SYNERGISTIC IMPACT ISSUE

OF THE WIND POWER PLANT WITH A NOMINAL CAPACITY OF 34,5MW AND ITS ACCOMPANYING WORKS AT THE SITE "ANEMONI"

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JULY 2024

PROJECT PROMOTER

Aetos Wind Single Member Private Company

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ENVIRONMENTALIST

ASSESSMENT AND EVALUATION OF ENVIRONMENTAL IMPACTS

Environmental impact is defined as the change in environmental conditions or parameters (natural and human-made) in an area because of one or more activities. This change may be positive or negative (i.e., upgrading or degrading the quality of the environment), long or short term, permanent or Temporary, indirect, or direct.

Environmental Impact Assessment (EIA) is one of the basic tools of environmental planning. Its purpose is to assess the future adverse effects on the environment that may result from activities on the site, with a view to minimizing or redesigning them. It assesses and evaluates the potentially significant impacts that the project or activity may have on the environment using natural resources, the emission of pollutants, the creation of disturbance and the disposal of waste. It shall also provide the data set and a description of the methods used to predict and assess the effects on the environment, with an indication of the reliability of the methods and an indication of any difficulties or lack of appropriate information encountered in gathering the necessary information.

This means that their impacts should be considered as an overall and not in isolation. Therefore, the impacts resulting from the construction and operation of the assessed wind power plant (WPP) relate to the totality of the main and associated projects.

The most important positive element of wind energy development and use is the reduction of anthropogenic impacts (because of air pollution) by replacing the combustion of conventional fuels for electricity generation, which has not yet been adequately assessed.

The main environmental parameters associated with the construction and operation of wind farms are the natural environment (flora and fauna), topography and landscape. Factors such as the size of the wind turbine, the type and size of the wind turbine, the size of the road works and the characteristics of the site (e.g., installation near environmentally sensitive areas) play an important role in determining the level of environmental impact.

Methodological requirements

This chapter assesses the potential environmental impacts that will be caused by the construction of the project during both the construction/installation and operation phases.

The assessment of the environmental parameters that are likely to be affected or changed by the construction and operation of the project (impact assessment) and the identification of the identity of the impact for each of the changes identified, focuses on the following properties of the environmental impacts:

- Character of impacts (positive, negative, neutral) and type of impacts.
- Magnitude of impact (significant, moderate, weak). This characterization is related to the consideration of the above-mentioned environmental impact assessment and evaluation parameters.

- Duration of impacts (short-term, long-term). This refers to the duration over which impacts take place.
- Potential for recovery by natural means (reversible, partially reversible, irreversible). It relates to the potential for the environmental impacts caused to be reversed by natural processes.
- Possibility of being addressed by artificial means (manageable, partially manageable, not manageable). Relates to the potential to address the environmental impacts caused by the construction of appropriate technical works/applications (anti-pollution technologies, environmental restoration works, etc.).
- Geographical reference level for environmental impact assessment/evaluation (local, study area, wider region).
- Intensity, with reference to the magnitude of the change, and its comparison with the relevant limit values.
- Likelihood of occurrence.
- Complexity of effects, with reference to the mechanism of occurrence (direct or indirect impact, description of stages in the latter case), the components of the effect (to distinguish simple from complex effects), and the dependencies of intensity and magnitude on non-project factors, if any.
- Characteristic timescales (time horizon of occurrence of effects, duration, recurrence).
- Possibilities for prevention, avoidance, reversal, or minimization.
- Synergistic or cumulative effects with other impacts from the project itself or from other projects or activities developed or environmentally permitted in the area.

In general, wind energy projects aim to reduce anthropogenic impacts by replacing the combustion of conventional fuels for electricity generation. Most impacts occur during the construction phase but can be reduced by responding appropriately. Impacts during the construction phase will last if the wind farm is being built and will be limited to the area where the project is located.

It should also be noted that negative impacts are assessed in terms of whether they need to be addressed, but also in terms of the potential of the mechanism of occurrence of each impact in terms of prevention or subsequent reversal. In this way, the most appropriate stage for taking the necessary action is explored. A diagnosis is made of the causes of each impact and whether measures to prevent one impact will have a positive effect on other impacts.

For the assessment - evaluation of the induced environmental impacts of the studied WPP, the following main determining parameters are considered and co-evaluated:

✓ Institutional framework for environmental protection, as specified by the adoption of measures for different environmental instruments.

✓ Characteristics of the area where the installation is located: Relates to the type and sensitivity - vulnerability of the environmental media that are subject to environmental pressures from the installation.

✓ Design of the technical-functional characteristics of the project: Refers to the type, size as well as the way of construction and operation of the project.

✓ Applicable measures for the prevention and mitigation of environmental impacts and environmental restoration.

Finally, for those environmental elements where no impacts are expected from the construction and/or operation of the project or activity as indicated by the information in the project description (Chapter 6), then only a simple statement that no impacts are expected is made and no development of the corresponding section is required.

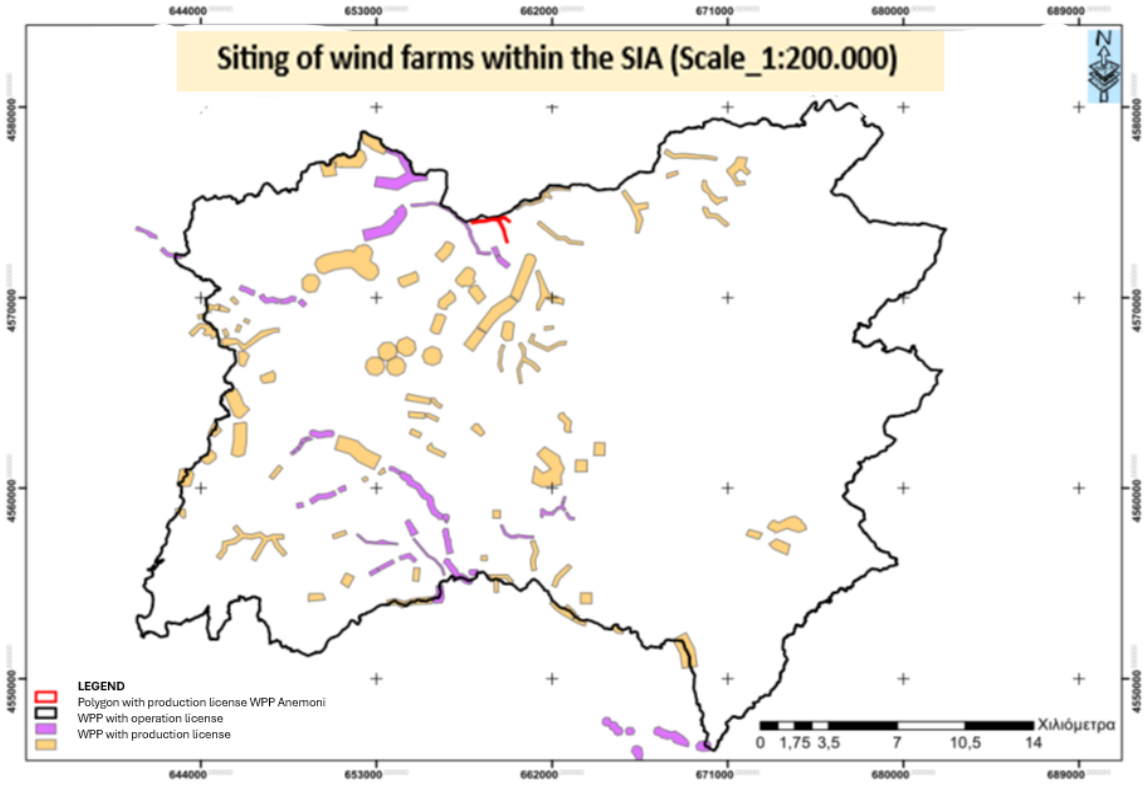
It is important to note that the analysis of synergistic - cumulative impacts in this chapter has been conducted regarding the entire synergistic impact study area as defined in Chapter 8.1.

Specifically, with regard to the protected areas under consideration, and in order to better address the synergistic impacts of the project under consideration, the Special Ecological Assessment has been defined to take into account the wider boundaries of the entire area enclosed within the main study area SPA GR1130011, but also the nearest Greek area SPA GR1110010, as this area contains almost all the already installed WPPs (operating license) of the wider area.

Therefore, the area resulting from the merging of the boundaries of the above two areas is referred to as the **'Synergistic Impact Study Area' (SIA)**.

Within the SIA, there are 14 WPPs (nine within the SIA and five partially within the SIA) licensed (Map 102 of the SEA) for operation with a total capacity of 314.6 MW, occupying a total area of 1,092.99 ha (total area of polygons within the SIA - of the five WPPs partially

located within the SIA, only the area of polygons located within the SIA was counted).



Map 1: Siting of wind farms within the synergistic impact study area (SIA)

Impact on Climatic and Bioclimatic Characteristics

In controlling the climate of a wider area, altitude, distance from the sea and the local conditions of a region play a role to some extent. Such conditions include, for example, large mountain ranges, prevailing local winds and other factors that shape the microclimate of a particular area.

Given the nature of the WPP and its associated projects, it follows that it will not result in any change in the climatic and bioclimatic characteristics of the area.

Sustainable development is related to efforts to reduce the consumption of non-renewable natural resources and is a global priority. Air pollution and greenhouse gas emissions resulting from the use of fossil non-renewable resources for energy production pose a major threat to the environment and sustainable development.

In particular, the production of electricity from wind turbines utilizes the wind potential of the region without emitting any air pollutants, unlike the process of generating energy by burning fossil fuels. A wind turbine therefore not only has no impact on the climate, but also contributes to the reduction of pollutants that are responsible for significant climate and environmental changes on a global scale. A typical example is the greenhouse effect, which results in an increase in global warming and the occurrence of extreme weather events (floods, fires, hurricanes, etc.).

Long-term energy planning and the promotion of renewable energy projects (including the exploitation of wind potential through the construction and operation of wind farms) are the essential tools for mitigating the effects of climate change. The path towards a low greenhouse gas economy must involve all sectors of economic activity, both energy consumption and energy production.

According to the current National Energy and Climate Plan (NECP), the main target for 2030 is to achieve an overall reduction in greenhouse gas (GHG) emissions in our country of more than 40% compared to 1990, while compared to 2005, which is more comparable based on the level of the Greek economy and the relevant emissions at European level, the reduction target exceeds 55%.

Regarding the penetration of renewable energy sources (RES), the national target for their share in gross final energy consumption is set at a minimum of 35%.

In addition, targets are set for the share of RES in gross final consumption of electricity to be at least 60%, for the share of RES in heating and cooling to be at least 40% and for the share of RES in transport to be at least 14%, according to the relevant EU calculation methodology.

