

Dear respondent,

This survey aims to elicit the attitudes of Estonian residents towards different development options of the shallow marine areas north of Hiiumaa island. This survey is part of the international project GES-REG (*Good Environmental Status through REGional cooperation and development*), managed by Stockholm Environmental Institute Tallinn Centre (SEI Tallinn). Your contribution is important since it will be considered by policy makers while taking decisions on how to further develop these marine areas. Your answers will be handled confidentially and the contributions will be used in an aggregated form only.

It will take approximately 30-40 minutes to complete the survey.

Thank you for your time!

Hiiumaa is the second largest island in Estonia. The marine area north of Hiiumaa includes four shoals, which are of particular interest for this survey. On the one hand they provide environmentally valuable habitats for marine wildlife, and birds in particular. On the other hand, these shallow sea areas provide favourable wind conditions that make them suitable for producing off-shore wind energy.

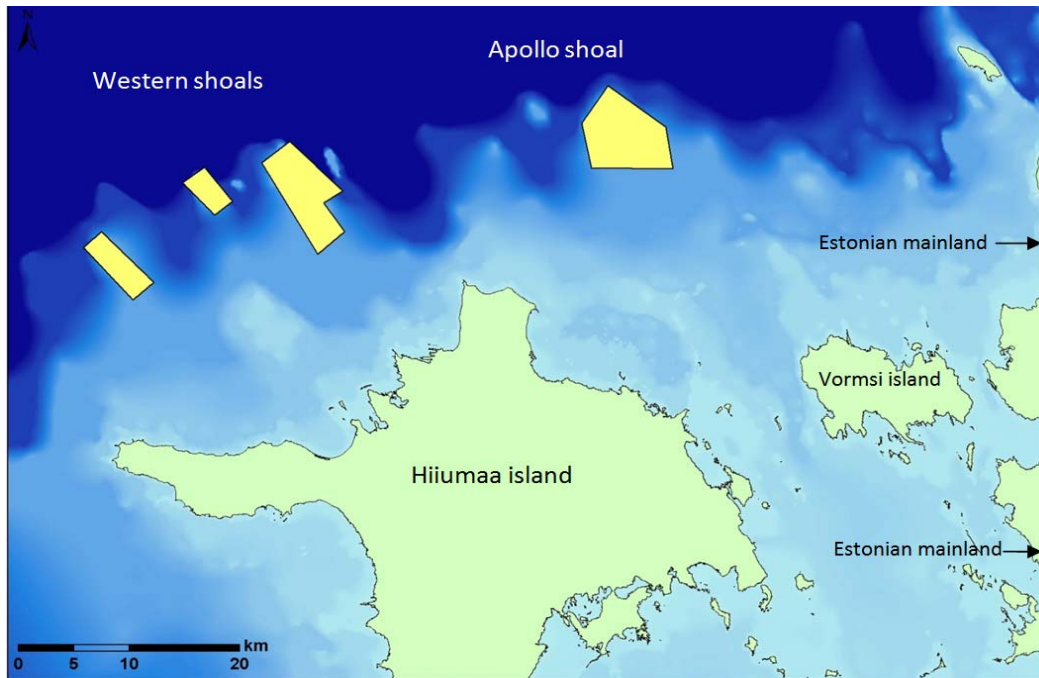
1. Have you ever been to Hiiumaa?

- ☐ Yes
- ☐ No

In this survey we would like to present you the information about alternative development options of these areas and would also ask for your opinion about how these marine areas should be developed in the future.

