



## **V. ZNANSTVENO-STRUČNI SKUP**

### **Klimatske promjene i očuvanje morskih ekosustava Jadranskog mora s međunarodnim sudjelovanjem**

Glavna tema: Interdisciplinarni pristup razmatranju prilagodbi, mjera i dobrih  
praksi u rješavanju problema izazvanih klimatskim promjenama

### **Attitudes of the local community on the importance of education and cooperation for the sustainable development of the marine ecosystem**

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# Abstract



- The sea and marine biodiversity are vital in creating well-being for communities worldwide. Also, biodiversity helps in the sustainability of the marine ecosystem and the fight against climate change. The actions of individuals and groups are increasingly endangering natural habitats in the marine environment, with an evident decline in plant and animal species. The sustainable development of the marine ecosystem requires the responsible behavior of all community members, where the level of environmental awareness is crucial. Raising ecological awareness and promoting the sustainable development of the marine ecosystem can be achieved through education and cooperation while connecting science and researchers with the entire community. The growth of knowledge and awareness about biodiversity represents the foundation and path for the sustainable development of the ecosystem. The paper explores the local community's attitudes regarding the challenges to the sustainability of the marine ecosystem, the use of marine resources, and the preservation of marine biodiversity. A survey of local community members was conducted on the role of education and cooperation in sustainable development and the importance of connecting science with the community for preserving, protecting, and conserving marine biodiversity, using the example of Split (Croatia) and its surroundings. The results confirm the importance of education in achieving sustainable development and raising environmental awareness. They also show the necessity of integrating ecology into education and protecting the marine environment. Furthermore, the results indicate the importance of responsible behavior and connecting science with the community in achieving sustainable development. The research revealed that respondents perceive the importance of achieving the SDGs related to the sustainable use of the sea and marine resources, climate change, and strengthening partnerships for sustainable development.
- **Keywords:** marine ecosystem, sustainable development, education, biodiversity, local community

# Introduction

- Oceans and marine biodiversity are vital in creating well-being for communities worldwide.
- Biodiversity helps in the sustainability of the marine ecosystem and the fight against climate change.
- The actions of individuals and groups are increasingly endangering natural habitats in the marine environment, with an evident decline in plant and animal species.



*The sea, the great unifier, is man's only hope. Now, as never before, the old phrase has a literal meaning: we are all in the same boat.*  
Jacques Yves Cousteau

# Oceans

- Oceans cover 71 percent of the planet and are home to 80 percent of life on Earth.
- Oceans are fragile ecosystems threatened by massive overfishing and pollution.
- By 2050, world oceans could contain more plastic than fish.

Source:

<https://www.theworldcounts.com/challenges/planet-earth/oceans>

Photo of the Earth: A photograph of Earth taken by the crew of Apollo 17 in 1972. A processed version became widely known as The Blue Marble. Available from: <https://en.wikipedia.org/wiki/Earth>



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Source: [https://www.youtube.com/watch?v=571sT5s\\_5go](https://www.youtube.com/watch?v=571sT5s_5go)



# Introduction

- The sustainable development of the marine ecosystem requires the responsible behavior of all community members, where the level of environmental awareness is crucial.
- Raising ecological awareness and promoting the sustainable development of the marine ecosystem can be achieved through education and cooperation while connecting science and researchers with the entire community.
- The growth of knowledge and awareness about biodiversity represents the foundation and path for the sustainable development of the ecosystem.