In addition to increasing energy security (by reducing a country's dependence on imports), the production of energy from renewable energy sources (RES) contributes to the reduction of pollutant emissions associated with conventional energy production (fossil fuels). Given that most forms of renewable energy, such as wind energy, do not produce greenhouse gases or other pollutants such as SO2, NOx or particulate matter, as there is no combustion process involved in energy production, they are expected and should form the basis of any long-term planning for sustainable development and energy production in particular.

Based on the energy mix of Greece, each KWh produced by wind energy avoids about 1 kg (0.85-1.06) of CO2 in the atmosphere. It also reduces emissions of other harmful pollutants (such as particulate matter, nitrogen oxides, sulfur compounds, etc.). It offsets up to 8.3 kg of SO2, 1.7 kg of NOx and 0.7 kg of particulates.

A typical 1,000kW (1MW) wind turbine generates on average 3 million kWh per year in a good wind potential location in Greece, preventing the release of approximately 3,000 tons of carbon dioxide (CO2), which is equivalent to the amount of CO2 absorbed annually by 4,000 hectares of forest or 200,000 trees.

Therefore, the project under consideration, neither during its construction nor during its operation, will have any negative impact on the climate of the surrounding area, on the contrary, it will have a positive impact at local and national level, making the best use of the available wind potential of the region, contributing to the country's environmental objectives and international commitments, as well as to the principles of sustainable development.

Construction phase of the Project

The construction of the overall project, due to the nature of the works, cannot cause a change in the climatic and bioclimatic characteristics of the study area. Under no circumstances are construction activities expected to impact climatic parameters such as temperature, precipitation, hail, snowfall, or humidity in the project development area.

Construction equipment (cranes, trucks, graders, excavators, etc.) powered by diesel engines will be used for the foundation and installation of the wind turbines, maintenance of existing roads and trenching for the installation of power transmission cables at the ten wind turbine sites. The operation of these machines is expected to release a quantity of greenhouse gases and particulate matter (PM10, PM2.5) into the atmosphere due to the combustion of liquid fuels (diesel, petrol). Therefore, these operations will only cause some carbon dioxide emissions. These quantities of CO2 will only be produced during the construction phase of the project, after which they will cease to be produced.

Therefore, any greenhouse gas impacts from the construction of the Project will be weakly negative - practically negligible, very weak, short term and fully reversible by the operation of the Project itself, mainly due to the minimal quantities of emissions that will be generated by a limited number of mechanical means in relation to the area of the Project site. However, compliance with current legislation on exhaust emissions from construction machinery and vehicles will be required.

Synergistic / Cumulative effects:

No synergistic impacts are anticipated with respect to temporary and limited weak air quality impacts during the construction phase as the projects are unlikely to be constructed all at the same time. The worst case scenario is that there will be simultaneous greenhouse gas emissions from the vehicles used throughout the works, which however are expected to be extremely low firstly because the road network cannot support a load on the road traffic due to its nature, and secondly because the exhaust gases are from vehicles whose emissions do not exceed the limiting and legal thresholds as defined by Directive 2007/46/EK.

Project Operation Phase

Wind farms, by their very nature, have no negative impact on the climatic and bioclimatic characteristics of the area in which they are installed. Wind turbines use a small fraction of the kinetic energy of the wind to produce energy without changing its intensity or direction. The operation of wind turbines does not generate heat, gases or other pollutants that could potentially alter the climatic and bioclimatic characteristics of the area in which they are installed. Consequently, during the operating phase of the wind turbine, it is not expected to have any impact on the climatic and bioclimatic characteristics of the area under consideration where the proposed WPP (10 W/Ts) will be installed.

As regards the production of greenhouse gases, not only will such gases not be produced, but on the contrary, the production of both greenhouse gases and other harmful pollutants in the atmosphere will be reduced because of the operation of the proposed projects.

It is therefore clear that the project in question is expected to have a significant positive impact on the climatic characteristics of the area, through its significant contribution to the country's energy mix, the decentralization of energy production and its contribution to a significant reduction in the production of greenhouse gases.

Regarding the underground electricity transmission network to be constructed to meet the interconnection needs of the Project, it is not expected to generate any air or other pollutants during its operation that could potentially alter the climatic and bioclimatic characteristics of the area. The heat generated by the medium and high voltage transmission lines is negligible, distributed over a wide area and does not affect the heat balance of the atmosphere, especially in the present case where the electricity transmission lines will be completely underground.

In conclusion, the impacts of the overall project during the operational phase on the climatic-bioclimatic characteristics of the wider study area will be positive of medium intensity, trans-regional, long-term, and permanent.

Synergistic / Cumulative effects:

The project is not associated with greenhouse gas emissions during operation. On the contrary, the operation of the project contributes to a reduction in greenhouse gas emissions compared to the do nothing alternative. In addition, in the worst-case scenario, where all licensed and approved projects in the study area would operate simultaneously, they would not have a negative impact, but a positive impact on the climate and bioclimatic characteristics of the study area.

Climatic and Bioclimatic Characteristics						
Impact Phase	**Type**	**Possibility of occurrence**	**Intesity**	**Synergistic action**	**Reversibility**	**Impact**
CONSTRUCTION	/	/	/	NO	/	/
OPERATION	/	/	/	NO	/	POSITIVE
CESSATION OF OPERATION	/	/	/	NO	/	NEGATIVE

Table 1: Impact Assessment Table on climate and bioclimatic characteristics.

Explanation of Contents of the Table:

Impact occurrence phase: Refers to the different phases of the project's life cycle. **Construction:** construction of the project up to the issuing of the operating permit. **Operation:** The duration of project operation and **Cessation of operation:** Refers to the cessation of project operation and environmental restoration.

The remaining columns refer to the individual impacts and take the following values:

Column	**Values**			
Type	Direct	Indirect		
Possibility of Occurence	/	LOW	MEDIUM	HIGH
Intesity	/	LOW	MEDIUM	HIGH
Synergistic action	YES	NO		
Reversibility	/	YES	NO	
Impact	/	POSITIVE	NEGATIVE	

/: No impact or negligible impact

Reversibility: refers to prevention, avoidance, reversal, minimization of impacts and is completed with / when there is no feasibility or reason to address and with 'YES' or 'NO' when: In the column 'Possibility of occurrence' and/or in the column 'Intensity' the assessment has concluded even a low probability of occurrence of impacts.

*The explanation of the table also applies to the following impact assessment tables in this chapter.

Impact on the morphology and characteristics of the landscape

The impact on the morphological - landscape characteristics of the immediate and wider study area depends on the change in its visual value that may result from the construction and operation of the study project (WPP and its associated projects). The degree of change to a landscape depends in principle on its level of sensitivity - vulnerability, which is determined by the characteristics of each landscape and the level of intervention in it.

The project does not fall within any protected landscapes and there are no such areas in the wider landscape. In view of the above, it is concluded that the WPP site is not sited in areas where interesting landscape features have been identified.

Construction phase of the Project

Impact on soil morphology

In terms of geomorphology, the WPP area under consideration is characterized by steep slopes and the area is described as semi-mountainous. Most of the land is covered by forests, while there is sparse agricultural land, in the coastal area of the region.

During the construction of the Project, the changes in topography and soil morphology will be moderate and will result from the excavation works for the foundations of the W/Ts, the opening of the internal road network and the construction of the underground medium voltage transmission line. These works are of minor scale and cannot cause erosion or significant changes in the topography of the land. All works on the wind farm site, except for the wind turbine platforms and internal roads, will be restored after completion of the works.

Excavation and backfilling will be conducted to create the internal access network for the project under consideration, the construction sites and the underground medium-voltage interconnection line, and the underground medium-voltage cables will be

installed in trenches by removing vegetation and surface soil. Earthworks will be limited to the occupation zone of the project and will be conducted under the supervision of the competent Forestry Department. A significant volume of the excavated material is expected to be used in the backfilling operations, which will result in an immediate reduction in the degree of landscape disturbance.

The final road construction and the axis of the HV and MV interconnectors will follow the slope of the existing ground, to ensure that as little earthworks as possible are carried out.

The ground disturbances on the installation sites and along the new branches and the route of the underground MV interconnector will be restored either by land restoration assessment or by natural means.

Impact on soil topology

The impact on the landscape **would be minor** as the construction of the project under consideration would be conducted in sections (zones) rather than simultaneously throughout the entire development. There will be little degradation of landscape aesthetics due to the increased mobility of material transport vehicles, the operation of mobile construction sites during the construction of the accompanying underground interconnection works.

In addition, most of the sites where landscape changes are expected are located at a considerable distance from human activities (residential areas, workplaces, primary production activities, tourist facilities, etc.).

Good practice, proper project design and implementation of appropriate measures (elements discussed in Chapters 10 and 11) will reduce the impact on landscape features as construction works **will be low intensity, short term and localized**.

Impacts on morphology during the construction phase of the Project are low as they follow the technical characteristics of opening forest roads, which in turn facilitate access for fire engines, shepherds, and wildlife.

Synergistic / Cumulative effects:

Synergistic and cumulative impacts during the construction phase will not occur as it is unlikely that all the neighboring wind farms with a production license will be built at the same time.

In conclusion, during the construction phase of the project the impacts on the morphology of the area are assessed **as medium scale, partially reversible and can be limited - after strict implementation of appropriate measures - to low scale.**

In the case that all the projects under license and with a production license are built at the same time, **the impact on morphological features will be related to the associated projects as there will be an intervention on the forest road. This will have**

a positive outcome as the improvement intervention and use of the existing forest road will only occur once during the construction phase of the projects.

Overall, the landscape impacts during the construction phase of a wind farm could be described as insignificant, short-term, and fully reversible.

Project Operation Phase

Impact on soil topology

During the operation phase, the changes in the landscape concern the visible parts of the works (W/Ts and roads), while during the operation phase no impact on the morphology of the landscape is expected.

The main impact of the project on the landscape results from the way in which the project is visually integrated into the natural environment. The degree of alteration of a landscape depends in principle on its degree of sensitivity and vulnerability. The more aesthetically interesting a landscape is, the more sensitive it is to alterations - interventions. The process of integrating a wind farm into the environment is based on the dynamic visual coupling of the wind turbines with the landscape features of the installation area.

These landscape elements can be characterized by:

- the flat topography of a lowland area
- the slightly undulating topography of a hilly area
- the steep topography of a ridge or mountain range
- the urban and suburban landscape of a town, village, or city
- the highly industrial and strictly regulated profile of an industrial zone
- combinations of the above.

Based on the above parameters, the desired visual link between the landscape and the wind farm can be achieved by applying aesthetic rules based on ensuring harmony in the relationships between lines and/or volumes. This is achieved using techniques of integration, harmony, or counterpoint with the existing dominant features of the landscape, so that despite the intervention, the observer's eye is not disturbed or confused, and the aesthetic result is visually acceptable.

