carbon storage and climate regulation	685	23.6	46.2
ensuring the necessary habitat for fish	744	25.7	50.2
stabilising coastal sediments	271	9.4	18.3
water filtration and nutrient cycling	524	18.1	35.4
supporting biodiversity	517	17.8	34.9
I am not aware of these functions	156	5.4	10.5
Total	**2897**	**100.0**	**195.5**

Taking into account the proportion in the sample, the responses of city dwellers are significantly closer to the sample averages.

City dwellers (residents)	Responses		%
	Frequency	%	of observations

	y		
carbon storage and climate regulation	518	24.9	45.0
providing the necessary habitat for fish	520	25.0	45.1
stabilisation of coastal sediments	187	9.0	16.2
water filtration and nutrient cycling	362	17.4	31.4
support for biodiversity	355	17.1	30.8
I am not aware of these functions	140	6.7	12.2
Total	**2082**	**100.0**	**180.7**

Academics and relevant civil servants were more likely to select more than one answer option, and less likely to select the option 'I am not aware of these functions'.

Scientists, civil servants	Responses		% of observations
	Frequency	%	
carbon storage and climate regulation	50	19.3	56.2
providing the necessary habitat for fish	68	26.3	76.4
stabilisation of coastal sediments	27	10.4	30.3
water filtration and nutrient cycling	53	20.5	59.6
supporting biodiversity	55	21.2	61.8
I am not aware of these functions	6	2.3	6.7
Total	**259**	**100.0**	**291.0**

Factor analysis using principal components made it possible group the respondents' answers into two main components of reasoning:

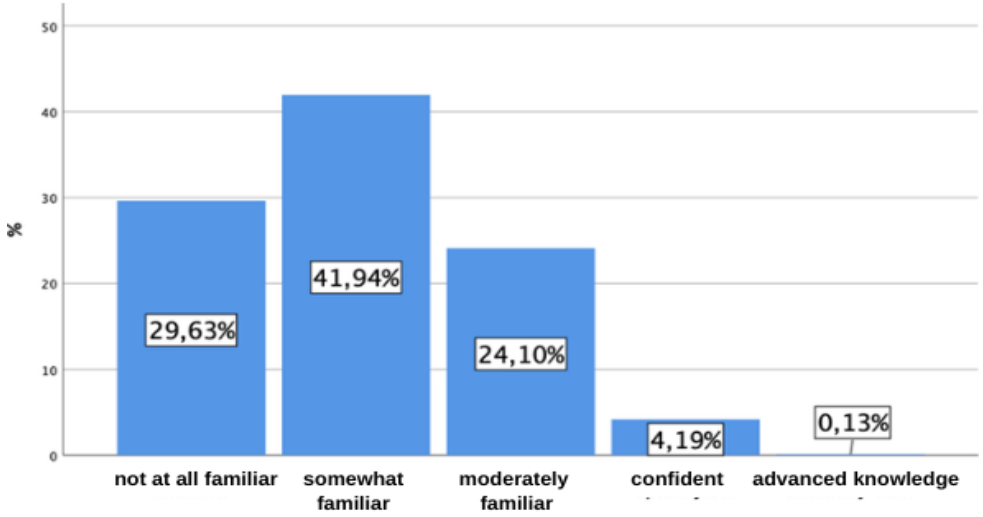
1) perception of the Total ecological significance of the impact of seagrasses, which contribute to carbon sequestration and climate regulation (usually only the relevant option was selected),

2) perception of the significance of seagrass for the aquatic ecosystem (usually from the group of statements – 'providing the necessary habitat for fish', 'stabilisation of coastal sediments', 'water filtration and nutrient cycling', 'supporting biodiversity' – several options were selected at once).

3. How familiar are they with the economic value of seagrass beds?

42% of respondents chose the option 'somewhat familiar'.

	Frequency	%
not at all familiar	445	29.6
somewhat familiar	630	41.9
moderately familiar	362	24.1
confident	63	4.2
advanced knowledge	2	0.1
Total	**1502**	**100.0**



The average score among academics and relevant civil servants is telling (slightly higher than the corresponding figure for city dwellers and the sample as a whole):

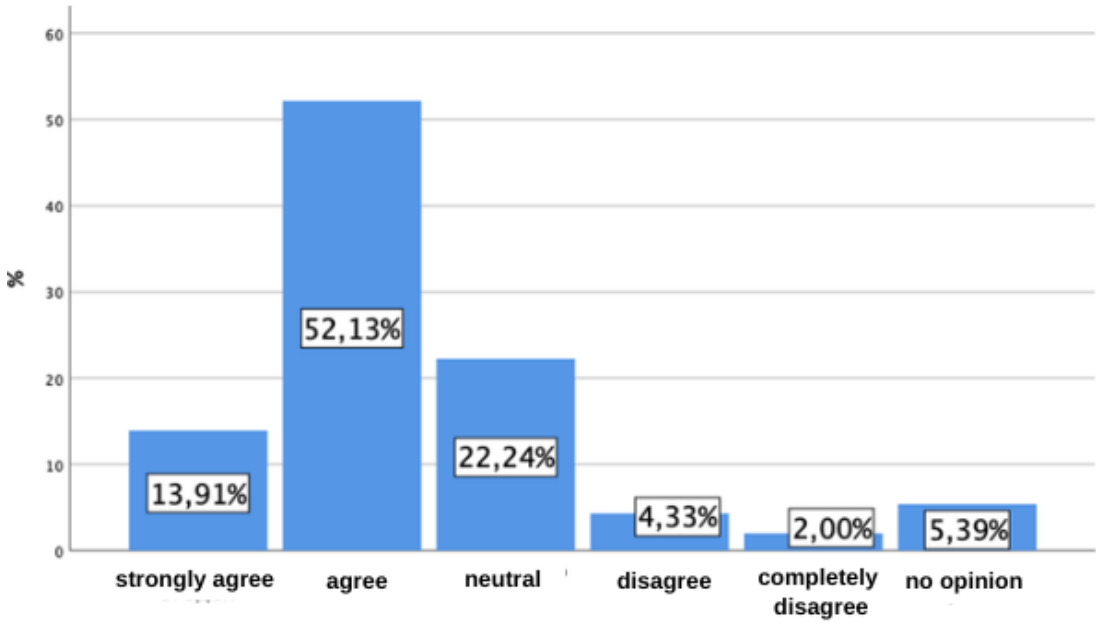
- All respondents – average – 2.03 (somewhat familiar)
- City dwellers (ordinary citizens) – average – 1.95 (somewhat familiar)
- Academics, civil servants – average score – 2.27 (somewhat familiar).

	City dwellers, %	Students, %	school pupils, %	Scientists, %	**All, %**
not at all familiar	32.1	30.9	5.0	28.1	**29.6**
somewhat familiar	43.0	35.8	43.7	33.7	**41.9**
moderately familiar	22.6	29.3	33.6	23.6	**24.1**
confident	2.2	4.1	17.6	12.4	**4.2**
advanced knowledge	-	-	-	2.2	**0.1**

4. Do seagrass beds play an important role in mitigating the effects of climate change?

More than half of those surveyed (52.1%) agreed with the statement.