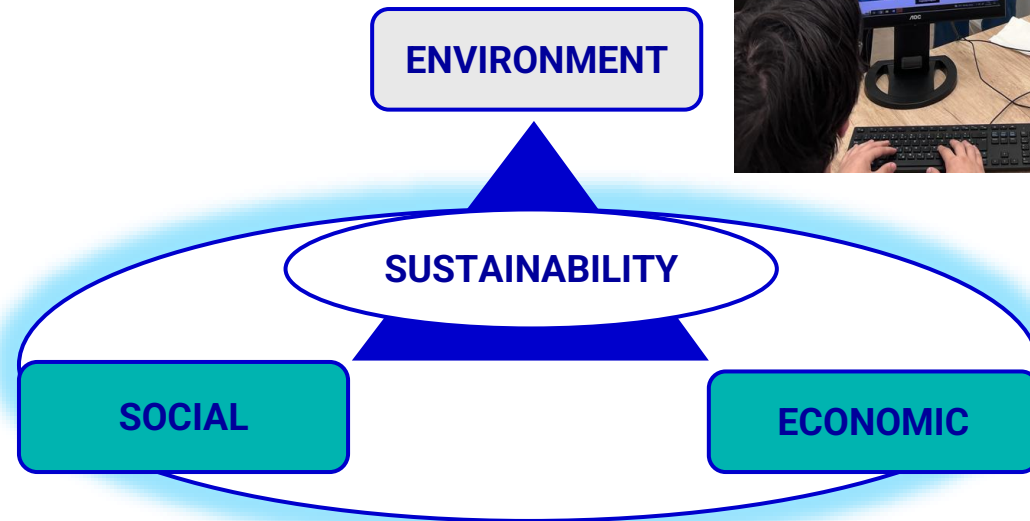
**Ecology** is the study of the environment and helps us understand how organisms live with each other in unique physical environments.

<https://education.nationalgeographic.org/resource/ecology/>

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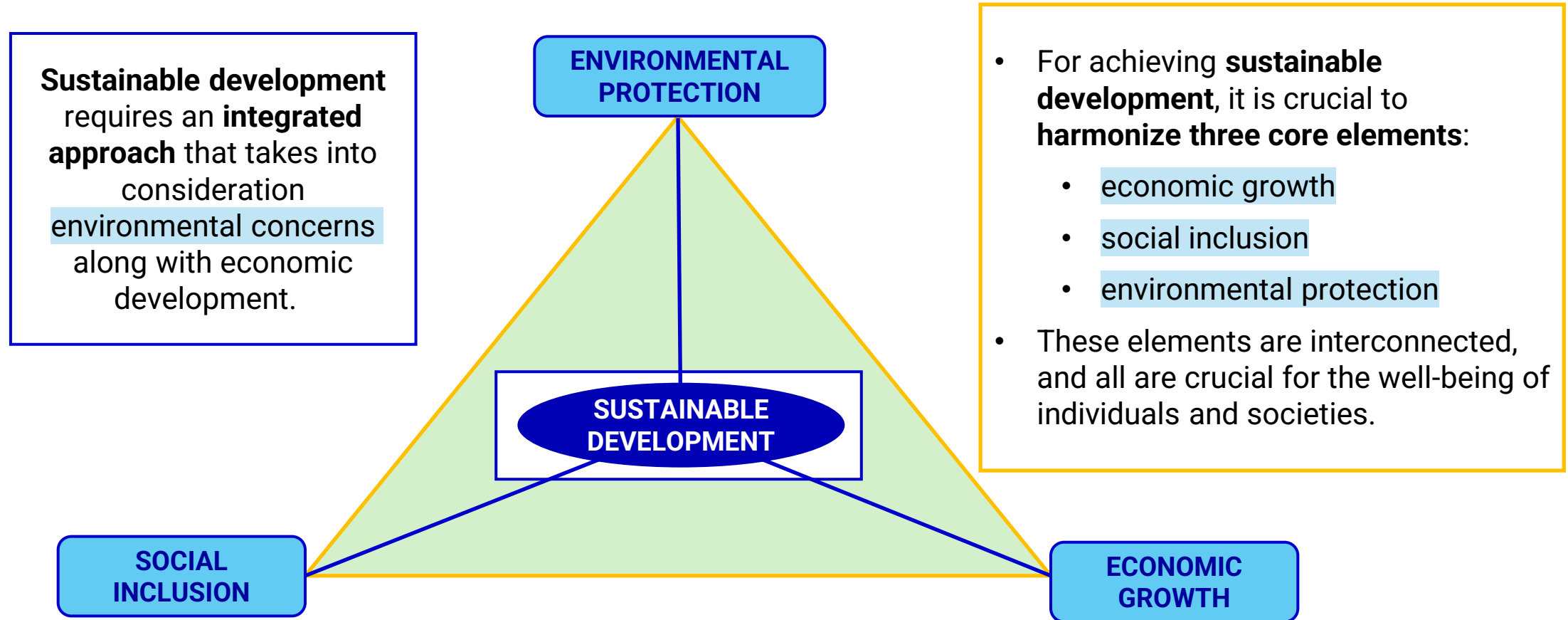
# Sustainable development