Due to the topography of Greece, the scale of wind farms is in most cases compatible with the scale of the landscape, which is dominated by large mountain ranges. In addition, modern wind turbines are characterized by a greater potential for visual acceptance than those of older technology, because:

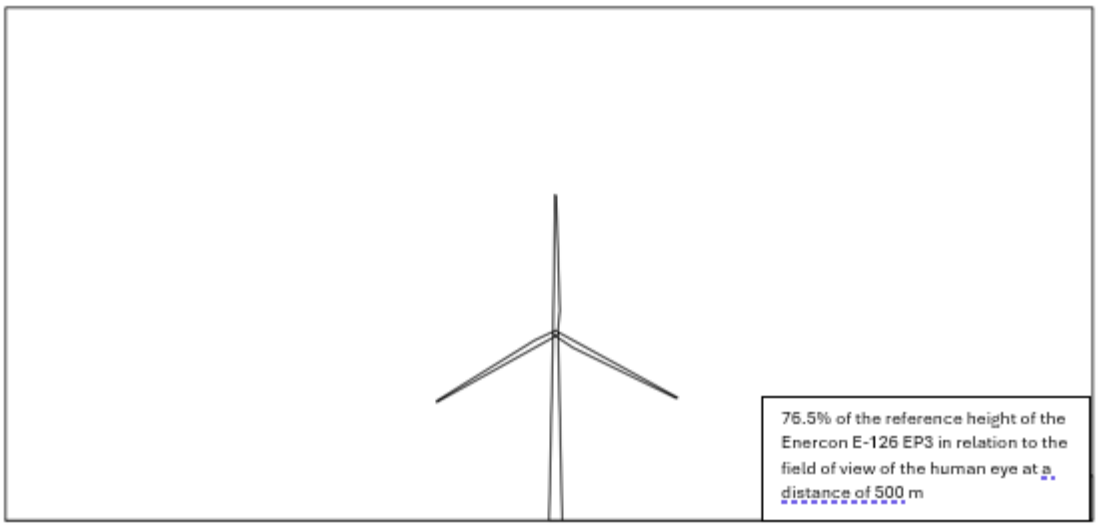
a) they are slim and elegant in design, compared to the early models that were bulky or based on metal trusses,

(b) the angular speed of rotation of their blades is lower, which creates a more pleasing visual effect; and

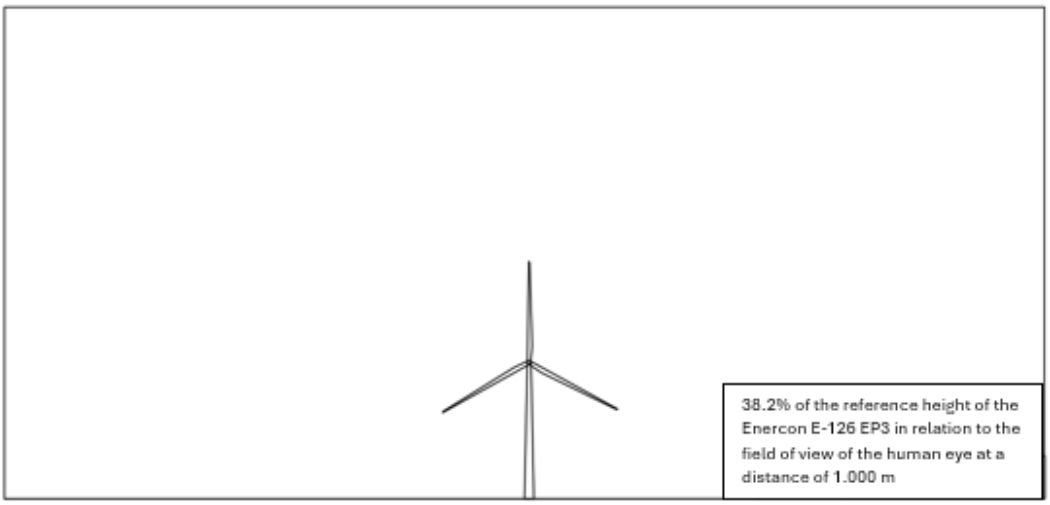
(c) they are placed at greater distances from each other, thus achieving sparser distributions compared to the denser groupings that earlier wind farms exhibited.

The sparse layout of the W/Ts in the project under study minimizes any visual change. The W/Ts are of a color that blends in with the landscape (usually light) and consist of three blades, which creates symmetry in the human eye and reduces visual disturbance, which is subjective anyway and not clearly defined by environmental legislation.

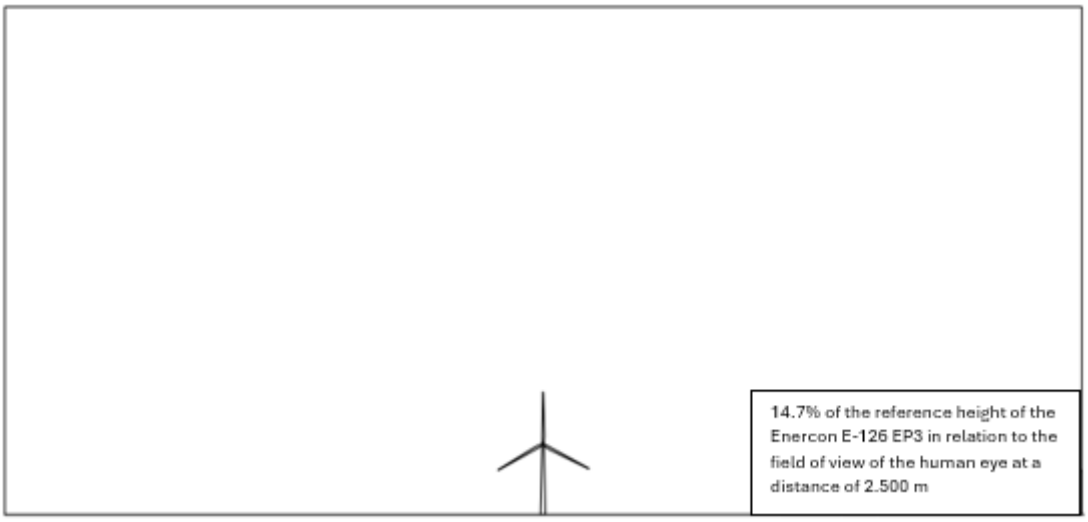
The following photographs illustrate the visual disturbance caused by W/Ts in relation to the field of vision of the human eye at distances of 500, 1.000, 2.500, 5.000, 7.500 and 10.000 m from the base of the W/Ts.



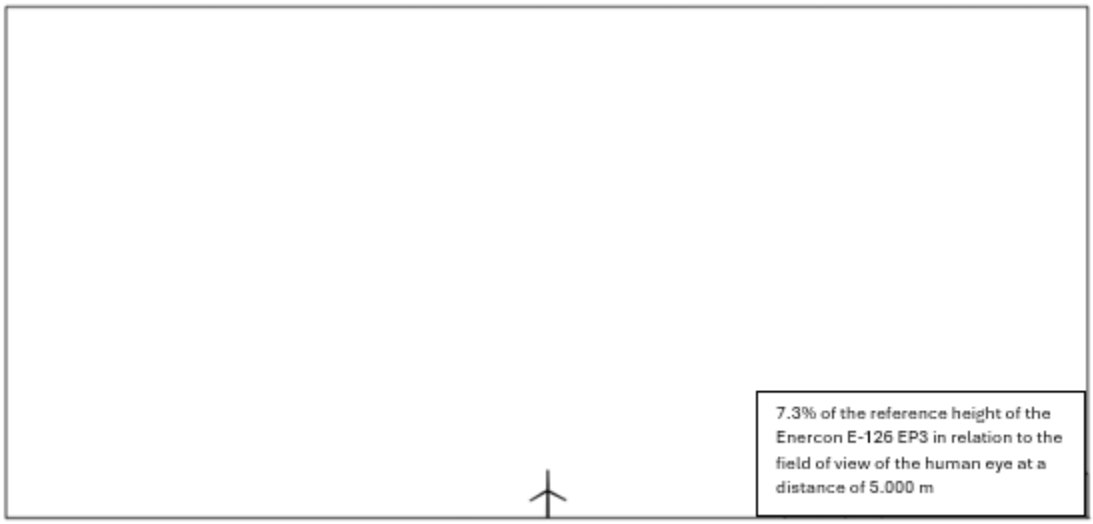
Picture 1: Visual disturbance at 500 m.



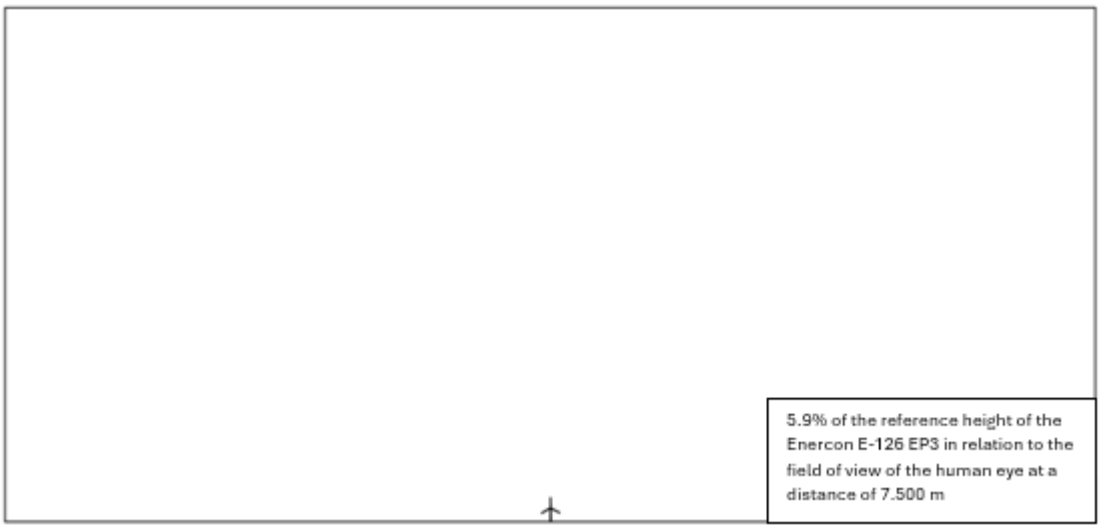
Picture 2: Visual disturbance at 1.000 m