HIIUMAA SHOALS

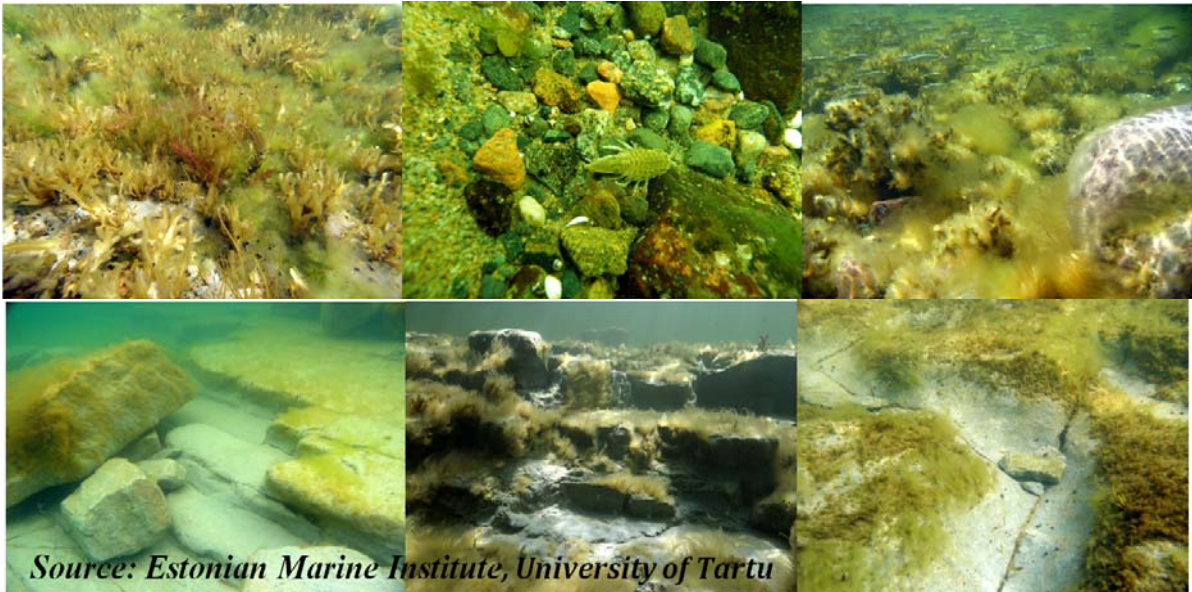
There are four major shoals north of Hiiumaa. Their location is illustrated on the following map.



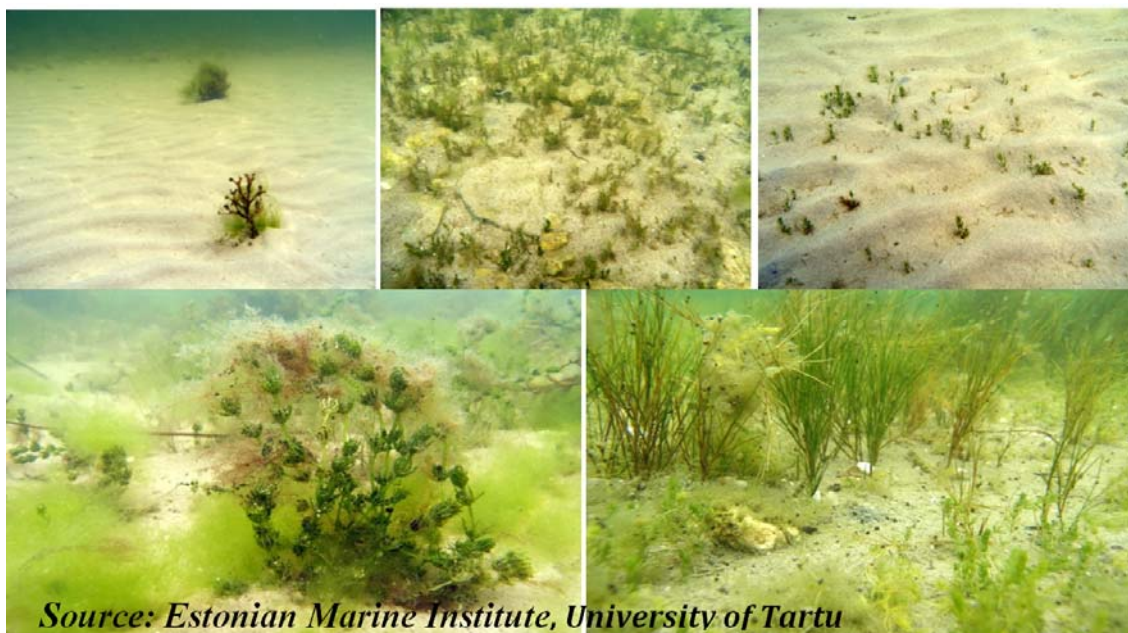
Later in the survey we will refer to the three shoals situated to the north-west of Hiiumaa as “**Western**” shoals, and the shoal situated north-east of Hiiumaa – **Apollo** shoal.