	Frequency	%
Strongly agree	209	13.9
Agree	783	52.1
Neutral	334	22.2
Disagree	65	4.3
Completely disagree	30	2.0
No opinion	81	5.4
Total	**1502**	**100.0**



It is telling that the average response among scientists and relevant civil servants (which exceeds the corresponding figure for city dwellers and the sample as a whole) indicates that, on average, they are more confident that coastal meadows play an important role in mitigating the effects of climate change:

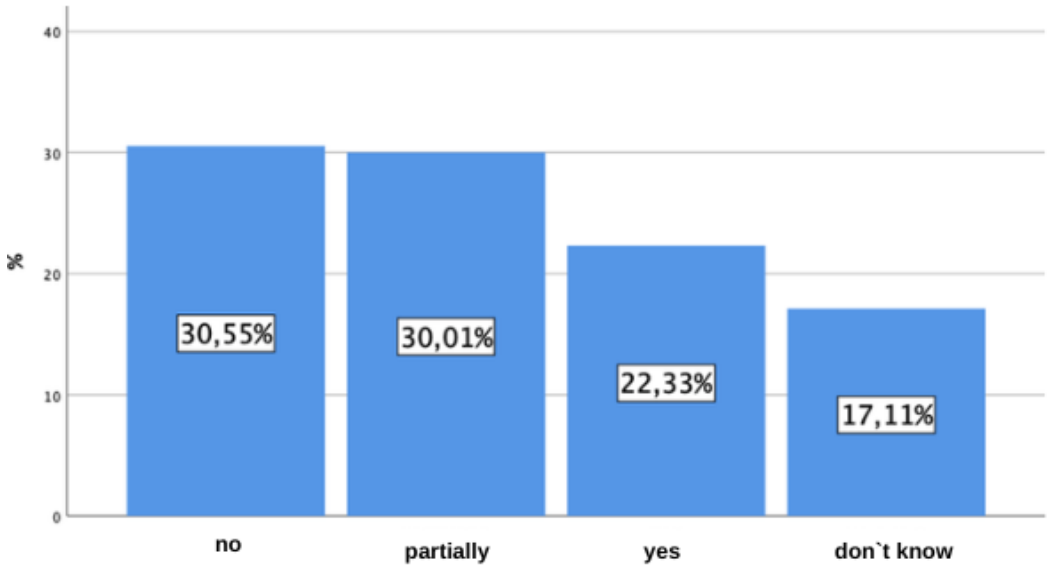
- All respondents – average score – 2.45 (agree – neutral)
- City dwellers (general public) – average score – 2.50 (agree – neutral)
- Scientists, civil servants – average score – 2.04 (agree).

	City dwellers, %	Students, %	School pupils, %	Academics, %	**All, %**
Strongly agree	11.7	14.6	16.8	38.2	**13.9**
Agree	51.4	59.3	56.3	46.1	**52.1**
Neutral	24.3	10.6	26.1	6.7	**22.2**
Disagree	5.5	-	0.8	-	**4.3**
Completely disagree	2.3	2.4	-	-	**2.0**
No opinion	4.9	13.0	-	9.0	**5.4**

5. Are the existing legal provisions sufficient to protect seagrasses?

60.5% of respondents (in equal proportions) chose either ‘no’ or ‘partially’.

	Frequency	%
Yes	334	22.3
No	457	30.5
partially	449	30.0
don’t know	256	17.1
Total	**1496**	**100.0**



The similarity between the average responses of academics and relevant civil servants and those of city residents is striking. Although the former chose the 'no' option slightly more often, the difference was not significant:

- All respondents – average – 2.42 (no)
- City residents (ordinary citizens) – average – 2.46 (no)
- Academics and civil servants – average score – 2.53 (no).

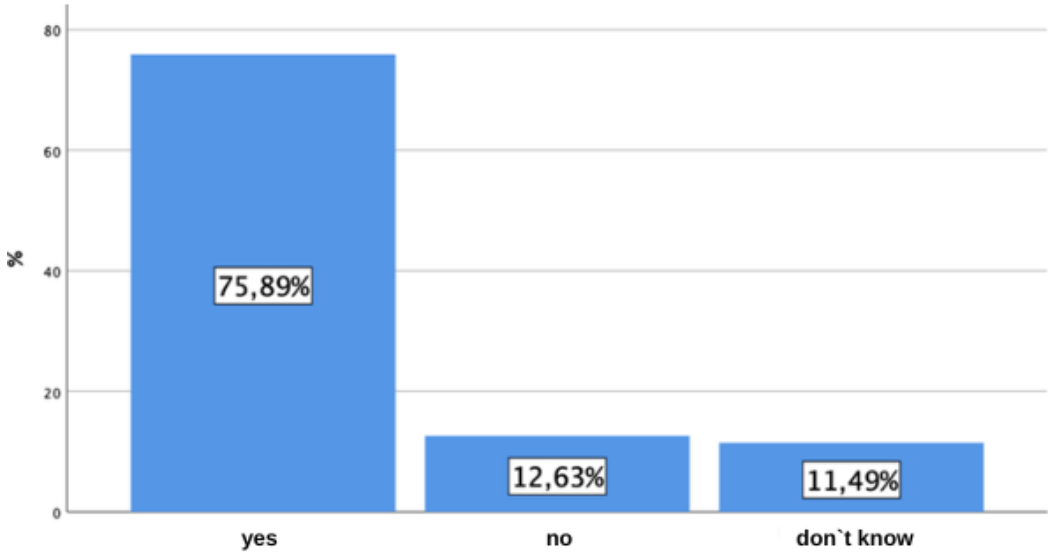
The Total 'yes' score was significantly influenced by the responses of school pupils, the majority of whom consider the existing legal provisions for the protection of seagrasses to be sufficient. Despite this, even a weak statistical correlation between the position on this issue and the 'expert/non-expert' was not recorded.

	City dwellers, %	students, %	school pupils, %	Academics, %	**All, %**
Yes	21.1	4.1	64.7	6.9	**22.3**
no	30.8	35.8	10.1	48.3	**30.5**
partially	29.6	38.2	25.2	29.9	**30.0**
don't know	18.5	22.0	0.0	14.9	**17.1**

6. Should the issue of seagrass protection be considered during the EIA process?

Three-quarters of respondents answered in the affirmative.