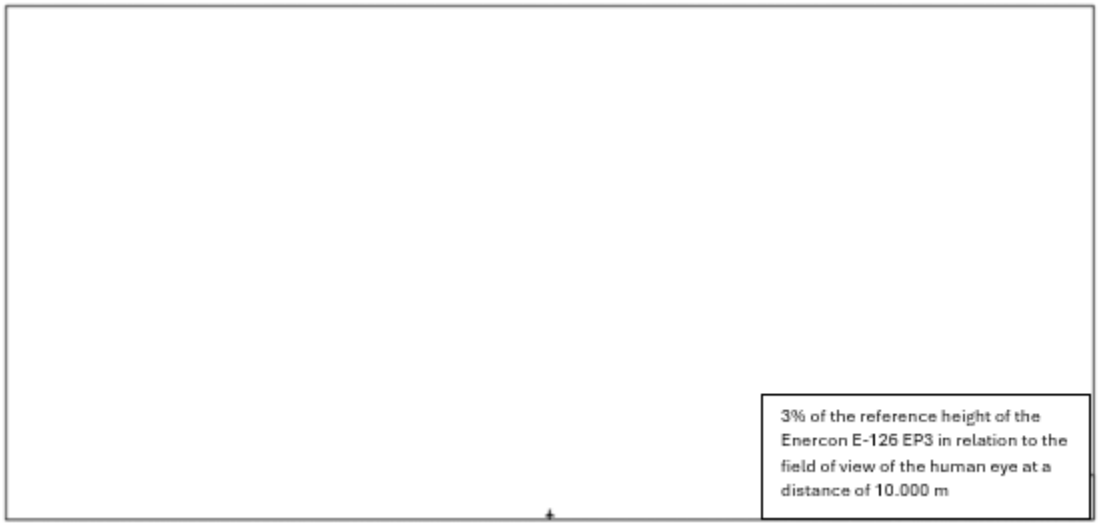
Picture 3: Visual disturbance at 2.500 m



Picture 4: Visual disturbance at 5.000 m



Picture 5: Visual disturbance at 7.500 m



Picture 6: Visual disturbance at 10.000 m

In the case of the project under study, the following can be noted:

- The adoption of simple tubular towers, the three-blade propeller, and the coloring of the wind turbines with a color that blends in with the environment give a harmonious and elegant aesthetic effect to a wind farm and increase its visual acceptability.
- In the wind farm development area, the view from or towards a unique natural or cultural heritage monument is not altered.
- The distances and differences in height of the wind turbine installation sites from residential areas are such that they do not create problems of shading of residential or other public areas and the restrictions imposed by the General Spatial Planning Framework for Greece on RES are strictly adhered to.
- The paint on the wind turbines (pillar and rotor) is "absorbent" and there are no reflections of incident light.

The aesthetic of a wind farm is a purely subjective factor, which depends, as relevant studies show, not so much on the image of the wind farm itself, but on the general image that the observer has formed of its use.

The attempt to quantify as objectively as possible the visual disturbance of a WPP has led to the establishment of rules under the General Spatial Planning for RES. It is further emphasized that the W/Ts are located **outside the exclusion zones of the area and meet the criteria for inclusion in the landscape.**

In any case, the project will change the landscape characteristics of the area to a minor extent after the installation of the wind turbines. The impact is considered to be medium, as the wind turbines of the project will be partially visible from most settlements at a considerable distance.

The fact that the MV interconnector will be undergrounded, combined with the choice of an environmentally approved substation that will not be in visual contact with the settlements in the area, will also significantly reduce the impact of the WPP on the landscape.

The project is also compatible with the criteria for the integration of wind installations in the landscape set by Annex IV of the Special Spatial Plan for RES (Joint Ministerial Desicion 49828/2008 - Government Gazette 2464 B') and the relevant analysis is presented in Annex II - Compatibility Sheet of this study.

In conclusion, the impacts of the studied wind farm during its operational phase on the landscape and morphological characteristics of the area can be considered as moderately negative, long-term and partially reversible.

Accompanying works - Road construction

In addition, the impacts of improving the existing roads mostly relate to visual intervention issues in the wider landscape of the area. However, the fact that both the existing roads are used and that there is limited visibility of these roads from the settlements in the area minimises the impact on the landscape and the aesthetic environment.

The road surface of the entire road network of the proposed WPP will be unmade and the traffic load will be minimal. The final form of the roads will be as compatible as possible with the immediate natural environment and therefore no paving is foreseen.

Therefore, the impact of the project's road construction on the landscape and morphological features is considered neutral, as it does not introduce a new feature into the landscape of the area, where there is an extensive network of forest roads.

Underground transmission line

Regarding the underground transmission line, for the "Anemoni" site, it will have a length of 10.370,46m and will start at the spindle of each wind turbine and end at an existing substation named “Patriarchis”, as shown in the attached interconnection map of this study.

It is understood that the landscape and morphological impacts of the electricity transmission network on the characteristics of the area are weak, negative and fully reversible.

Conclusions:

Thus, the impacts of wind farms on the morphological and landscape characteristics of the area will be fully reversible after the end of the lifetime of the investment and will only concern the visual disturbance during the lifetime of the project and the temporary change in the aesthetics of the site.

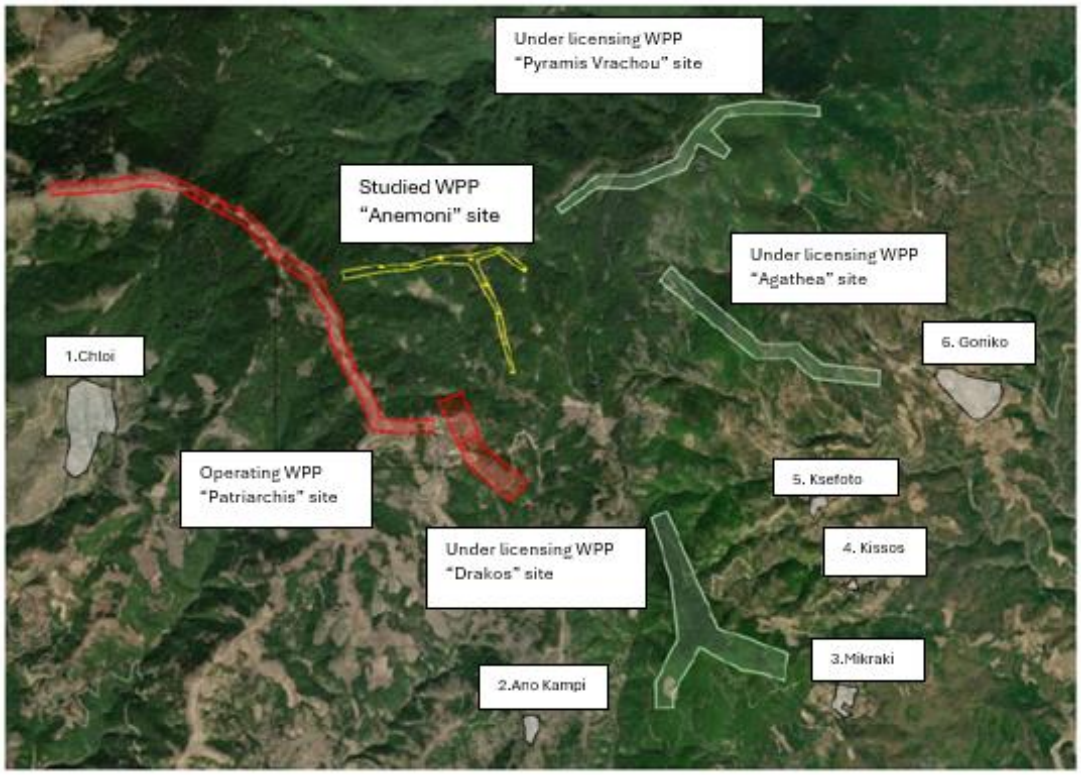
From the above analysis, the impacts on the landscape and morphological characteristics of the study area from the construction of the main and accompanying works are considered to be weak, short-term, localised and fully reversible.

Synergistic effects/Cumulative effects:

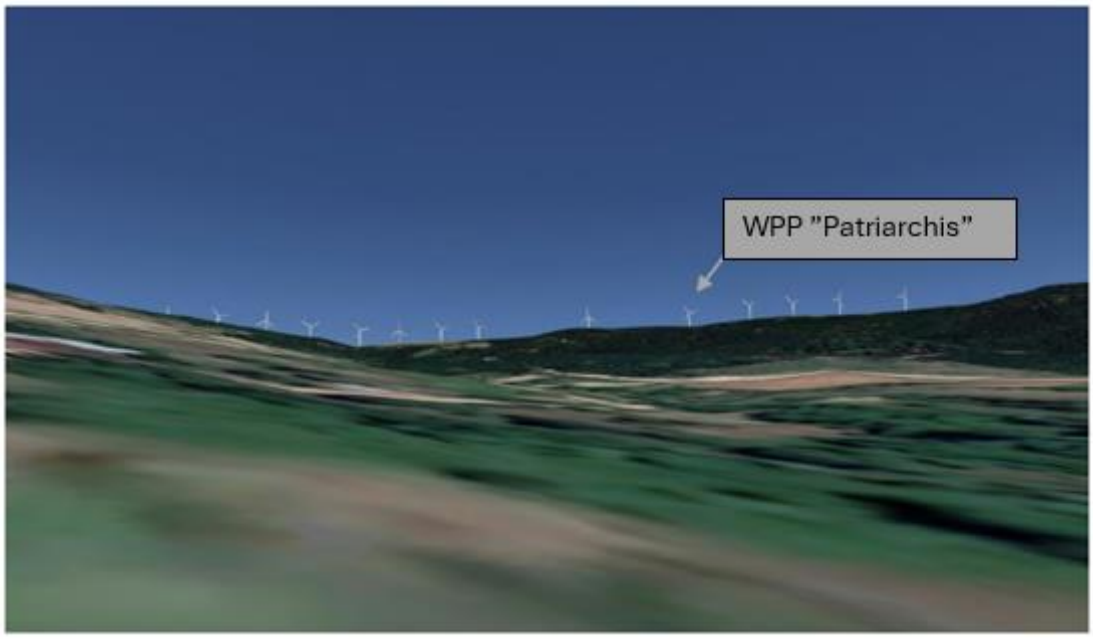
WPPs with a production licence and an operating licence have been identified in the area closest to the installation of the assessed WPP and in the 10 km study area. It should be noted that in the context of the examination of the compatibility of the project with the Special Spatial Planning and Sustainable Development Framework for Renewable Energy Sources (Joint Ministerial Decision 49828/2008), the project was assessed in terms of its integration into the landscape, in synergy with the nearest WPPs (WPPs under licence at the "Pyramis Vrachou", "Agathea" and "Drakos" sites, and the WPP operated by X. ROKAS S.A. at the "Patriarchis" site) and was found to be compatible with the visual impact criteria of the above-mentioned specific framework.

The following images show photorealistic representations of the W/Ts of all five WPPs from different viewing angles in order to assess their visibility from the nearest points of interest, such as settlements and archaeological sites.