There are ecologically valuable reef and sandbank habitats presented on some areas of the bottoms of Hiiumaa shoals. Reef habitats are very rare in the Baltic and they are biodiversity hot spots, because stony bottom provides opportunity for rich animal and plant life. Shallow water sandbanks are important sites for water birds' feeding. Both reef and sandbanks habitats are represented on both of the shoals, but there are relatively more sandbank habitats on Apollo shoal (8% of the area of the shoal) and reef habitats on Western shoal (30% of the area of the shoals).

The two pictures below illustrate how reefs and sandbanks bottom habitats look like.

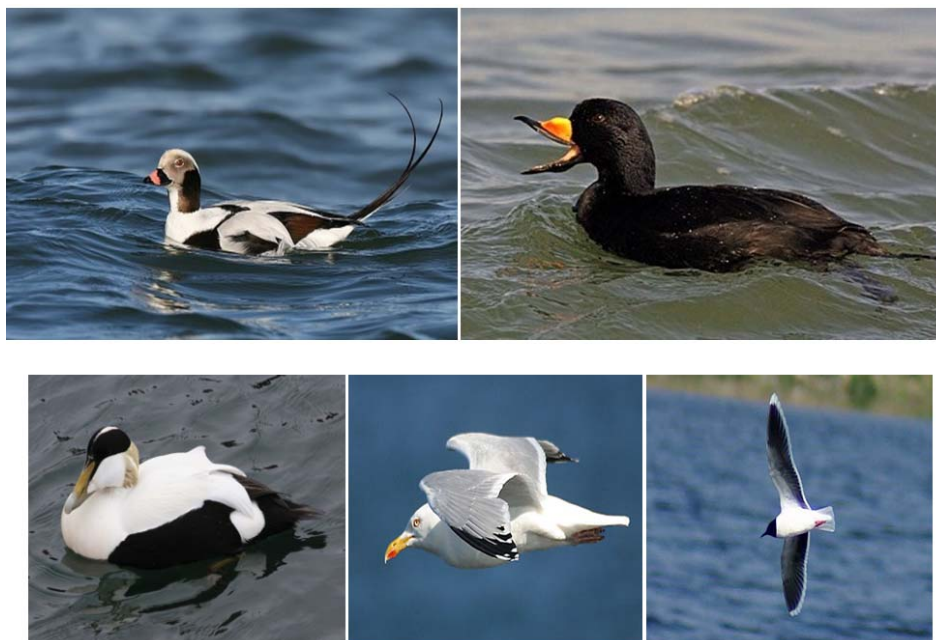


Reef habitat



Sandbank habitat

The shoals and the diversity of wildlife in these habitats is perfect for birds foraging, because there is more food available on the shoals. In addition, the shoals are usually ice-free in the winter, and thus migrating birds can use the areas for their staging and overwintering. As a result, the Hiiumaa shoals is a good habitat for at least ten different species of birds, e.g., Long-tailed Duck, Common Scoter, Common Eider, Herring and Little Gull.



From left to right, upper row: Long-tailed Duck, Common Scoter; lower row: Common Eider, Herring Gull and Little Gull

The most important shoal from the birds perspective is the Apollo shoal, where seven out of ten species of birds using the Hiiumaa shoals are present, including highest numbers of Long-tailed Ducks. The Long-tailed Duck comes to the Baltic Sea for overwintering from the northern Russia and stays in the areas of Gulf of Finland, Gulf of Riga, Northern and Southern Baltic Proper. It is the most numerous wintering water bird in Estonia, especially in North Estonia and the ice-free waters of Hiiumaa and Saaremaa.

During the period of 1993-2007 the number of wintering Long-tailed Ducks in the Baltic Sea region decreased by 65% and that is why it is important to protect their wintering habitats. Therefore it was also proposed that the Apollo shoal could possibly be developed differently from the Western shoals, in order to protect its bottom and bird habitats.

2. Have you heard prior to this survey that the Hiiumaa shoals have valuable habitats on their bottom?

- ☐ Yes
- ☐ No

3. Have you heard prior to this survey that the Hiiumaa shoals are important staging, foraging and wintering areas for migratory birds?