	Frequency	%
Yes	1136	75.9
No	189	12.6
don't know	172	11.5
Total	**1497**	**100.0**



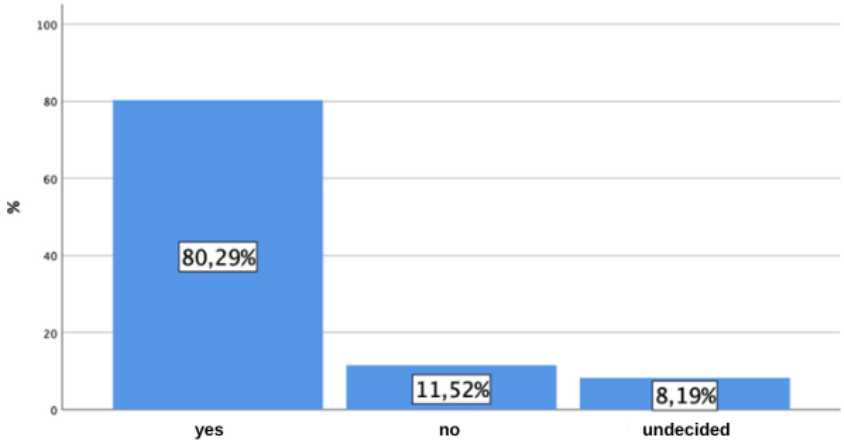
The average score in the responses from academics, relevant civil servants and city residents is close to the average score for the sample as a whole:

- All respondents – average score – 1.36 (yes)
- City residents (ordinary citizens) – average score – 1.41 (yes)
- Scientists, civil servants – average value – 1.27 (yes).

7. Should there be specific criteria for the protection of seagrass in EIA processes?

Three-quarters of respondents answered in the affirmative.

	Frequency	%
Yes	1206	80.3
No	173	11.5
undecided	123	8.2
Total	**1502**	**100.0**



The average value in the responses of academics, relevant civil servants and city residents is close to the average value for the sample as a whole:

- All respondents – average score – 1.28 (yes)
- City dwellers (ordinary citizens) – average score – 1.32 (yes)
- Academics, civil servants – average – 1.16 (yes).

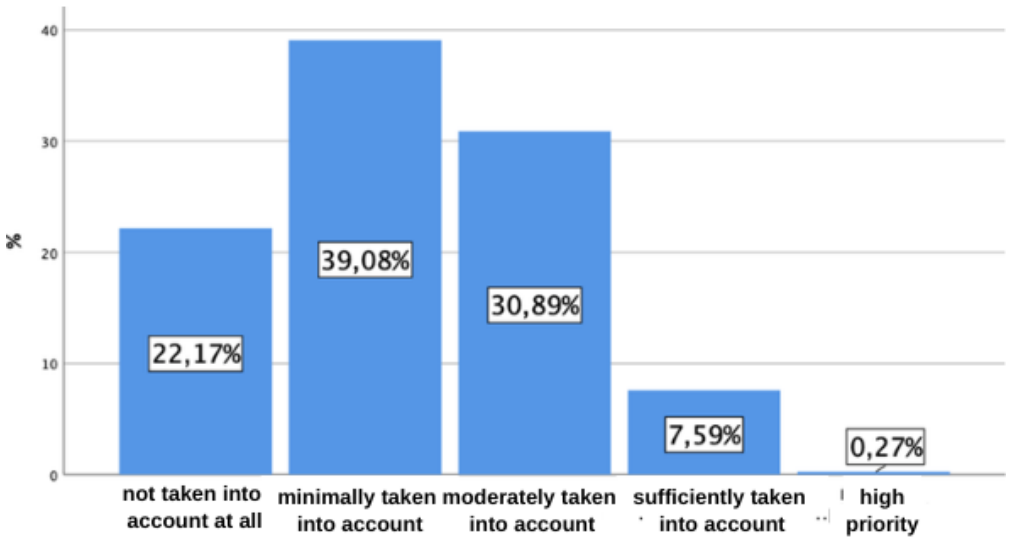
Members of expert groups were more likely than city dwellers to give an affirmative answer.

	City dwellers, %	Students, %	School pupils, %	Scientists, %	**All, %**
Yes	76.7	89.4	97.5	92.1	80.3
No	14.3	2.4	2.5	0.0	11.5
undecided	9.1	8.1	0.0	7.9	8.2

8. Do coastal infrastructure development projects (ports, marinas, land reclamation, etc.) in the country adequately take into account the protection of salt marshes in EIA processes?

More than 60% of respondents chose or the option 'not taken into account at all ', or the option 'minimally taken into account'.

	Frequency	%
not taken into account at all	333	22.2
minimally taken into account	587	39.1
moderately taken into account	464	30.9
sufficiently taken into account	114	7.6
high priority	4	0.3
Total	**1502**	**100.0**



The average score in the responses from academics, relevant civil servants and city residents is close to the average score for the sample as a whole:

- All respondents – average – 2.25 (minimally taken into account)
- City residents (ordinary citizens) – average score – 2.21 (minimally taken into account)
- Academics, civil servants – average – 2.12 (minimally taken into account).

The Total score for the 'moderately taken into account' option was significantly influenced by the responses of school pupils, the majority of whom chose the neutral answer. Despite this the statistical correlation between the position on this issue and the 'expert/non-expert' criterion is too weak to be taken into account.

	city dwellers, %	students, %	school pupils, %	academics, %	**All, %**
not taken into account at all	22.7	26.0	10.1	25.8	**22.2**
minimally taken into account	41.2	39.8	16.0	41.6	**39.1**
moderately taken into account	28.4	29.3	58.8	28.1	**30.9**
sufficiently taken into account	7.7	2.4	15.1	3.4	**7.6**
high priority	0.0	2.4	0.0	1.1	**0.3**

9. What are the main reasons why the issue of seagrass protection is not adequately addressed in EIA processes?

Opinions were divided. The option 'insufficient inclusion in the legal framework', which topped the list, gained a slight statistical advantage. As expected, the Total result differs little from the results for the sample of city dwellers alone.

All respondents	Responses		%
	Frequency	%	of observations
Insufficient integration into the legal framework	747	29.2	49.8
lack of experience among EIA experts	616	24.1	41.1
difficulties in assessing the environmental impact of seagrass	558	21.8	37.2
limited awareness of the impact of seagrasses on the environment	621	24.3	41.4
other	15	0.6	1.0
Total	**2557**	**100.0**	**170.5**
Townspeople (residents)	Responses		%
	Frequency	%	of observations
Insufficient integration into the legal framework	588	29.8	50.2
lack of experience among EIA experts	490	24.9	41.8
difficulties in assessing the environmental impact of seagrass	420	21.3	35.9
limited awareness regarding the impact of sea the environment	460	23.4	39.3
other	12	0.6	1.0
Total	**1970**	**100.0**	**168.2**
Scientists, civil servants	Responses		%
	Frequency	%	of observations
Insufficient integration into the legal framework	50	28.4	56.2
lack of experience among EIA experts	26	14.8	29.2
difficulties in assessing the environmental impact of seagrasses	43	24.4	48.3
limited awareness of the impact of seagrasses on the environment	55	31.3	61.8
other	2	1.1	2.2
Total	**176**	**100.0**	**197.8**

The responses from scientists and civil servants are characteristically dominated by the option 'limited awareness of the impact of seaweed on the environment'.

	city dwellers, %	students, %	school pupils, %	Scientists, %	**All, %**
Insufficient inclusion in the legal framework	29.8	32.1	17.6	28.4	29.2
lack of experience among AEC experts	24.9	19.8	31.4	14.8	24.1
difficulties in assessing the environmental impact of seagrasses	21.3	18.3	30.8	24.4	21.8
limited awareness regardingthe impact of seaweed on the environment	23.4	29.4	20.1	31.3	24.3
other	0.6	0.4	0.0	1.1	0.6

10. In which types of projects should the inclusion of seagrass protection in EIA processes be mandatory?

Almost 75% of responses supported the option 'all coastal and marine projects'. A third of responses chose the option 'projects involving the discharge of wastewater'. As expected, the Total result is almost identical to the results from the sample of city residents alone. The responses from scientists and relevant civil servants are close to the average.