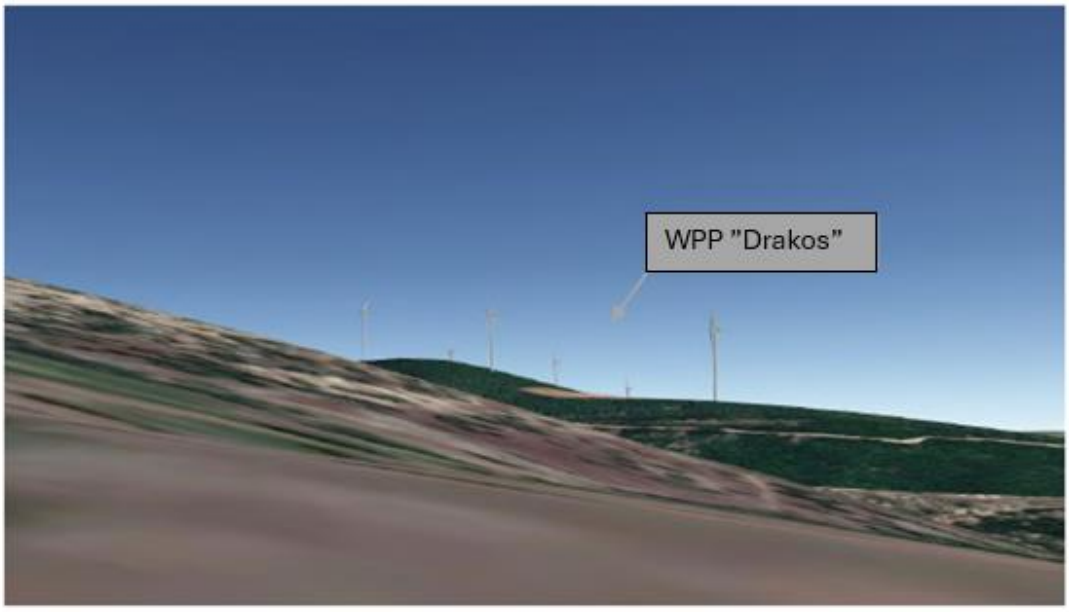
The shots from the points of interest to the wind farm were taken from the average human height (1.70 m). During the photorealistic imaging the terrain was taken into account and not the visual obstructions (e.g. buildings, vegetation) in the study area, thus concluding that the visual disturbance depending on the viewing angle will be even weaker.



Picture 7: Locations of Photorealistic illustrations.

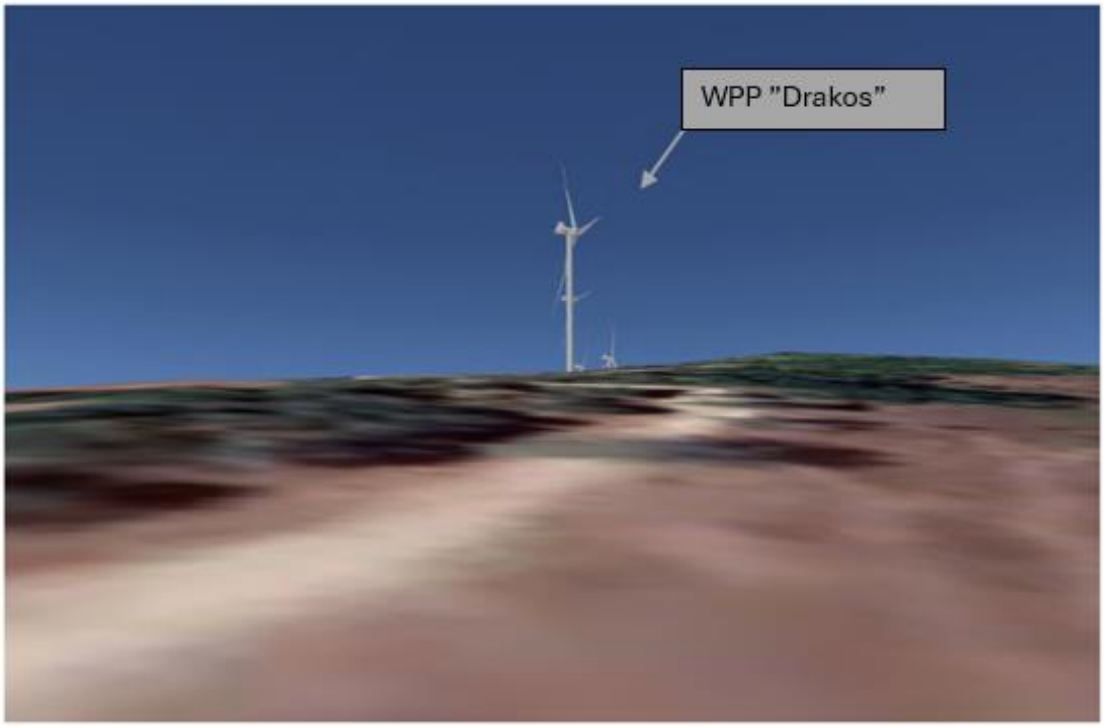


Picture 8: View of the WPP from the "Chloi" village.



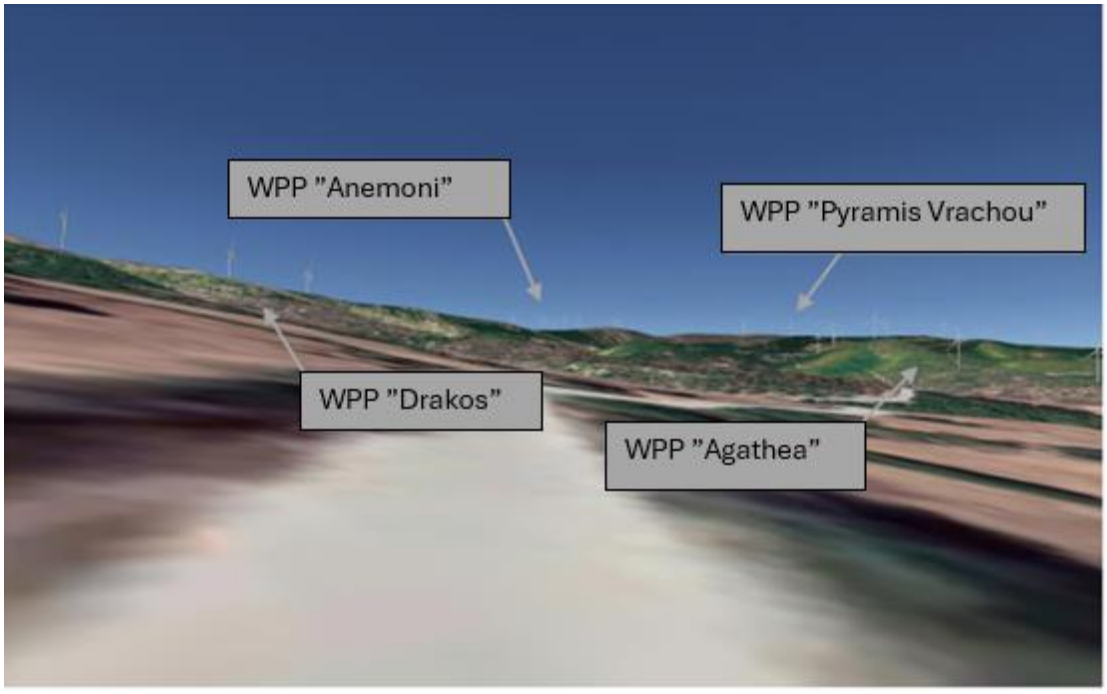
Picture 9: View of the WPP from the "Ano Kampi" village.

There is no visual disturbance to the settlements "Chloi" and "Ano Kampi" from the studied WPP at the "Anemoni" site.

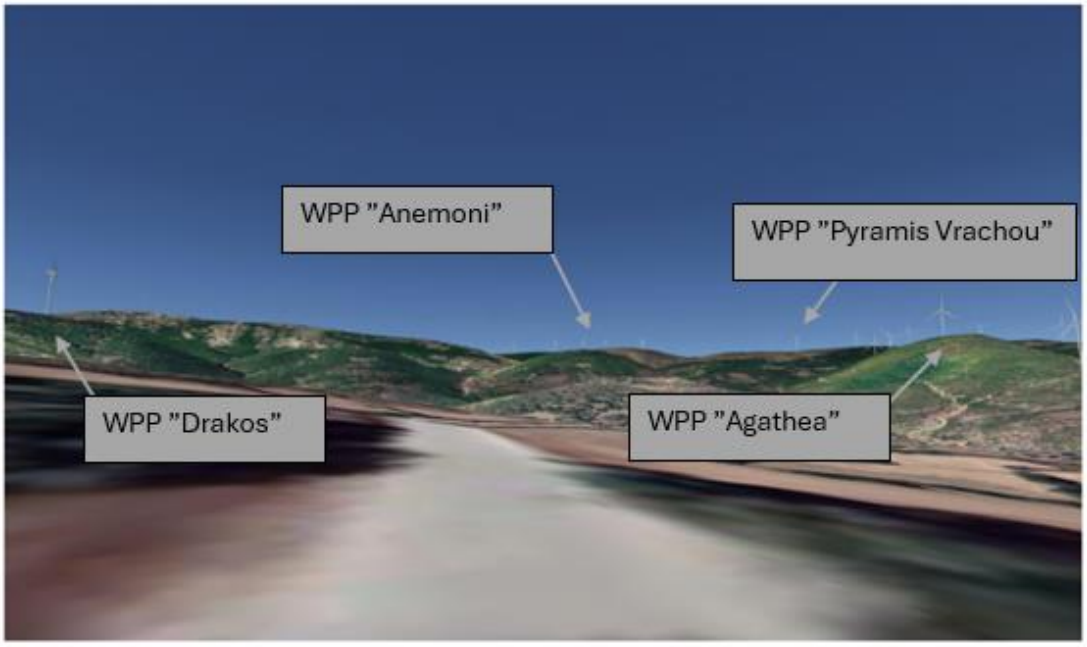


Picture 10: View of the WPP from the "Mikraki" village.