- ☐ Yes
- ☐ No

4. Have you heard prior to this survey that the Apollo shoal is particularly important for the Long-tailed Duck?

- ☐ Yes
- ☐ No

Currently, the Hiiumaa shoals are almost not disturbed by any economic activity. Due to their remote location the shoals are not used for leisure activities. Fish trawling is limited on the most areas of the shoals and there is not much shipping in the area. As a result, the area has retained its good ecological status and continues to be a valuable marine habitat.

Despite of the good ecological status and importance for birds, the shoals are not currently being protected as a marine protected area. This means that the state of the ecosystem is not systematically monitored and there are no restrictions to economic use, including leisure activities on the shoals. In addition, it is possible that these areas will be used economically in the future, which means that some construction or excavation activities could take place in the future and disturbance of ecosystems might occur.

In this study we would like to find out what are **your** preferences for the future use and development of the Hiiumaa shoals. The possibilities may include establishing a marine protected area, building a wind park or leaving the area unchanged as it is now.

In the remainder of the survey we will describe all possible options and explain what they entail. Since there may be costs associated with different development options, and these costs would need to be covered from everyone's taxes or other payments, we would like you to consider the different options and later choose the ones which you consider the best, provided the increased cost to your household.

POSSIBLE DEVELOPMENT OPTIONS FOR THE HIIUMAA SHOALS

1. ESTABLISHMENT OF MARINE PROTECTED AREAS (MPA)

Approximately 27% of marine waters in Estonia are under some form of limited use, where the use of marine waters (e.g. fishing, excavation or the installation of wind turbines) is restricted or limited. On the other hand, the protection enables to save unique marine ecosystems and habitats, or protect them from disturbance, caused by human activity.

It was proposed that the Apollo shoal, which is considered to be ecologically highly valuable, could become a marine protected area, while the Western shoals could come into economic use in some other way. According to proposal, the marine protected area would mean that only construction and excavation activity would be prohibited there. As a result, the habitats will be maintained and the marine mammals, birds and fish could continue to thrive in these areas.

Alternatively, it is possible to include all the four shoals into the Estonian marine protected areas, ensuring that all the ecosystems are preserved.

Establishing of new marine protected areas, however, requires that the cost of management and monitoring are paid. They would be covered from the general taxes every household in Estonia pays.

5. Have you heard prior to this survey that there has been a proposal to create marine protected area on Apollo shoal?

- ☐ Yes
- ☐ No

6. In general, do you think we should protect marine waters in Estonia?

- ☐ Yes,
- ☐ No
- ☐ Do not know

7. Currently 27% of Estonian marine areas have some kind of limitations to use. Do you think this is enough?

- ☐ It is too much
- ☐ It is about right
- ☐ It is too little
- ☐ Do not know

8. Are you in favour of establishment of marine protected area on Hiiumaa shoals?

- ☐ Yes, on all of the shoals
- ☐ Yes, only on Apollo shoal
- ☐ Yes, only on Western shoals
- ☐ No
- ☐ Do not know

2. BUILDING A WIND PARK (WP)

Currently, the basic material for electricity production is oil shale. The use of oil shale for electricity production leads to different environmental problems (like storage of dangerous waste, CO₂ and other emissions, pollution of water, the falling of the level of ground water during the oil shale extraction and other). Due to the use of oil shale Estonian economy needs more resources in comparison to other EU countries. For each produced unit of GDP three times more resources is consumed in comparison to EU average.

In order to produce electricity without damage to environment it is possible to use renewable energy sources such as wind and solar energy, instead of oil shale. The use of renewable energy is in accordance with the climate and energy policy of EU, which has the goal of 25% of final energy consumption from renewable energy sources by 2020. Estonia has already achieved this goal in 2011, when already 26% of consumed energy in Estonia originated from renewable energy sources.

Currently, the energy, generated from renewables is more expensive in comparison to energy generated by the oil shale plants due to high investment costs. In order to promote the use of renewable energy sources such as wind, and to achieve the EU targets, the energy from such sources is subsidized via taxing of energy consumption. This subsidy takes a form of an additional payment in consumers' monthly electricity bills.