All respondents	Responses Frequency	Responses %	% of observations
all coastal and marine projects	1120	50.1	74.6
ports and marinas only	228	10.2	15.2
coastal reclamation projects only	237	10.6	15.8
projects involving the discharge of wastewater	504	22.6	33.6
dredging works on the seabed only	104	4.7	6.9
should not be mandatory for any projects	39	1.7	2.6
other	3	0.1	0.2
Total	**2235**	**100.0**	**148.8**
Townspeople (residents)	Responses Frequency	Responses %	% of observations
all coastal and marine projects	849	51.4	72.5
ports and marinas only	161	9.7	13.7
coastal reclamation projects only	139	8.4	11.9
projects involving the discharge of wastewater	403	24.4	34.4
dredging works on the seabed only	67	4.1	5.7
should not be mandatory for any projects	32	1.9	2.7
other	1	0.1	0.1
Total	**1652**	**100.0**	**141.1**
Scientists, civil servants	Responses Frequency	Responses %	% of observations
all coastal and marine projects	77	45.0	86.5
only ports and marinas	15	8.8	16.9
coastal reclamation projects only	16	9.4	18.0
projects involving the discharge of wastewater	43	25.1	48.3
dredging works on the seabed only	16	9.4	18.0
should not be mandatory for any projects	2	1.2	2.2
other	2	1.2	2.2
Total	**171**	**100.0**	**192.1**

In the students' responses, option 1 accounts for over 60%, whereas among school pupils it barely exceeds 35%.

	City dwellers, %	students, %	school pupils, %	academics, %	**All, %**
all coastal and marine projects	51.4	62.6	35.2	45.0	50.1
ports and marinas only	9.7	5.0	18.5	8.8	10.2
coastal reclamation projects only	8.4	7.8	29.2	9.4	10.6
projects involving the discharge wastewater	24.4	17.9	11.2	25.1	22.6
dredging work on the seabed only	4.1	4.5	5.6	9.4	4.7
should not be mandatory for any projects	1.9	2.2	0.4	1.2	1.7
other	0.1	-	-	1.2	0.1

Factor analysis using principal components made it possible group respondents' answers into three main components of reasoning:

1) the inclusion of seagrass protection issues in EIA processes should be mandatory in highly specialised projects for the development of port and coastal infrastructure (respondents tended to select the options 'only ports and marinas', 'only coastal reclamation projects' and 'only seabed dredging works'),

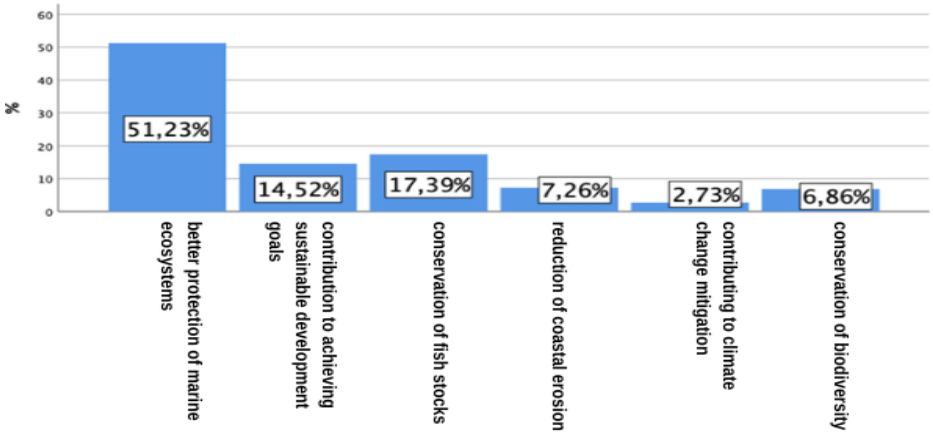
2) the inclusion of seagrass protection in EIA processes should not be mandatory for any projects (the corresponding option was predominantly selected),

3) the inclusion of seagrass protection in EIA processes should be mandatory for projects involving the discharge of wastewater (the corresponding option was predominantly selected).

11. What is the most important benefit of incorporating the issue of seagrass conservation into EIA processes?

More than 60% of respondents chose or the option 'is not taken into account at all ', or the option
'are taken into account to a minimal extent'.

	Frequency	%
better protection of marine ecosystems	769	51.2
contribution to achieving sustainable development goals	218	14.5
conservation of fish stocks	261	17.4
reduction of coastal erosion	109	7.3
contributing to climate change mitigation	41	2.7
conservation of biodiversity	103	6.9
Total	**1501**	**100.0**



The average score in the respondents' answers is close to the average score for the sample as a whole. Scientists and relevant civil servants (as well as students and lecturers) were noticeably more likely to choose option 6 ('preserving biodiversity'), which influenced the average score in the responses.

- All respondents – average score – 2.16 (better protection of marine ecosystems – a contribution to achieving the Sustainable Development Goals)
- City dwellers (ordinary residents) – average score – 2.00 (better protection of marine ecosystems – contribution to achieving sustainable development goals)
- Scientists, civil servants – average score – 2.88 (contribution to achieving sustainable development goals).