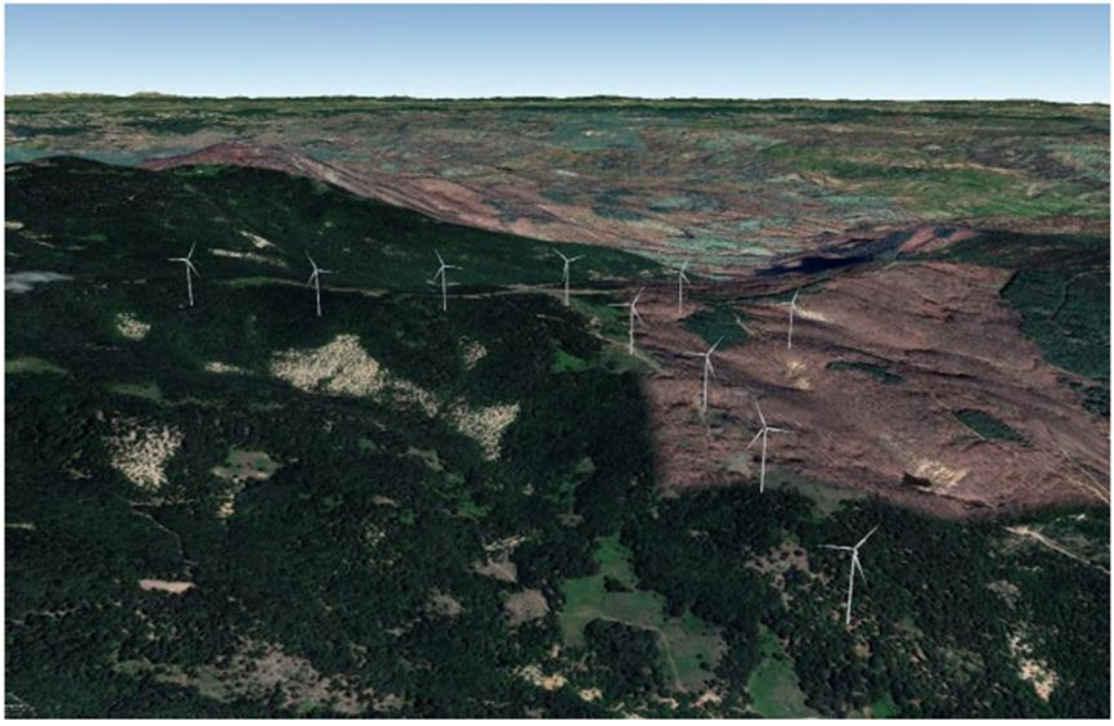
There is no visual disturbance from the studied WPP at the "Anemoni" site.



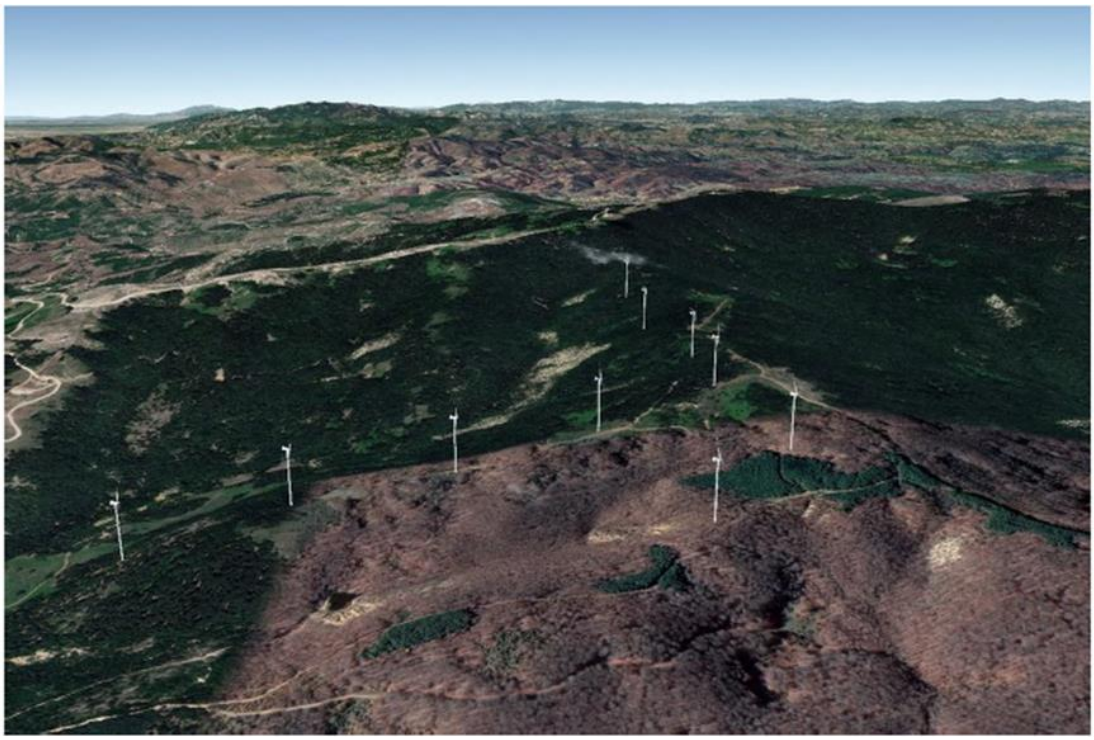
Picture 11: View of the WPP from the "Kissos" village.



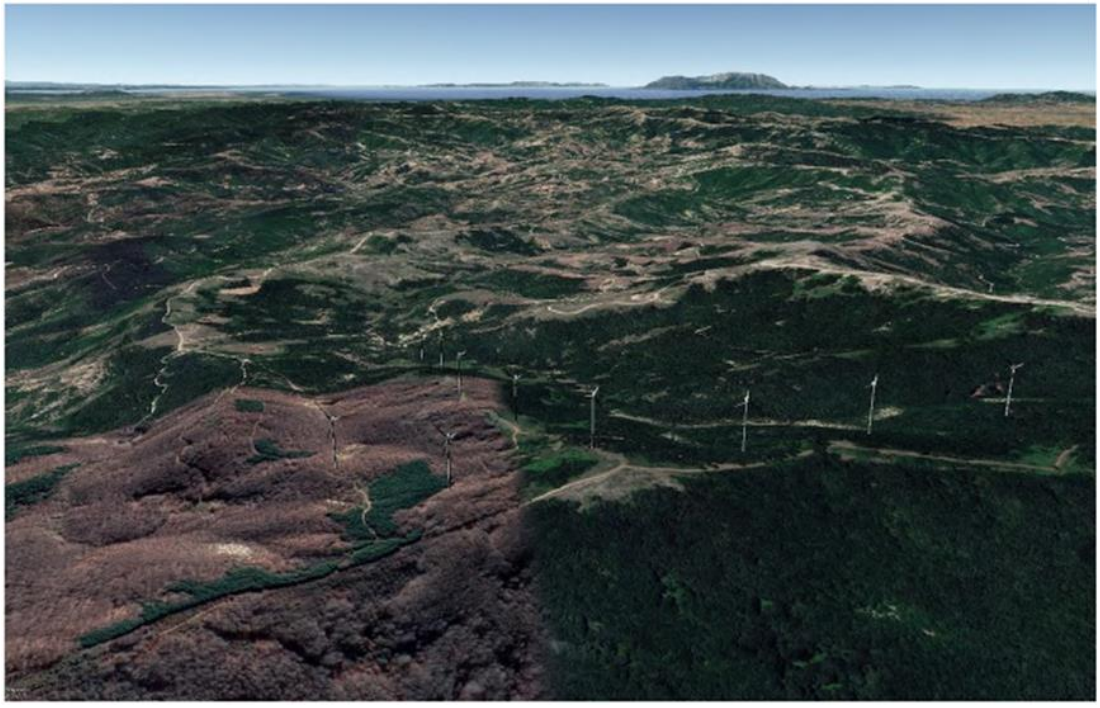
Picture 12: View of the WPP from the "Gonikon" village.



Picture 13: Panoramic view of the WPP with shooting direction north.



Picture 14: Panoramic view of the WPP with shooting direction east.



Picture 15: Panoramic view of the WPP with shooting direction south.

Picture 16: Panoramic view of the WPP with shooting direction west.

Considering the data above, it is concluded that the project under consideration, together with the neighboring WPPs, will not introduce a new element into the landscape of the area, as other W/Ts will already be visible from various points in the wider study area. The additional introduction of W/Ts into the landscape is difficult to assess as the aesthetic acceptability of W/Ts is subjective. However, it is considered that the small number of W/Ts to be installed in relation to the existing number and the satisfaction of the carrying capacity (compatibility issue) will not be significantly noticeable. Visually, it is considered that the Project's W/Ts, together with the adjacent WPP W/Ts at the "Pyramis Vrachou", “Agathea”, “Drakos” and “Patriarchis” will not have a significant impact on the landscape.

The synergistic/cumulative landscape impacts are expected to be of **medium cumulative impact** intensity due to the fact that there are already constructed and operational WPPs projects in the project area. The impact is estimated to be of low intensity given the photorealistic visualization with the neighboring WPPs as the geomorphology of the area is such that the W/Ts of all five projects will not be simultaneously visible beyond a few viewing locations and therefore will not obstruct views of notable landscape features or monuments.

Cessation of Operation

After the wind farm has been decommissioned (a period of approximately 20 to 25 years), the wind turbines are dismantled, and the equipment is transported off-site to special areas for recycling/disposal. This obligation of the promoter is explicitly mentioned in the environmental conditions of each wind farm, as well as in the special spatial planning and sustainable development framework for renewable energy sources (Article 26).

Thus, when a wind farm is decommissioned, the only remaining interventions in the environment are the foundations of the wind turbines (most of which are restored), the underground electrical connection cables that remain buried in the ground, and the access roads. If a road is no longer considered necessary, it can be remediated using appropriate methods and returned to restoration. Therefore, any impact on landscape aesthetics is reversible after the end of the operation of the WPP under consideration.

In general, the impact on the landscape and morphology of an area resulting from the installation of a WPP during the construction phase is temporary and is located within the construction area of the project, which is usually in remote mountainous areas. The landscape impacts during the operation phase of the project are more significant due to the introduction of the project into the landscape of an area and the fact that the project is visible over long distances and over a wide horizon coverage. However, the impact of the operation of a WPP on the landscape and morphological characteristics of an area is extremely difficult to assess as it involves significant subjective parameters. Finally, the impact on the landscape during decommissioning is negligible, as restoration techniques and the correct removal of infrastructure can restore the landscape to its original state.

Morphology and characteristics of the landscape						
Impact Phase	**Type**	**Possibility of occurrence**	**Intesity**	**Synergistic action**	**Reversibility**	**Impact**
CONSTRUCTION	DIRECT	MEDIUM	MEDIUM	YES	YES	/
OPERATION	DIRECT	MEDIUM	MEDIUM	YES	YES	/
CESSATION OF OPERATION	/	/	/	/	/	NEGATIVE

Table 2: Impact Assessment Table about morphology and characteristics of the landscape

Impact on Geological, Tectonic and Soil Characteristics

The expected impacts at the above intervention sites are related to the soil characteristics of these sites and not to the geotectonic characteristics. The construction works of the Project are not expected to have any impact on the tectonic characteristics of the immediate and wider study area, given the surface nature of the interventions (shallow excavation depths).

The overall impact on the soil characteristics of the intervention sites is only related to the construction phase, as the operational phase of the project does not involve any additional soil intervention.

The construction of the project includes:

- Widening of a new road with a length of 1.400,96 m and road improvements with a total length of 4.740,33 m for access to the "Anemoni" site.
- Opening of underground channels for the transmission of medium voltage cables to connect the wind turbines to the substation.
- Excavations for the foundations of the wind turbine bases.
- Construction of the foundations for the wind turbines.

Project Construction Phase

The geological, tectonic and soil changes that will occur are related to the activities that will take place during the construction of the project but will be minor and limited to the surrounding area.