9. To what extent do you agree or disagree with the following statements:

| | Definitely agree | Rather agree | Neither agree / nor disagree / do not know | Rather disagree | Definitely disagree |
|--|------------------|--------------|--|-----------------|---------------------|
| There is already enough renewable energy consumed from renewable (26% of final energy consumption) | | | | | |
| I am in favour of the EU targets for renewable energy sources | | | | | |
| The production of renewable energy should be supported in Estonia | | | | | |
| The wind energy production should be supported by consumers as today | | | | | |
| Production of other types of renewable energy should be supported, but not the wind energy | | | | | |
| We should use oil shale potential as a priority for energy and electricity production | | | | | |

One of the possible sources of renewable energy that could be further expanded is wind energy. However, there are typically problems with building windmills on-shore due to resistance of local communities. Lack of feasible sites has led to consider wind energy production off-shore. Currently, there are no operating off-shore wind parks in Estonia, though there are several projects under development.

One of such projects is the establishment of a wind park on Hiiumaa shoals. The wind turbines could be situated on the all of the four shallow areas (Western shoals and “Apollo”). The wind park would be situated at least 12 km from the shore and is expected to be seen with clear weather from the Northern and North-Western Hiiumaa and the Vormsi island.

In total approximately 200 wind turbines are designed to be erected on all of the shoals. Establishment of such a wind park would increase Estonian energy security - the total intended yearly electricity production would be equivalent to approximately 22% of total electricity production of Estonia in 2011.

The construction of the wind park would start in 2017 and would last for three years. The construction of the wind park would involve new jobs for 100 - 200 people. Operating the wind park would create 10 - 20 jobs. Some of vacancies could be covered by local people, other would require professionals from the other parts of Estonia and Europe.

Construction of the wind park would cause some temporary but major pressures on the marine environment of Hiiumaa shoals. This means that bottom habitats would be strongly affected during construction; marine mammals, fish and birds would be disturbed. During the wind park operation phase, the impact on marine life is unclear, but it would be definitely less than during the construction phase. The usage of the shoals by birds would still be limited.

The installation of the wind park would be done by a private company. However, due to the fact that renewable energy is subsidized in Estonia, everyone would have to pay a share of these costs (e.g. in the form of increased electricity bill). Due to a number of reasons (e.g. free electricity market, the upper limit of subsidies) it is however unclear how much electricity price would increase.

10. Are you in favour of establishment of Hiiumaa wind park?

- ☐ Yes, on all of the shoals
- ☐ Yes, only on Apollo shoal
- ☐ Yes, only on Western shoals
- ☐ No
- ☐ Do not know

3. ENVIRONMENTALLY FRIENDLY WIND PARK (ECO-WP)

Another possibility of developing the Hiiumaa shoals is to build an environmentally friendly wind park, where the negative effects on environment are minimized. The wind turbines would be located on the areas, where the valuable bottom habitats are not presented, which would allow to save them. The number of wind turbines would decrease while the power capacity of each turbine would increase allowing to produce the same amount of electricity as in wind park (WP) option and expand the space for birds. The producer would use the best available techniques in order to minimize the effects on environment both during construction and operation phase.

Requirements to reduce to the minimal the environmental impacts make this option more expensive compared to the Wind Park (WP) or Marine Protected Area (MPA) options.

11. Are you in general in favour of establishment of environmentally friendly wind park on Hiiumaa shoals?

- ☐ Yes, on all of the shoals
- ☐ Yes, only on Apollo shoal
- ☐ Yes, only on Western shoals
- ☐ No
- ☐ Do not know

4. STATUS QUO IS MAINTAINED (NO CHANGE)

Finally, it is possible not to introduce any changes to neither to Western, nor Apollo shoals. This alternative means that for now everything would remain as it is now, however, it is possible that the area would be developed in some way in the future.

This alternative entails no additional costs to you, or any other household in Estonia.

THE FUTURE SCENARIOS FOR THE HIIUMAA SHOALS

In what follows we would like to present you with 12 choice situations which describe the alternative development options for Hiiumaa shoals and ask you to choose the option that you prefer.