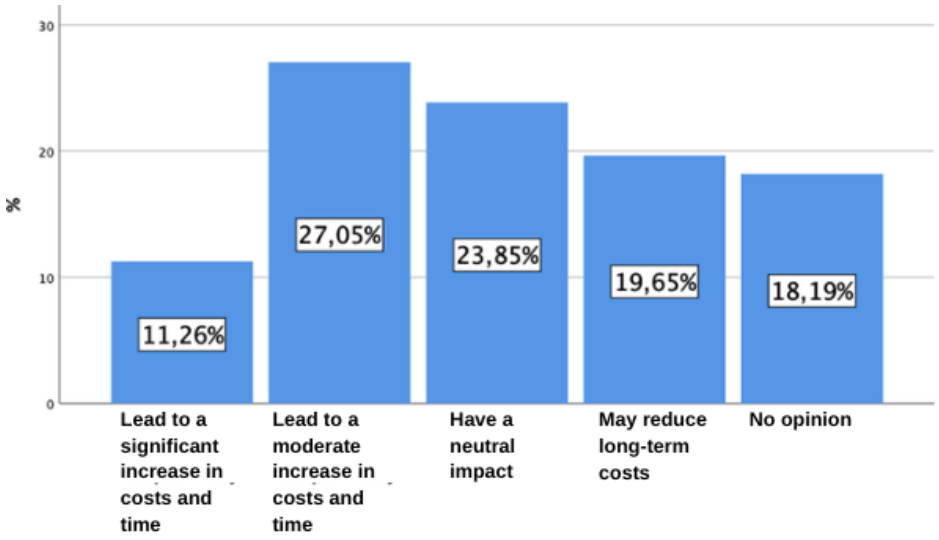
The Total score for the 'conservation of fish stocks' option was significantly influenced by the responses of school pupils, the majority of whom chose option 3. Despite this, the statistical correlation between the position on this issue and the 'expert/non-expert' criterion is weak.

	city dwellers, %	Students, %	school pupils, %	Scientists, %	**All, %**
better protection of marine ecosystems	55.0	50.4	25.2	38.2	**51.2**
contribution to achieving sustainable development goals	15.0	11.4	10.1	19.1	**14.5**
conservation of fish stocks	16.2	8.1	45.4	9.0	**17.4**
reduction of coastal erosion	7.3	4.9	11.8	4.5	**7.3**
contributing to climate change mitigation	1.7	7.3	3.4	9.0	**2.7**
conservation of biodiversity	5.0	17.9	4.2	20.2	**6.9**

12. What impact might the inclusion of seagrass protection in EIA processes have on the cost and timeline of the project?

Opinions were divided. The combined proportion of responses stating 'will lead to a moderate increase in costs and time' and 'will have a neutral impact' was just over 50%.

	Frequency	%
Lead to a significant increase in costs and time	169	11.3
Lead to a moderate increase in costs and time	406	27.0
Have a neutral impact	358	23.9
May reduce long-term costs	295	19.7
No opinion	273	18.2
Total	**1501**	**100.0**



The average score in the respondents' answers matches the average score for the sample as a whole. Academics and relevant civil servants (as well as students and lecturers) were noticeably more likely to choose option 4 ('may reduce long-term costs'), which influenced the average score in the responses.

- All respondents – average score – 3.06 (have a neutral impact)
- City dwellers (ordinary citizens) – average score – 3.06 (have a neutral impact)
- Academics, civil servants – average score – 3.31 (have a neutral impact – may reduce long-term costs).

The Total score for the 'have a neutral impact' option was significantly influenced by the responses of school pupils, the vast majority of whom chose option 3 (in contrast to university students, among whom this option received only around 5%). Despite this, the statistical correlation between the position on this issue and the 'expert/non-expert' criterion is not significant.

	City dwellers, %	University students, %	school pupils, %	academics, %	**all, %**
Lead to a significant increase in costs and time	10.4	20.3	9.2	12.4	11.3
Lead to a moderate increase in costs and time	29.3	25.2	12.6	19.1	27.0
Have a neutral impact	23.2	4.9	53.8	18.0	23.9
May reduce long-term costs	17.8	28.5	24.4	25.8	19.7
No opinion	19.2	21.1	-	24.7	18.2

13. What strategies would be most effective in raising public awareness of seagrass conservation issues?

Opinions were divided. The combined proportion of respondents who chose 'educational campaigns' and 'media campaigns' was less than 50%. As expected, the Total result is almost identical to the results for the sample of city dwellers alone.

All respondents	Responses		%
	Frequency	%	of observations
educational programmes	1069	27.8	71.8
media campaigns	793	20.6	53.3
legal regulation	652	17.0	43.8
incentives for the fisheries and maritime sectors	597	15.5	40.1
Engagement of local communities	693	18.0	46.6
none of the strategies are suitable	40	1.0	2.7
Total	**3844**	**100.0**	**258.3**
Townspeople (residents)	Responses		%
	Frequency	%	of observations
educational programmes	819	27.4	70.8
media campaigns	599	20.0	51.8
legal regulation	507	17.0	43.8
incentives for the fisheries and maritime sectors	494	16.5	42.7
Engagement of local communities	532	17.8	46.0
none of the strategies are suitable	38	1.3	3.3
Total	**2989**	**100.0**	**258.3**
Scientists, civil servants	Responses		%
	Frequency	%	of observations

educational programmes	73	26.3	82.0
media campaigns	59	21.2	66.3
legal regulation	52	18.7	58.4
incentives for the fisheries and maritime sectors	43	15.5	48.3
involvement of local communities	51	18.3	57.3
none of the strategies are suitable	-	-	-
Total	**278**	**100.0**	**312.4**

Among pupils, the proportion of responses for 'educational campaigns' and 'media campaigns' was 68% (including the option 'educational campaigns' – 41.2%). In contrast, pupils were less likely to choose the options
'legal regulation' and 'incentives for the fisheries and maritime sectors'.

	City dwellers, %	students,%	school pupils,%	Academics, %	**All, %**
educational programmes	27.4	23.8	41.2	26.3	27.8
media campaigns	20.0	21.2	26.8	21.2	20.6
legal regulation	17.0	18.3	12.7	18.7	17.0
incentives for the fisheries and maritime sectors	16.5	16.3	1.3	15.5	15.5
involvement of local communities	17.8	19.8	18.0	18.3	18.0
none of the strategies are suitable	1.3	0.6	-	-	1.0

Factor analysis using principal components made it possible group the respondents' answers into three main components of the reasoning process:

1) raising awareness (respondents tended to select the options 'educational programmes', 'media campaigns' and 'legal regulation' simultaneously),

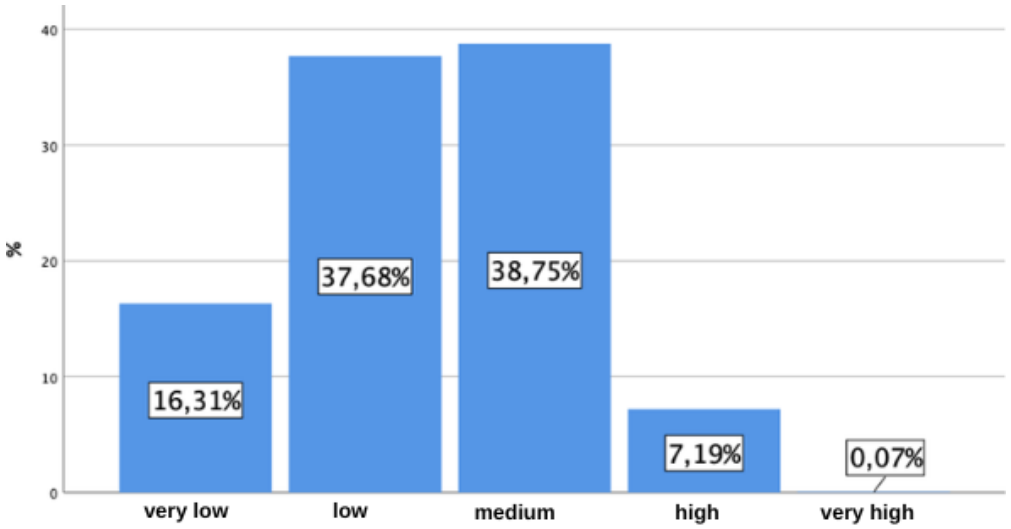
2) stimulating relevant industrial sectors (the option
'incentives for the fisheries and maritime sectors'),

3) engagement with local communities (the relevant option was predominantly selected).