- “Development that meets the needs of the present without compromising the ability of future generations to meet their own needs.”
- *Our Common Future (final report), the “Brundtland Commission” United Nations*
- Sustainable development seeks to reconcile economic development with social and environmental balance protection.



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# Sustainable development



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# Sustainable development: Sustainable Development Goals (SDGs)

- The 2030 Agenda for Sustainable Development, adopted by all United Nations Member States in 2015, provides a shared blueprint for peace and prosperity for people and the planet, now and into the future.
- At its heart are the **17 Sustainable Development Goals (SDGs)**, which are an urgent call for action by all countries - developed and developing - in a global partnership.
- SDGs recognize that ending poverty and other deprivations must go together with strategies that improve health and education, reduce inequality, and spur economic growth – **all while tackling climate change and working to preserve our oceans and forests.**

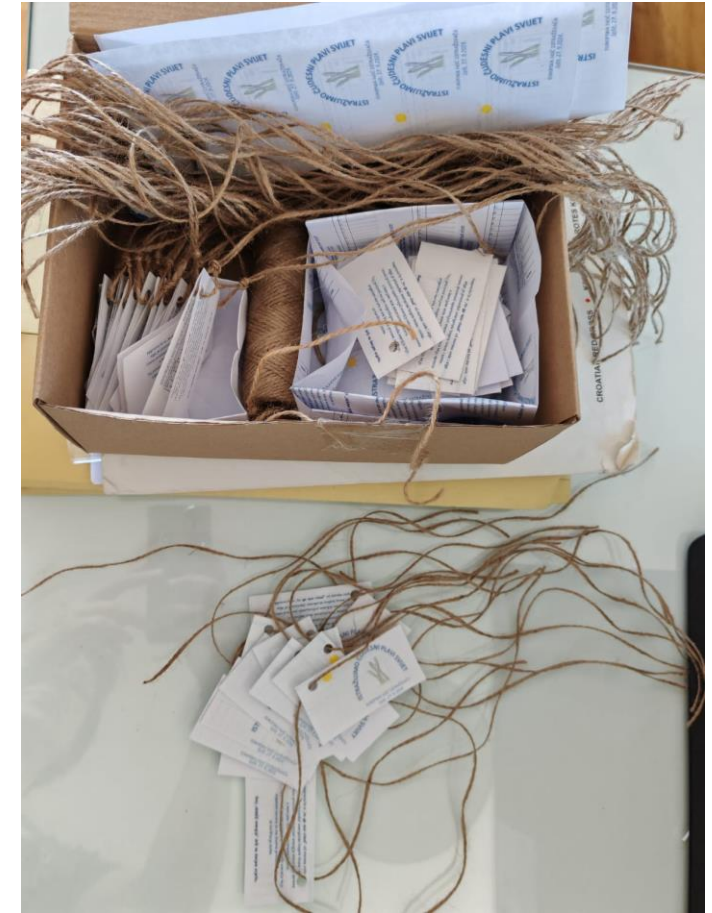


Source: United Nations Sustainable Development Goals,  
<https://sdgs.un.org/goals#goals>