Since the Apollo shoal may be considered different from the other shoals, the scenarios describe the development of the Apollo shoal and the Western shoals separately. For each of them the possible development options were indicated as:

- No change – Status Quo is maintained
- MPA – establishing of the marine protected area
- WP – building a wind park
- ECO-WP– building an ‘environmentally friendly’ wind park

Take an example of the following choice task, where we ask you to choose between alternative A and B (question 12). You are asked here to choose between the options, that the ecological wind-park would be developed on all the four shoals (Alternative A) and Alternative B, which implies that Apollo shoal is taken under protection, guaranteeing that no changes would appear there and Western shoals would remain unprotected, and no wind turbines would be built there now. In addition, you can choose an option of Status Quo, which implies no changes for any of the shoals.

An important thing to consider in your choices is the cost associated with each alternative. This cost is an increase in the amount of taxes or electricity bill your household would have to pay annually. The Alternative A would cost you 10 EUR per year and Alternative B – 5 EUR per year. Choosing Status Quo does not cost you anything.

12. CHOICE TASK (EXAMPLE). *Please choose the alternative which is the most preferable for you:*

| | Status quo | Alternative A | Alternative B |
|--|------------|---------------|---------------|
| Apollo shoal | No change | ECO-WP | MPA |
| Western shoals | No change | ECO-WP | No change |
| Cost to your household (EUR per year) | 0 | 10 | 5 |
| YOUR CHOICE | | | |

Please consider each choice situation carefully. The costs may vary in different choice tasks – please select the alternative which you personally find the most preferable, given the

associated cost your household would have to pay annually. Please take into account that the money paid, will decrease your annual disposable income and you might want to use it for some other purposes. If you are not sure your household would like or can afford to pay an indicated amount (5 or 10 EUR in case of the example choice card) – select the Status Quo alternative, which costs you nothing.

When making a choice please take into account the fact, that in addition to the local impacts, the installation of wind park will have impacts for Estonia as a whole (energy security, electricity price).

CHOICE TASKS

Click on each scenario to see it again

No change – Status Quo is maintained

MPA – establishing of the Marine Protected Area

WP – building a Wind Park

ECO-WP– building an ‘environmentally friendly’ wind park

13-1. CHOICE TASK 1. Please choose the alternative which is the most preferable for you:

| | Status quo | Alternative A | Alternative B |
|--|------------|---------------|---------------|
| Apollo shoal | No change | WP | MPA |
| Western shoals | No change | No change | ECO-WP |
| Cost to your household (EUR per year) | 0 | 10 | 5 |
| YOUR CHOICE | | | |

13-2. CHOICE TASK 2. Please choose the alternative which is the most preferable for you:

| | Status quo | Alternative A | Alternative B |
|--|------------|---------------|---------------|
| Apollo shoal | No change | ECO-WP | MPA |
| Western shoals | No change | ECO-WP | No change |
| Cost to your household (EUR per year) | 0 | 20 | 2 |
| YOUR CHOICE | | | |

13-3. CHOICE TASK 3. Please choose the alternative which is the most preferable for you:

| | Status quo | Alternative A | Alternative B |
|--|------------|---------------|---------------|
| Apollo shoal | No change | No change | WP |
| Western shoals | No change | ECO-WP | No change |
| Cost to your household (EUR per year) | 0 | 2 | 10 |
| YOUR CHOICE | | | |

13-4. CHOICE TASK 4. Please choose the alternative which is the most preferable for you:

| | Status quo | Alternative A | Alternative B |
|--|-------------------|----------------------|----------------------|
| Apollo shoal | No change | WP | No change |
| Western shoals | No change | WP | MPA |
| Cost to your household (EUR per year) | 0 | 5 | 5 |
| YOUR CHOICE | | | |

13-5. CHOICE TASK 5. Please choose the alternative which is the most preferable for you:

| | Status quo | Alternative A | Alternative B |
|--|-------------------|----------------------|----------------------|
| Apollo shoal | No change | No change | ECO-WP |
| Western shoals | No change | WP | MPA |
| Cost to your household (EUR per year) | 0 | 10 | 5 |
| YOUR CHOICE | | | |