14. What is the level of awareness regarding the importance of seagrass conservation among decision-makers (politicians, senior officials, etc.)?

The majority of respondents (66.4%) chose either the 'low' or 'medium' option.

	Frequency	%
Very low	245	16.3
Low	566	37.7
Medium	582	38.7
High	108	7.2
Very high	1	0.1
Total	**1502**	**100.0**



As expected, the average score in the city residents' responses corresponds to the average score for the sample as a whole. Academics and relevant civil servants (as well as students and lecturers) were noticeably more likely to choose options 1 and 2 ('very low' and 'low', respectively).

- All respondents – average score – 2.37 (low)
- City residents (ordinary citizens) – average score – 2.43 (low to medium)
- Scientists, civil servants – average score – 1.96 (low).

The Total score for the 'medium' option was significantly influenced by the responses of city dwellers (ordinary residents) and school pupils, the majority of whom chose option 3. Thus, as expected, ordinary residents and pupils, who are less informed on the issue, tend to assess the level of awareness of decision-makers on matters relating to the conservation of seagrasses more positively.

	City residents, %	students, %	school pupils, %	Scientists, %	**All, %**
very low	15.4	29.3	3.4	28.1	**16.3**
low	35.1	52.8	39.5	48.3	**37.7**
medium	40.8	17.9	51.3	23.6	**38.7**
high	8.7	-	5.0	-	**7.2**
very high	-	-	0.8	-	**0.1**

15. How important are the following consequences of seagrass loss? (on a scale of 1 to 5, where 1 = not at all important, 5 = very important)

	Average rating
decline in fish populations	4.29
increased carbon emissions	4.01
acceleration of coastal erosion	3.89
decrease in tourism revenue	3.09

16. Which of the following proposals should be supported to ensure that the protection of seagrasses is more effectively taken into account in EIA processes?

Opinions were divided. The combined proportion of respondents who selected 'strengthening the

legal status of seagrass ' and 'adding special provisions regarding the conservation of seagrass to the AIS Regulations' amounted to less than 35%. As expected, the Total result differs little from the results for the sample of city dwellers alone. Among academics and relevant civil servants, the proportion of these responses stands at 39%.

All respondents	Responses		%
	Frequency	%	of observations
Inclusion of specific provisions on the conservation seaweed to the AIS Regulation	603	15.4	40.2
mapping of seagrass distribution areas and creation of a national database	510	13.0	34.0
training sessions for experts from the regarding the protection of seagrass	648	16.6	43.2
imposing restrictions on the development of projects in areas where seagrass is found	454	11.6	30.2
strengthening the legal status of seagrass protection	735	18.8	49.0
calculating the economic value of seagrasses and incorporating it into EIA processes	416	10.6	27.7
ensuring more active participation of the public and stakeholders in EIA processes	540	13.8	36.0
other	4	0.1	0.3
Total	**3910**	**100.0**	**260.5**
Townspeople (residents)	Responses		%
	Frequency	%	of observations
Inclusion of specific provisions on the conservation seaweed to the AIS Regulation	440	14.7	37.6
Mapping of seagrass distribution areas and creation of a national database	349	11.7	29.8
training sessions for experts from the regarding the protection of seagrass	486	16.3	41.5
the introduction of restrictions on the development of projects in areas where seagrass is found	359	12.0	30.7
strengthening the legal status of seagrass protection	575	19.3	49.1
calculating the economic value of seagrasses and incorporating it into EIA processes	327	11.0	27.9
ensuring more active participation of the public and stakeholders in EIA processes	447	15.0	38.2
other	2	0.1	0.2
Total	**2985**	**100.0**	**254.9**
Scientists, civil servants	Responses		%
	Frequency	%	of observations
Inclusion of specific provisions on the conservation of seagrasses in the EIA Regulations	60	21.2	67.4
Mapping of seagrass distribution areas and creation of a national database	37	13.1	41.6
conducting training sessions for EIA experts on the protection of seagrass	50	17.7	56.2
the introduction of restrictions on development projects in areas where seagrass is found	25	8.8	28.1
strengthening the legal status of seagrass protection	51	18.0	57.3
calculating the economic value of seagrasses and incorporating it into EIA processes	26	9.2	29.2

ensuring more active participation of the public and stakeholders in EIA processes	32	11.3	36.0
other	2	0.7	2.2
Total	**283**	**100.0**	**318.0**

Factor analysis using the principal component method allowed the respondents' answers to be grouped into three main components of reasoning:

1) the relevant regulatory framework should be improved (respondents tended to select both 'adding specific provisions on the conservation of seagrasses to the EIA regulations' and 'mapping the distribution of seagrasses and creating a national database'),

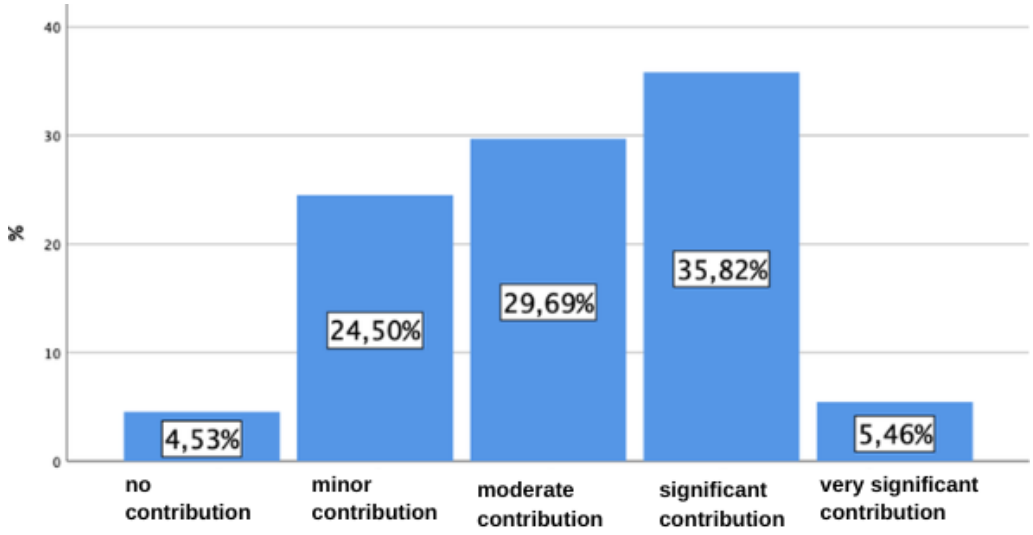
2) the level of expert awareness should be raised and restrictions should be introduced on the development of projects in seagrass distribution areas (the corresponding options were predominantly selected),

3) strengthening the legal status of seagrass protection and calculating their economic value (the corresponding options were predominantly selected).