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# Methodology

- The research explores the local community's attitudes regarding the challenges to the sustainability of the marine ecosystem, the use of marine resources, and the preservation of marine biodiversity.
- A survey of local community members was conducted on the role of education and cooperation in sustainable development and the importance of connecting science with the community for protecting and conserving marine biodiversity.
- Method: Survey (online), Questionnaire (research instrument), 5-point Likert Scale (1 - *Totally disagree*, 5 - *Totally agree*), and open questions
- Sample: Local population in the City of Split and the surrounding area
- N=188



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# Results

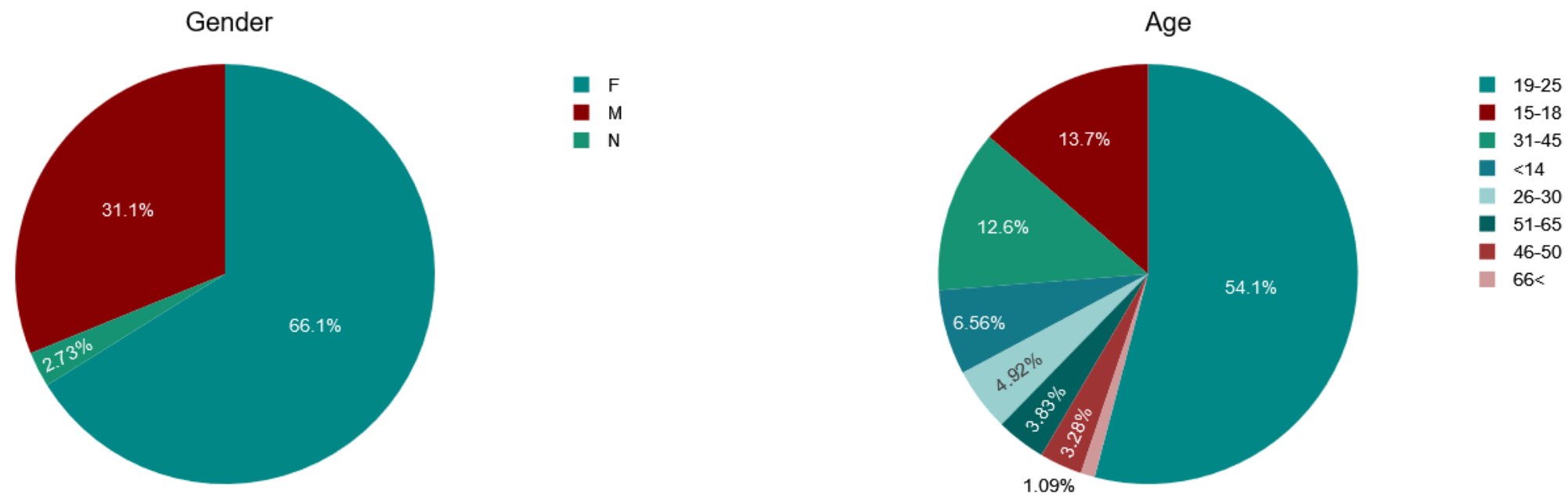


Figure 1. Respondent's gender, age group

# Results

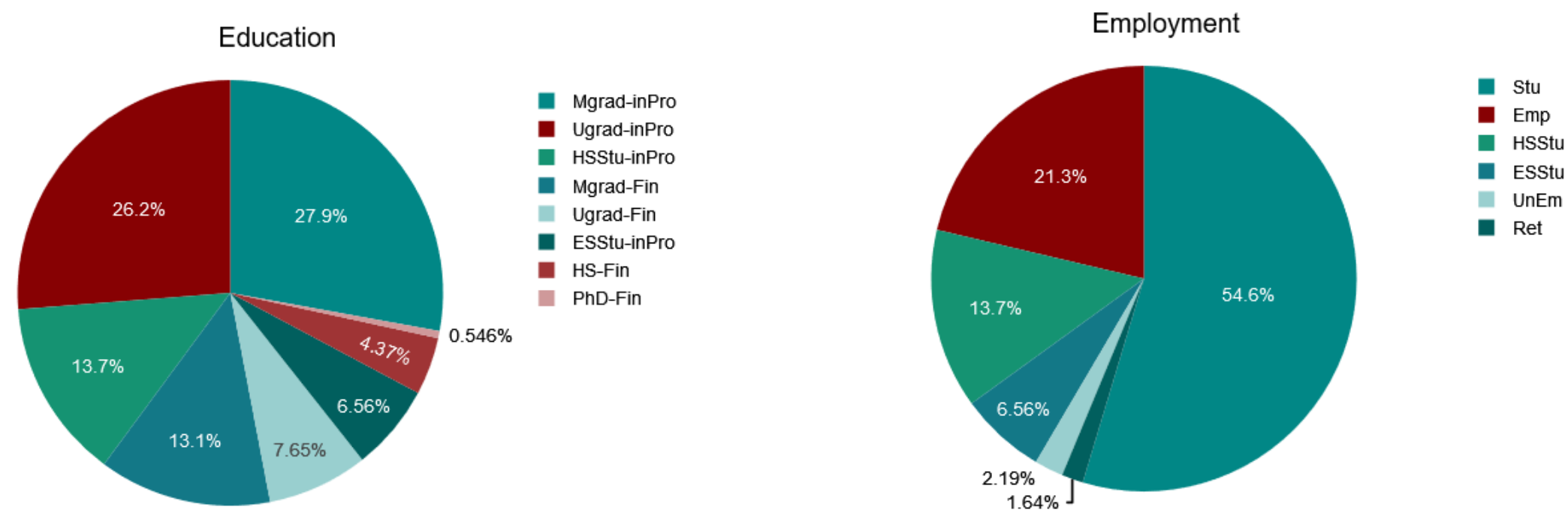
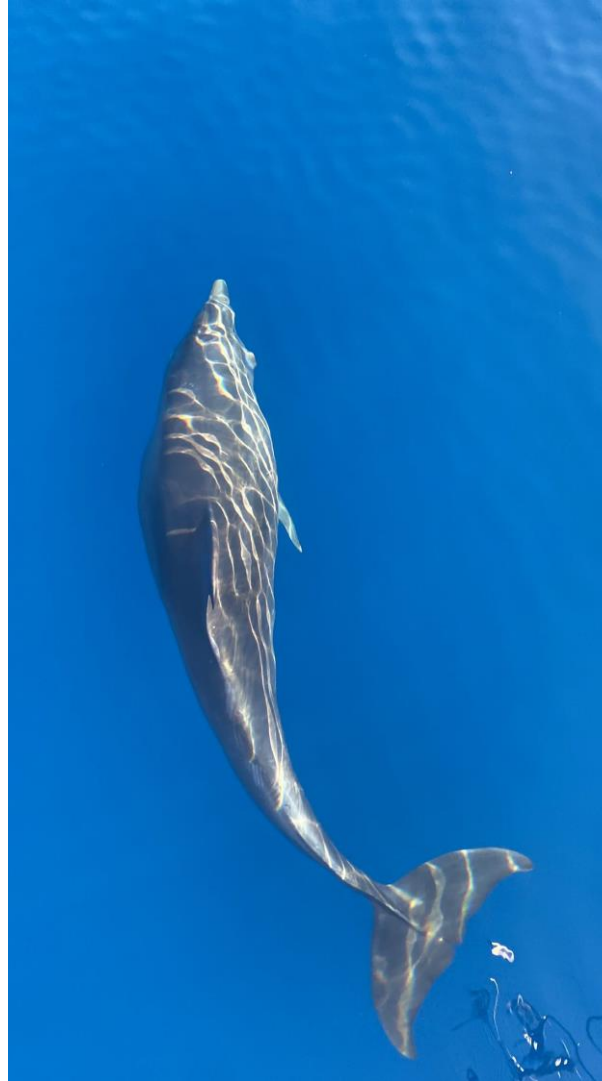


Figure 2. Respondent's education, employment

# The Blue Life

- Source of life
- Life in the broadest sense; Survival
- Marine ecosystem
- A marine ecosystem rich in life that needs to be preserved
- Life by the sea
- Life in the oceans
- Sea, marine organisms
- Sea, fish, animal world, health, cleanliness
- Sea, Purity, Air, Fish