13-6. CHOICE TASK 6. Please choose the alternative which is the most preferable for you:

| | Status quo | Alternative A | Alternative B |
|--|-------------------|----------------------|----------------------|
| Apollo shoal | No change | MPA | WP |
| Western shoals | No change | No change | ECO-WP |
| Cost to your household (EUR per year) | 0 | 10 | 10 |
| YOUR CHOICE | | | |

13-7. CHOICE TASK 7. Please choose the alternative which is the most preferable for you:

| | Status quo | Alternative A | Alternative B |
|---------------------|-------------------|----------------------|----------------------|
| Apollo shoal | No change | MPA | ECO-WP |

| | | | |
|--|-----------|--------|-----------|
| Western shoals | No change | ECO-WP | no change |
| Cost to your household (EUR per year) | 0 | 2 | 20 |
| YOUR CHOICE | | | |

13-8. CHOICE TASK 8. Please choose the alternative which is the most preferable for you:

| | Status quo | Alternative A | Alternative B |
|--|-------------------|----------------------|----------------------|
| Apollo shoal | No change | WP | WP |
| Western shoals | No change | MPA | WP |
| Cost to your household (EUR per year) | 0 | 20 | 2 |
| YOUR CHOICE | | | |

13-9. CHOICE TASK 9. Please choose the alternative which is the most preferable for you:

| | Status quo | Alternative A | Alternative B |
|--|-------------------|----------------------|----------------------|
| Apollo shoal | No change | MPA | MPA |
| Western shoals | No change | WP | MPA |
| Cost to your household (EUR per year) | 0 | 20 | 2 |
| YOUR CHOICE | | | |

13-10. CHOICE TASK 10. Please choose the alternative which is the most preferable for you:

| | Status quo | Alternative A | Alternative B |
|--|-------------------|----------------------|----------------------|
| Apollo shoal | No change | ECO-WP | No change |
| Western shoals | No change | WP | WP |
| Cost to your household (EUR per year) | 0 | 2 | 20 |
| YOUR CHOICE | | | |

13-11. CHOICE TASK 11. Please choose the alternative which is the most preferable for you:

| | Status quo | Alternative A | Alternative B |
|--|-------------------|----------------------|----------------------|
| Apollo shoal | No change | ECO-WP | No change |
| Western shoals | No change | No change | ECO-WP |
| Cost to your household (EUR per year) | 0 | 5 | 20 |
| YOUR CHOICE | | | |

13-12. CHOICE TASK 12. Please choose the alternative which is the most preferable for you:

| | Status quo | Alternative A | Alternative B |
|--|-------------------|----------------------|----------------------|
| Apollo shoal | No change | No change | ECO-WP |
| Western shoals | No change | MPA | ECO-WP |
| Cost to your household (EUR per year) | 0 | 5 | 10 |
| YOUR CHOICE | | | |

**14. To what extent do you agree or disagree with the following statements,
about the choice tasks?**

| | Definitely agree | Rather agree | Neither agree nor disagree / do not know | Rather disagree | Definitely disagree |
|--|---------------------|--------------|--|--------------------|------------------------|
| I can't afford to pay | | | | | |
| I do not want the wind park be located near Hiiumaa | | | | | |
| I believe it is possible to create wind park which has minimal impact on environment | | | | | |
| I care about environment | | | | | |
| I find questions, related to renewable energy important | | | | | |
| There is enough information in the questionnaire to make the choice | | | | | |
| The topic of questionnaire is not important to me | | | | | |
| I believe the money will be used for the purpose | | | | | |

15. In making your choices which of the facts did you consider to be important or unimportant?

| | Important | Unimportant |
|--|-----------|-------------|
| impact on birds | | |
| impact on bottom habitats | | |
| environmental impact: other than impact on birds or bottom habitats | | |
| impact on the Apollo shoal | | |
| impact on the Western shoals | | |
| impact on the economy and employment of Hiiumaa | | |
| impact on the economy and employment of other parts of Estonia and Europe | | |
| compliance with EU development of renewable energy capacities | | |
| impact on energy security of Estonia | | |
| The use of renewable energy sources in electricity production is more environmentally friendly in comparison to the use of oil shale | | |
| use of renewable energy is more sustainable in long-term perspective | | |
| visual pollution effects for coastal people | | |
| location of wind park (Hiiumaa shoals) | | |
| cost: increased taxes due to establishment of marine protected area | | |
| cost: increased electricity bill due to the establishment of the wind park and associated grid system | | |

GENERAL QUESTIONS

To help us raise the quality of questionnaire, we need to know a little bit about you. The information you provide in this survey is completely confidential – this information cannot be connected to you personally. Please provide this information, otherwise we cannot use Your other answers.