The interventions for the placement of the WTs and the construction of the WPP, such as the landscaping of the wind turbine foundations, the construction of new internal roads and the improvement of existing roads to ensure access to the wind turbines, the interconnection of the wind turbines with the voltage step-up substation, have been described in detail in the description of the Project under consideration (Chapter 6) of this study. At a general level, the impacts of these interventions on the ground are characterized as mostly negative in nature, of varying magnitude (intensity) and duration, partially or fully manageable and localized in terms of their geographical scope, but without causing changes in the lower geological layers and tectonic characteristics of the study area.

The land will be restored to its previous condition and original height using most of the excavated soil. As the land where the wind turbines will be installed is rocky, it is not expected that extensive vegetation clearance will take place, except in specific areas, without causing soil erosion. Only the soil (and not the underlying geological layers and tectonics) will be temporarily affected during the construction phase by the presence of construction sites and machinery for the transport, assembly and installation of the wind turbines and the construction of ancillary works. This impact would be small, negative, short-term, and fully reversible.

Once the work on the foundations of the wind turbines, the construction of roads, etc., has been completed, it is planned to restore the area to its original state, and the changes that will take place will be limited to the foundations of the wind turbines. The latter will be paved with the products of the earthworks, so that the intervention will be limited to the internal roads and the area where the wind turbines will be installed. This will also reduce the amount of waste generated and limit any further disturbance to the site.

The restoration of disturbed sites will therefore have the following main objectives:

- The restoration of the natural environment from the damage caused by the construction of the project and the harmonious integration of the road into the landscape.

- To protect the surface of the embankments from erosion, mainly because of rainwater, by removing various particles from the body of the embankment, the maximum percentage of which (around 75%) will normally take place in the first autumn and winter period following the end of the earthworks. The areas proposed for restoration are the embankment surfaces, which will be filled with vegetated soil.

- Restoration of vegetation removed during the excavation works.

Regarding the trenches for the transmission cables, it is planned that these surfaces will be partially covered with the material excavated during the excavation process and thus

returned to their original level. The impact of the cable laying on the ground is expected to be extremely limited and localized, as the work will be light and of limited duration. They are also considered to be reversible, as the entire connection line is underground.

In addition, the W/Ts can be installed in seismically active areas, since the design to withstand the normal stresses to which the blades and tower are subjected during operation is greater than the stresses normally encountered in the event of an earthquake. The entire plant can withstand large earthquakes without damage.

It can therefore be concluded that the impact on the topography and morphology of the area affected will be weak, negative, and short-term, and will not cause ground instability or changes in the geological configuration of the rocks, since no deep excavations will be carried out.

Project Operation Phase

During the operational phase of the project, no impact on the soil, geological and tectonic characteristics of the immediate and wider study area is expected. The operation of the WPP Project is not associated with any additional ground disturbance. In addition, the operation of the project is not associated with the generation of hazardous liquid or solid wastes which, in the event of an accident, could be dispersed into the surface soil layers and cause changes in the composition and consistency of the surface soil mantle.

Cessation Of Operation

When dismantling a wind farm, the surface soil should be removed at the points where, according to the original design, cranes are to be installed and components and other materials are to be temporarily stored. The dismantling of the wind turbine sections, and the temporary storage of components and materials requires the creation of suitable flat surfaces. Earthworks grading will be undertaken, and the soil removed from the site surface will be stored for the purpose of re-surfacing. This area will be surface covered with gravel. At the end of the process the gravel placed will be removed.

The soil will be decompacted and the soil will be replaced and repositioned so that it is similar to the original composition prior to any intervention on the site.

Synergistic impacts / Cumulative impacts:

As regards synergistic impacts during the construction phase, they are unlikely to occur as it is not feasible to build all the licensed stations at the same time. With regard to the case of simultaneous operation of the projects under licensing and with a producer's certificate in the study area, as well as the network of forest roads in the nearest area of the installation of the W/Ts, in the operation phase of the project, it is not expected to bring any synergistic impact on the geological, tectonic and soil characteristics of the nearest area of the project location, given that the WPP in its operation phase, as well as the accompanying projects, do not interact with the specific abiotic factors.

In addition, the use of the existing forest road shared by the power plant under consideration with the adjacent WPP "Pseftis" is an important positive synergistic effect, as it saves significant volumes of earthworks.

Geological, Tectonic and Soil Characteristics						
Impact Phase	**Type**	**Possibility of occurrence**	**Intesity**	**Synergistic action**	**Reversibility**	**Impact**
CONSTRUCTION	DIRECT	MEDIUM	MEDIUM	YES	YES	/
OPERATION	/	/	/	NO	/	
CESSATION OF OPERATION	/	/	/	NO	/	

Table 3: Impact assessment table on geological, tectonic and soil characteristics.

Impacts on the Natural Environment

Construction phase of the Project

Flora

The occupation of the land in the area where the wind farms will be located is the most direct impact of the construction of the proposed WPP on the vegetation of the Field Investigation Area (FIA). The area to be covered relates to the wind turbines foundations, improvements to existing roads and construction sites.

The impacts on vegetation are due to the construction phase of the project and in particular the removal of local plant species for the construction of the bases and wind turbines foundations. However, as already mentioned, the project site is occupied by oak trees, shrubs and areas of juniper and grassland. The direct impact of the construction of the wind farms will result from the occupation of part of the land in the areas where the technical works to serve the project are located, such as the zone of occupation of the internal roads and the cables and platforms of the wind turbines. The construction of these works will locally alter the natural state of the habitats on which they are built, as they will require the clearing and shaping of the land within the occupation zone.

The removal of vegetation will take place in the places where the W/Ts are to be located and the wind turbines foundations around them will be landscaped to accommodate the movement of the mechanical equipment that will work on their construction and maintenance.

The wind turbine installation area is dominated by areas of sclerophyll vegetation, mixed forest, natural pastures, land used mainly for agriculture together with significant parts of natural vegetation, coniferous forest, transitional woodland and shrubland and areas with sparse vegetation. In general, the above habitat types predominate in the area.

The removal of vegetation on these surfaces is negligible both in terms of the type of vegetation and in relation to the objective of the specific project. The WPP under consideration falls within oak and beech forests with small stands of pine. Forested areas with scattered mature oak trees dominate much of the area, which is used for extensive forestry and livestock farming. The Diavolorema River flows through the area, creating areas of riparian vegetation and small rocky gorges. No particularly important vegetation species are destroyed in either of the two cases studied.

The interventions to be made on the surface will be minor and will soon be restored as the affected areas are backfilled and the native species of the area will re-cover the ground. Furthermore, the flora of the protected area and the other areas where the wind farms will be located are not expected to be exposed for a prolonged period to the air pollutants from the mechanical equipment and the dust to be generated by the construction processes that will take place on the site as these will be of limited duration and low concentration since all the necessary measures will be taken, such as wetting the surfaces to reduce the release of dust, maintenance of the equipment to be used etc.

However, vegetation can potentially be affected by the discharge or leaking of liquid toxic wastes such as oils and fuels from the site and construction machinery which will also affect the soil causing pollution of the soil and consequently the existing vegetation. For this reason, all necessary measures must be taken, and the necessary equipment must be available, e.g., adsorbents, to deal with possible spills that may occur.

Overall, the vegetation in the area under consideration is expected to be adversely affected to a moderate degree. However, these impacts can be identified as manageable and reversible assuming that appropriate protection measures are taken, which are described in detail in Chapter 10. In terms of the time of occurrence, they are considered long-term locally as the lifetime of the project is long, but in the wider area they are considered short-term. ***Therefore, minimal impacts on the flora of the area are expected to be caused locally during the construction phase of the project, since Annex I species of the Joint Ministerial Decision 14849/853/E103/4.4.2008 are not affected, as mentioned below.***

Based on the above assessment, it is concluded that there is no substantial change in environmental impacts compared to those considered and assessed in the environmentally permitted project. There is also no likelihood of a significant cumulative or synergistic effect between the impacts due to the distances between the wind turbines.

Thus, it is noted that the study area is not a Special Conservation Zone (S.C.Z.) and/or a Site of Community Importance (SCI) and for this reason **no habitat types of Annex I of Joint Ministerial Decision 14849/853/E103/4.4.2008 (Government Gazette B΄ 645) are recorded.**

Synergistic/Cumulative impacts

Synergistic/ Cumulative impacts will not occur during the construction phase as it is unlikely that all the adjacent WPPs will be constructed at the same time-**worst case scenario.**

In the scenario where only the proposed project under consideration is constructed and licensed in synergy with the existing WPPs in ***the synergistic impacts study area*** would be the limitation of areas that would be suitable for use by avian species, such as areas or sites suitable for nesting, roosting, cover, foraging, etc.

All the projects, or more accurately the most significant in terms of generating negative impacts, are usually located within the two polygons of the WPP, although associated projects, such as access roads, may extend for several kilometers off these.

However, the otherwise dense network of forest roads located within productive forests, the road network connecting mountain settlements, villages, etc., the road network serving other purposes, such as the network of rural roads, the network serving livestock needs, etc., which often already exist in areas where new WPPs are being installed, cannot easily be distinguished in terms of the impact they cause in relation to those parts of the road network that are also used as access roads to WPPs.

Fauna - excluding avifauna.

The impacts on fauna are due to the construction works of the wind farms, and particularly the groundworks, the required road improvements, the assembly of the electrical installations and the construction of the wind turbines. The characteristics of these works are not expected to disturb the habitats of reptiles, mammals, and amphibians for an extended period of time. The interventions in the area where the wind turbines are to be installed will be punctual and cannot affect the local fauna to a significant extent.

However, the increased noise levels and human presence due to the works taking place at the site are likely to cause species to relocate and temporarily move from the site until the construction of the project under consideration is completed. However, impacts are limited to this extent and are fully reversible and temporary without leading to habitat fragmentation. ***However, once the works are completed, the disturbed areas will be used again by local fauna for natural colonisation.***

In addition, it is noted that this area does not belong to the Natura 2000 network areas that are classified as SACs and/or SCIs and there is no record of species of Directive 92/43/EK in their Standard Data Forms. However, indicative sampling was carried out for the other fauna species of the area (except for the avifauna that is the protected object of the SPAs, and for which detailed records were made), and the presence of the species found is shown in the table below, with reference to their protection status.