- Fish, sea, seaweed, shells
- All organisms in the marine environment (all blue organisms and those that feel blue)
- Plants and animals in the sea
- Sea, fish, islands, life
- Biodiversity, education, sea
- The key to the survival of the sea and organisms in the sea
- Cleanliness, beach, nature, sustainable development, sea

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# The Blue Life

- Cleanliness and preservation of the environment and life
- Environmental protection, marine life
- Sustainable development, blue growth, future
- Protection of the sea, ocean, water, and life in it, protection of the quality of our life and health
- Conservation of biodiversity, especially marine life



- Caring for the sea
- Caring for the environment and improving the quality of life through rational use of marine resources
- Sustainable harmony between man and nature
- Our life, past, and future
- Blue life is a miracle, a mystery, and a danger but also an excitement; It is my passion and my inspiration

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# Results



|                | ConSciEduLoCo<br>BLSD | ReBeAlCoMeBL<br>SD | EduBLSD/MarE<br>cSys | EcoEnvEduInclA<br>lLevEdu | EnvAwerCamPB<br>LSD |
|----------------|-----------------------|--------------------|----------------------|---------------------------|---------------------|
| Mean           | 4,35                  | 4,63               | 4,4                  | 4,4                       | 4,51                |
| Std. Deviation | 0,7                   | 0,62               | 0,69                 | 0,71                      | 0,62                |
| Variance       | 0,49                  | 0,39               | 0,48                 | 0,5                       | 0,38                |
| Minimum        | 2                     | 2                  | 2                    | 2                         | 2                   |
| Maximum        | 5                     | 5                  | 5                    | 5                         | 5                   |
| Skew           | -0,71                 | -1,74              | -1,02                | -0,94                     | -1,16               |
| Kurtosis       | -0,31                 | 3,01               | 0,92                 | 0,28                      | 1,63                |

- **ConSciEduLoCoBLSD** - Connecting science and education with the local community is vital for BLSD (Blue Life Sustainable Development)
- **ReBeAlCoMeBLSD** - Responsible behavior of all community members is vital for BLSD
- **EduBLSD/MarEcSys** - Education is essential for the BLSD/marine ecosystem
- **EcoEnvEduInclAllLevEdu** - Ecology /environmental education should be included in all levels of education
- **EnvAwerCamPBLSD** - Environmental awareness campaigns are vital for BLSD

# Results



|                | BioDivMarEcoSys<br>SD | BioDivHelFighClim<br>Cha | OceProvKeyNatRe<br>sVitRoISD | ClimChThreMarEn<br>v BioDiv |
|----------------|-----------------------|--------------------------|------------------------------|-----------------------------|
| Mean           | 4,49                  | 4,4                      | 4,35                         | 4,46                        |
| Std. Deviation | 0,69                  | 0,77                     | 0,65                         | 0,74                        |
| Variance       | 0,47                  | 0,59                     | 0,43                         | 0,55                        |
| Minimum        | 2                     | 2                        | 3                            | 1                           |
| Maximum        | 5                     | 5                        | 5                            | 5                           |
| Skew           | -1,29                 | -1,12                    | -0,5                         | -1,81                       |
| Kurtosis       | 1,54                  | 0,57                     | -0,69                        | 4,83                        |

- **BioDivMarEcoSysSD** - Biodiversity is vital to the sustainability of the marine ecosystem
- **BioDivHelFighClimCha** - Biodiversity helps fight climate change and mitigate natural disasters
- **OceProvKeyNatResVitRoISD** - Oceans provide key natural resources to society and play a vital role in sustainable development
- **ClimChThreMarEnv BioDiv** - Climate change significantly threatens the marine environment and biodiversity