16. In order to understand peoples' choices better, we'd like to ask you some questions about how you view the world and what kind of person you are.

Below, there are a number of personality traits that may or may not apply to you. **Please indicate the extent to which you agree or disagree with each statement.** You should rate the extent to which the pair of traits applies to you, even if one characteristic applies more strongly than the other.

| I see myself as: | Disagree strongly | Disagree moderately | Disagree a little | Neither agree nor disagree | Agree a little | Agree moderately | Agree strongly |
|----------------------------------|-------------------|---------------------|-------------------|----------------------------|----------------|------------------|----------------|
| extraverted, enthusiastic | | | | | | | |
| critical, quarrelsome | | | | | | | |
| dependable, self-disciplined | | | | | | | |
| anxious, easily upset | | | | | | | |
| open to new experiences, complex | | | | | | | |
| reserved, quiet | | | | | | | |
| sympathetic, warm | | | | | | | |
| disorganized, careless | | | | | | | |
| calm, emotionally stable | | | | | | | |
| conventional, uncreative | | | | | | | |

17. We would like to know, what is your general knowledge about marine and energy related issues. **Please answer the following questions by indicationg true or false T=True, F=False.** (Please note, that four questions in the end of the test relate to the issues raised in this questionnaire).

| | T | F | Do not know |
|---|---|---|-------------|
| 1. Algal blooms are signs of serious eutrophication of the Baltic Sea | | | |
| 2. Alien species can spread into Baltic Sea with the ballast water of the ships | | | |
| 3. Biodiversity of the Baltic Sea is very high since here cohabit both salt water and fresh water species | | | |
| 4. Cormorant is typical alien bird species in Estonian coastal area | | | |
| 5. Estonia plans to establish several marine protected areas along its coast in order to protect the return of sexually mature eels to the Sargasso Sea in Atlantic Ocean | | | |
| 6. Nord Stream gas pipe links energy systems of Russia, Baltic states, Nordic Countries, Poland and Germany | | | |
| 7. Oil spills are considered one of the most serious security risks in the Gulf of Finland | | | |
| 8. Neugrund is a meteorite crater at the sea bottom of the Gulf of Finland | | | |
| 9. 15% of final energy consumption in Estonia comes from renewables | | | |
| 10. 20% of electricity production in Estonia originates from wind turbines | | | |
| 11. Estonia has already reached the EU 2020 target for reduction of CO ₂ emissions | | | |
| 12. "Western" shoals are more ecologically valuable than Apollo shoal, because of the higher number of water birds, using the areas for wintering | | | |
| 13. Establishment of Hiiumaa wind park will affect only the local communities | | | |
| 14. MPA scenario will guarantee, that no construction or excavation activities will happen to the shoal | | | |
| 15. Environmental impact of ECO-WP scenario is less than the impact of WP scenario | | | |

DEMOGRAPHIC QUESTIONS

18. In what year were you born?

19. Are you

- ☐ Female
- ☐ Male

20. How many people live in your household, including yourself?

21. How many people in your household are under 18 years old?

22. What is your highest level of education?

- ☐ Basic school
- ☐ Secondary school
- ☐ Professional school
- ☐ University
- ☐ Other, please specify _____

23. What is your current occupational status? Please choose only one option that best describes your occupational status.

- ☐ Employed full-time
- ☐ Employed part-time
- ☐ Retired
- ☐ Student
- ☐ Home-employed
- ☐ Self-employed (incl FIE)
- ☐ Unemployed

24. Where do you live (town or local municipality, county)

25. What is your monthly net household income (after taxes)? Please include all sources of income, including benefits, stipends, pension etc.

- ☐ 400 € month or less
- ☐ 600 - 800 € month
- ☐ 800 - 1000 € month
- ☐ 1000 - 1600 € month
- ☐ 1600 € month or more

26. Any further comments

If you would like to make a comment on the survey or anything else, please do so below.