17. To what extent will the inclusion of seagrass protection in EIA processes contribute to the protection of coastal and marine ecosystems?

The majority of respondents (65.5%) selected either the option 'will make a minor contribution' or the option
'will make a moderate contribution'.

	Frequency	%
no contribution	68	4.5
minor contribution	368	24.5
moderate contribution	446	29.7
significant contribution	538	35.8
very significant contribution	82	5.5
Total	**1502**	**100.0**



As expected, the average score in the city residents' responses corresponds to the average score for the sample as a whole. Academics and relevant civil servants were noticeably more likely to choose option 4 ('significant contribution').

- All respondents – average score – 3.13 (moderate contribution)

- City residents (ordinary citizens) – average score – 3.05 (moderate contribution)
- Scientists, civil servants – average score – 3.65 (moderate contribution –minor contribution).

In addition to the responses from academics and relevant civil servants, the Total score for the 'will make a significant contribution' option was influenced by the responses from school pupils.

	City residents, %	University students, %	school pupils, %	Scientists, %	**all, %**
no contribution	4.4	3.3	9.2	2.2	**4.5**
minor contribution	28.1	12.2	9.2	14.6	**24.5**
moderate contribution	30.4	28.5	36.1	13.5	**29.7**
significant contribution	33.0	39.8	45.4	55.1	**35.8**
very significant contribution	4.2	16.3	-	14.6	**5.5**

18. Who should be the main stakeholders in the process of incorporating the issue of seagrass protection into EIA procedures?

Opinions were divided. The combined proportion of respondents who selected 'government bodies' and 'academic/research institutions' was less than 40%. As expected, the Total result is almost identical to the results for the sample of city dwellers alone. Among academics, 42.5% of respondents selected 'government bodies' and 'local communities'. A similar pattern was observed among students and lecturers.

	Responses		
All respondents	Frequency	%	% of observations
Government agencies	1015	22.4	67.6
private sector	547	12.1	36.4
academic/research institutions	679	15.0	45.2
local authorities	444	9.8	29.6
non-governmental organisations (NGOs)	264	5.8	17.6
representatives of the fishing industry	511	11.3	34.0
international organisations	491	10.8	32.7
local communities	563	12.4	37.5
other	19	0.4	1.3
Total	**4533**	**100.0**	**301.8**
	Responses		
Townspeople (ordinary people)	Frequency	%	% of observations
Government institutions	781	22.4	66.7
private sector	425	12.2	36.3
academic/research institutions	542	15.6	46.3
local authorities	350	10.0	29.9
non-governmental organisations (NGOs)	179	5.1	15.3
representatives of the fishing industry	422	12.1	36.0
international organisations	407	11.7	34.8
local communities	377	10.8	32.2
Other	2	0.1	0.2
Total	**3485**	**100.0**	**297.6**
	Responses		
Scientists, civil servants	Frequency	%	% of observations
Government agencies	79	26.4	88.8
private sector	27	9.0	30.3

academic/research institutions	35	11.7	39.3
local authorities	28	9.4	31.5
non-governmental organisations (NGOs)	17	5.7	19.1
representatives of the fishing industry	40	13.4	44.9
international organisations	23	7.7	25.8
local communities	48	16.1	53.9
Other	2	0.7	2.2
Total	**299**	**100.0**	**336.0**

Among pupils, the 'local communities' option came first (22.2% of respondents).

	city dwellers, %	students, %	school pupils, %	academics, %	**All, %**
Government institutions	22.4	25.4	16.5	26.4	22.4
private sector	12.2	8.6	17.6	9.0	12.1
academic/research institutions	15.6	12.8	15.1	11.7	15.0
local authorities	10.0	8.9	9.1	9.4	9.8
non-governmental organisations (NGOs)	5.1	3.1	15.9	5.7	5.8
representatives of the fishing industry	12.1	11.8	1.1	13.4	11.3
international organisations	11.7	13.6	2.6	7.7	10.8
local authorities	10.8	15.7	22.2	16.1	12.4
Other	0.1	-	-	0.7	0.4

Factor analysis using principal components made it possible to identify the underlying determinants of the audience's thinking:

1) academic research institutions (the relevant option),

2) non-governmental organisations (relevant option),

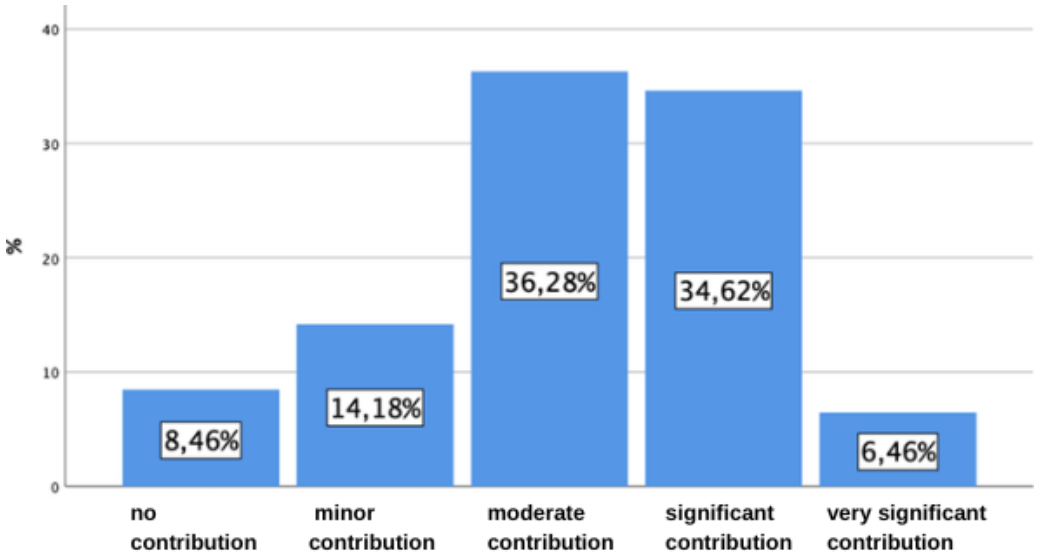
3) local authorities (relevant option),

4) international organisations (relevant option).

19. To what extent will the inclusion of the issue of seagrass protection in EIA procedures contribute to Total environmental protection policy?

The majority of respondents (70.9%) selected either the option 'moderate contribution' or the option 'significant contribution'.

	Frequency	%
no contribution	127	8.5
minor contribution	213	14.2
moderate contribution	545	36.3
significant contribution	520	34.6
very significant contribution	97	6.5
In total	**1502**	**100.0**



The average score in the respondents' answers traditionally corresponds to the average score for the sample as a whole. Academics and relevant civil servants were noticeably more likely to choose option 4 ('significant contribution').