# Results



|                | GovBussSuppSciEdu-<br>PrInAwC-SUCP-<br>OcMarResBiDi | SDG4-SDBL | SDG14-SDBL | SDBL-SDG17 |
|----------------|-----------------------------------------------------|-----------|------------|------------|
| Mean           | 4,52                                                | 4,57      | 4,61       | 4,5        |
| Std. Deviation | 0,61                                                | 0,62      | 0,62       | 0,67       |
| Variance       | 0,37                                                | 0,39      | 0,38       | 0,45       |
| Minimum        | 2                                                   | 3         | 2          | 2          |
| Maximum        | 5                                                   | 5         | 5          | 5          |
| Skew           | -1,05                                               | -1,18     | -1,47      | -1,23      |
| Kurtosis       | 0,83                                                | 0,3       | 1,69       | 1,18       |

- **GovBussSuppSciEdu-PrInAwC-SUCP-OcMarResBiDi** - Governments and businesses worldwide should support science and education projects, initiatives, and awareness campaigns for sustainable use, conservation, and protection of oceans, marine resources, and biodiversity
- **SDG4-SDBL** - Ensuring inclusive and equitable quality education and promoting lifelong learning opportunities for all is vital for the sustainable development of the "blue life" (SDG 4)
- **SDG14-SDBL** - Conservation and sustainable use of oceans, seas, and marine resources are high priorities for sustainable development (SDG 14).
- **SDBL-SDG17** - Sustainable development requires strengthening local and global partnerships (SDG 17)

# Results

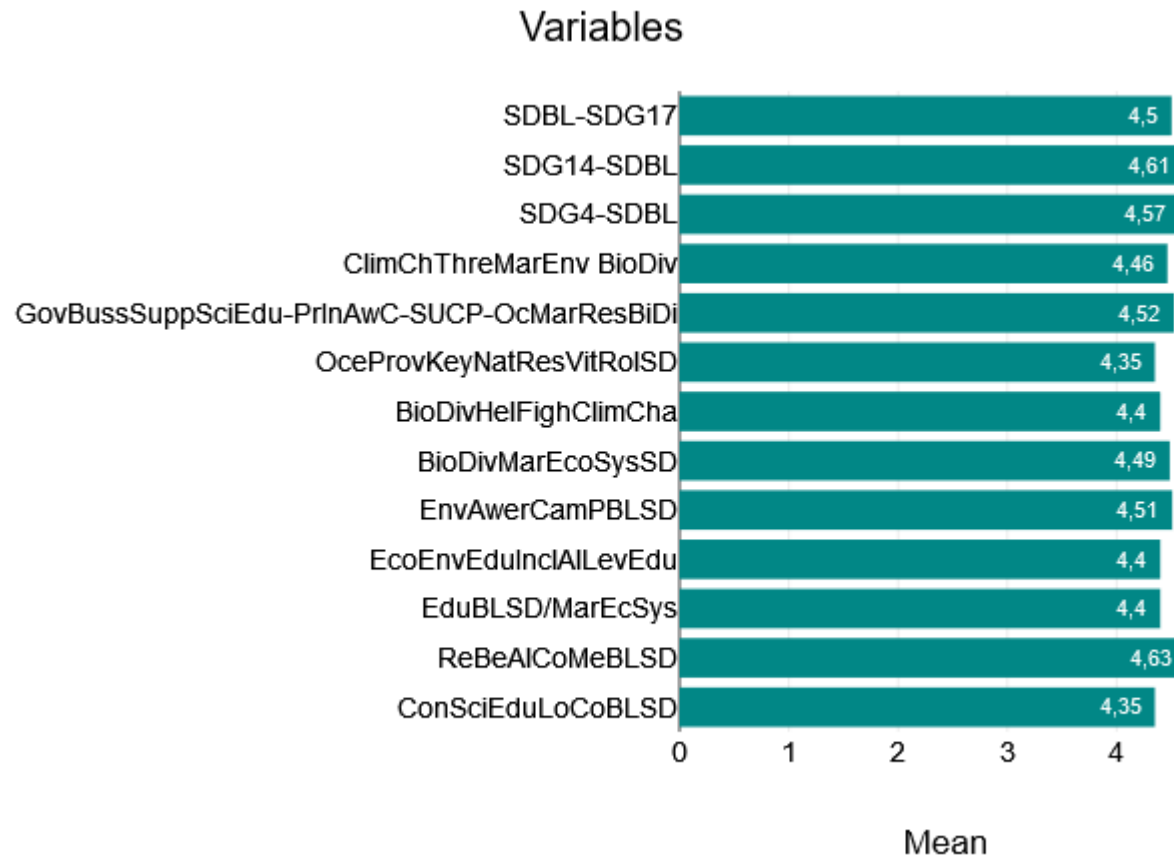


Figure 3. Variables

(1 - Totally disagree, 5 - Totally agree)



THE BLUE LIFE



# Conclusion

- Results of this research
  - confirm the importance of education in achieving sustainable development and raising environmental awareness.
  - show the necessity of integrating ecology into education and protecting the marine environment.
  - indicate the importance of responsible behavior and connecting science with the community in achieving sustainable development.
  - revealed that respondents perceive the importance of achieving the SDGs related to the sustainable use of the sea and marine resources, climate change, and strengthening partnerships for sustainable development.

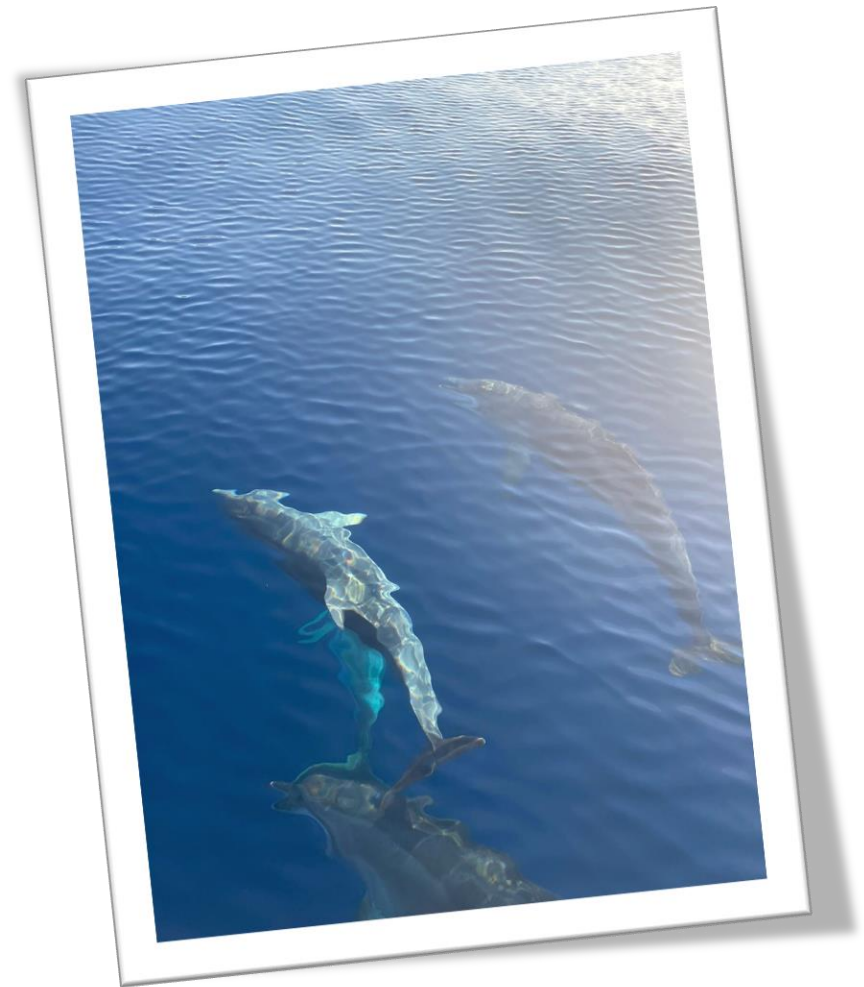




# THANK YOU

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