- All respondents – average score – 3.16 (moderate contribution)
- City residents (ordinary citizens) – average score – 3.06 (moderate contribution)
- Scientists, civil servants – average score – 3.71 (significant contribution).

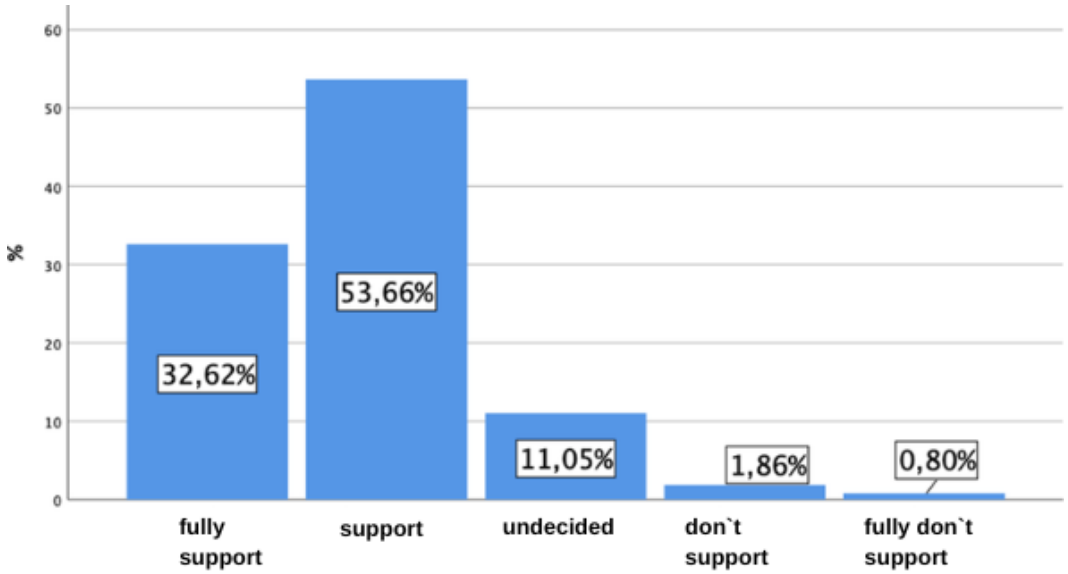
The option 'no contribution' was predominantly chosen by the sample of city dwellers. The combined proportion of the 'moderate contribution' and 'significant contribution' options in the students' responses was 88.3%. The 'very significant contribution' option was most frequently selected by students and lecturers, as well as scientists and civil servants.

	City residents, %	students, %	school pupils, %	Academics, %	**All, %**
no contribution	10.7	0.8	-	1.1	**8.5**
minor contribution	15.2	10.6	10.9	10.1	**14.2**
moderate contribution	36.5	35.8	42.9	24.7	**36.3**
significant contribution	32.5	36.6	45.4	44.9	**34.6**
very significant contribution	5.0	16.3	0.8	19.1	**6.5**

20. Total opinion of respondents regarding the inclusion of seagrass protection in EIA procedures

The majority of respondents (86.3%) selected either 'support' or 'fully support'.

	Frequency	%
fully support	490	32.6
support	806	53.7
undecided	166	11.1
don`t support	28	1.9
fully don`t support	12	0.8
Total	**1502**	**100.0**



The average score in the city residents' responses traditionally corresponds to the average score for the sample as a whole. Academics and relevant civil servants were noticeably more likely to choose option 1 ('fully support'), whereas 86.6% of students chose option 2 ('support').

- All respondents – average score – 1.85 (support)
- City residents (ordinary citizens) – average score – 1.90 (support)
- Scientists, civil servants – average score – 1.47 (fully support – support).

The combined proportion of 'fully support' and 'support' responses among students was 95.1%.

	Townspeople, %	students, %	School pupils, %	Scientists, %	**All, %**
I fully support	30.9	45.5	13.4	62.9	**32.6**
I support	52.6	49.6	86.6	29.2	**53.7**
undecided	13.2	4.1	-	6.7	**11.1**
I do not support	2.3	0.8	-	-	**1.9**
I completely disagree	0.9	-	-	1.1	**0.8**

MAIN CONCLUSIONS

Based on the results of the work carried out:

- the following hypotheses were ***confirmed***:
  1. Membership of expert groups proved to be the most influential factor in the study of public awareness of seagrass conservation and EIA processes (in some cases, a weak linear relationship was observed).
  2. The level of awareness among expert groups proved to be uneven. As expected, the highest level was demonstrated by scientists and relevant civil servants, and the lowest by school pupils.
  3. The level of awareness among experts (including scientists) is not significantly higher than that of city dwellers (the general public). The audience demonstrated a low ability to identify obvious solutions (opinions were often divided).
- ***It has been*** established that:
  - public awareness of the role of seagrasses in combating climate change and coastal erosion remains low. Even among scientists, it is, at best, at an average level.
  - Public awareness of the issues surrounding the protection of seagrass beds, which are threatened with extinction due to the development of coastal infrastructure, fishing and human activity, remains low.
  - The audience considers educational programmes to be the most effective strategies for raising public awareness.
  - The audience tends to show a high level of demand for the issue of seagrass protection to be considered in the EIA process. They see the main advantage of this as better protection of marine ecosystems. The main consequence of seagrass loss is a decline in fish populations.
  - The audience expects the increase in costs resulting from the inclusion of seagrass protection in EIA processes to have a rather insignificant impact on the project's cost and timeline.
  - When asked who they consider to be the main stakeholder in the process of incorporating seagrass conservation into EIA procedures, respondents identified government agencies by a narrow margin.

- Strengthening the legal status of seagrass protection and adding specific provisions on seagrass conservation to the EIA Regulations is, in the opinion of scientists and relevant government officials, the most appropriate course of action to ensure that seagrass protection is more effectively taken into account in EIA processes, out of the proposals outlined.

Individual entrepreneur **Denys Podiachev**

Interreg
Co-funded by the European Union
NEXT Black Sea Basin

- Programme: (Interreg VI-B) NEXT Black Sea Basin Programme
- The material editor: Tekirdag Namik Kemal University
- Material editor's contact details: lhtecer@nku.edu.tr / +905556422543 / https://www.nku.edu.tr
- Publishing date: 25th of December 2025
- The Interreg NEXT BSB Programme is jointly funded by the European Regional Development Fund (ERDF), the Neighbourhood, Development and International Cooperation Instrument (NDICI) and by the Instrument for Pre-accession (IPA), hereinafter referred to as Interreg funds, in the framework of the European Neighbourhood and the Cohesion policy.
- This publication has been produced with the financial assistance of the European Union. The contents of this publication are the sole responsibility of Tekirdag Namik Kemal University and can in no way be taken to reflect the views of the European Union.