THREATENED STATUS OF SPECIES OF FAUNA OBSERVED IN THE RESEARCH AREA			
SPECIES (LATIN NAME)	**SPECIES (ENGLISH NAME)**	**IUCN EU**	**GR(RB)**
MAMMALS			
Carnivora			
Canidae			
Vulpes vulpes	Fox	LC	NE
Mustelidae			
Martes foina	Beech marten	LC	NE

Felidae			
Felis silvestris	Wildcat	LC	NE
Lagomorpha			
Leporidae			
Lepus europaeus	Rabbit	LC	NE
Cetartiodactyla			
Suidae			
Sus scrofa	Boar	LC	NE
Cervidae			
Capreolus capreolus	Roe deer	LC	VU
Rodentia			
Sciuridae			
Sciurus vulgaris	Squirrel	LC	NE
REPTILES			
Squamata			
Sauria			
Lacertidae			
Lacerta viridis	European green lizard	LC	LC
Podarcis muralis	Common wall lizard	LC	LC
Anguidae			
Pseudopus apodus	European legless lizard	LC	LC
Serpentes			
Psammophiidae			
Malpolon insignitus	Eastern Montpellier snake	LC	LC
Testudines			
Testudinidae			
Testudo graeca	Mediterranean spur-thighed tortoise	VU	LC
Testudo hermanni	Mediterranean tortoise	NT	VU
AMPHIBIAS			
Anura			
Bufonidae			
Bufotes viridis	Green toad	LC	LC

Table 4: Presence of species observed in relation to their protection status

Legend

IUCN Threat Status

EX: Extinct, EW: Extinct from their natural habitat, CR: Critically Endangered, EN: Endangered, VU: Vulnerable, NT: Near Threatened, LC: Least Concern, DD: Not Well Known, NE: Not Assessed

Directive 92/43/EOK

I belongs to Annex I of the Directive (types of natural habitats of Community interest whose conservation requires the designation of sites as Special Areas of Conservation)

II: included in Annex II to the Directive (animal and plant species of Community interest whose conservation requires the designation of Special Areas of Conservation)

III: included in Annex III to the Directive (criteria for the selection of sites that may be recognized as sites of Community interest and designated as Special Areas of Conservation)

IV: included in Annex IV to the Directive (animal and plant species of Community interest requiring strict protection)
V: included in Annex V to the Directive (animal and plant species of Community interest whose capture in the wild and exploitation may be subject to management measures)
Berne Convention
II: included in Annex II of the Treaty (fully protected species and their capture, possession and killing, damage or destruction of their breeding or resting places, disturbance during the breeding, dependence and hibernation period, destruction, collection or possession of their eggs and the possession or trade in these species, whether alive or dead, are prohibited)
III: belongs to Annex III of the Treaty (protected species and establishes periods of prohibition of hunting, temporarily or locally prohibits exploitation, and regulates the sale, possession, transport or offering for sale of these species, whether alive or dead)
Bonn Convention
I: included in Annex I to the Treaty (migratory species in danger of extinction)
II: included in Appendix II to the Treaty (migratory species benefiting from international cooperation on conservation and management measures)
International Convention CITES
I: included in Appendix I to the Convention (species threatened with extinction and affected or likely to be affected by trade)

II: included in Appendix II of the Convention (species which, although not currently threatened with extinction, may become threatened in the future if trade is not strictly regulated)

III: included in Appendix III to the Convention (species for which a Contracting State declares that they are subject, within the limits of its competence, to regulation aimed at preventing or restricting the exploitation of these species and requiring the cooperation of the other Contracting States)

Therefore, the fauna of the area identified on the site will not be significantly affected by the construction of the project and the impacts of the construction of the WPP on the fauna of the area can be considered ***weak, short-term and partially reversible upon completion of the works.***

Synergistic / Cumulative Impacts

There will be no cumulative/synergistic effects on fauna during the construction phase, as it is not possible to build all the wind turbines at the same time.

Avifauna

During the construction phase of the WPP and due to the elevated noise level, increased human presence and the emission of dust and pollutants, bird species in the immediate vicinity of the project area will be forced to move to adjacent areas, which occupy a large area in the wider region and have similar habitat characteristics. At the end of the construction phase of the project, bird species will return to the W/T area.

Impacts during the construction phase on avifauna will mainly result from:

- **Immediate habitat loss**, which assesses the magnitude of the impact of direct habitat loss of important birds on these populations. No habitat loss is estimated to occur during the construction phase as the availability of similar habitat in the project area is high.
- **Disturbance and barriers to movement**, which is evaluated based on an assessment of the magnitude of the impact on populations living for at least

some time (breeding, wintering, foraging area) in the installation area due to the potential displacement of some individuals.
During the construction phase it is estimated that disturbance to the avifauna will be weak as

1. The intervention within the production license blocks will be less than their total area and only the areas within the blocks that will be used for the installation of each wind turbine (foundation of the turbine, infrastructure works) will be affected.
2. The opening of access roads will not be particularly large due to the use of the existing road network in the wider area and will be limited to only the parts of the new openings to connect the existing network to the turbine sites.
3. The broader area will not be fenced off; the disturbance will be of short duration and intensity and ultimately reversible after the works are completed.

Impact assessment of associated projects

Regarding the associated works, the works that are placed within the two polygons of the construction of the WPP, such as the control center that will be built on the site of the two polygons of the wind turbine installation, it is considered that no special mention is required since the important structure on the site is the wind turbine itself and any impacts reported in the literature relate to them.

The impacts that may be created on the environment by the accompanying works are caused by the wiring and power transmission lines, which may constitute obstacles to the movement and flight of various species of birdlife and may cause impacts. Based on studies in the international literature, accidents, and losses of individuals of avifauna species due to impacts on power lines have been recorded. Most of the incidents that have been documented concern cases of impacts on high-voltage cables or impacts on high-voltage cable pylons rather than on medium-voltage cables. At this wind farm it is proposed to connect the wind farm underground to the grid or, if this is not technically feasible, to connect it to existing power transmission lines running close to the wind farm under study. In any case, the underground connection is chosen for this wind farm as the undergrounding of the cables is always proposed as a measure to avoid impacts on the bird population and the environment in general.

Based on the above data, it is assessed that the cabling for the transmission of the generated electricity will not pose any risk to the avifauna of the installation site and its constituent species and will not harm the conservation objectives of the site and its integrity.

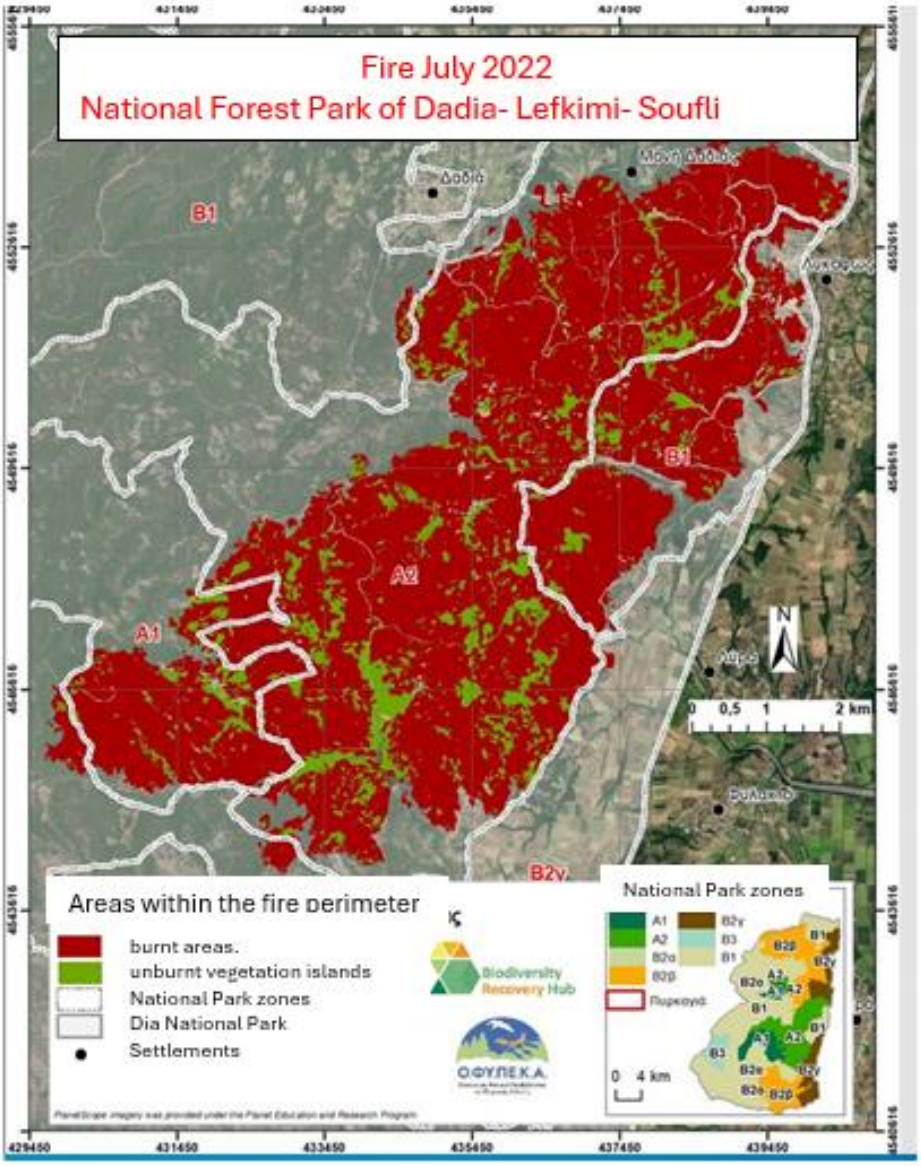
Regarding access roads, it is true that the existing road network in the area will be used, and very little internal road widening will be carried out to access the turbines, and very little improvements will be made to the existing road network, as it is a developed network mainly due to livestock farming (Map 109 of the SEA).

Therefore, the accessibility of the site will not be burdened by the installation of the WPP and will not be less than the situation prior to the construction of the project. However, measures will subsequently be proposed for the new section of the widening however (although clearly limited in length) to prevent any additional burden from the movement of the public which includes any non-significant reason for working in the vicinity of the WPP.

Assessment of the impact of forest fires

The assessment of the 2022 fire season finds the Dadia National Park almost 46.000 ha less. During the Evros forest fire, part of the National Park burned despite a major firefighting operation by the fire brigade.

The most affected zones of the National Park were A2 with 26.367 ha burnt, while in the critical zone A1 with the highest density of Blackbird nesting sites, the fire affected 4.590 ha.



Map 2: Mapping of the forest fire in Dadia National Park in 2022 by Natural Environment and Climate Change Agency Greece (NECCA) (source: https://necca.gov.gr/nea-anakoinoseis-deltia-typou/i-epexergasia-doryforikon-eikonon-poly-ypsilis-chorikis-analysis-3-met

The wildfire destroyed a large part of the GR1110002 SPA area named Dasos Dadias - Soufli, however, because it was mostly crawling, several trees were saved. Approximately, half of the hectares (2.250 ha) were burnt to the ground, while the remainder involved the vegetation lining the forest carpet, with the result that the trees were not affected. The destruction of the strict protection zone of the SPA amounts to 80%.

Based on the interview with iEidiseis (23-07-23) we conclude that, the damage assessment to the avifauna is expected to be significant, although the nest of the Golden Eagle within the burned area was not affected, the habitat of large raptors, has been radically changed. Breeding and cover sites have been stripped, and foraging is also a problem as there is no assessment of the influence of the fire on other fauna in the area.

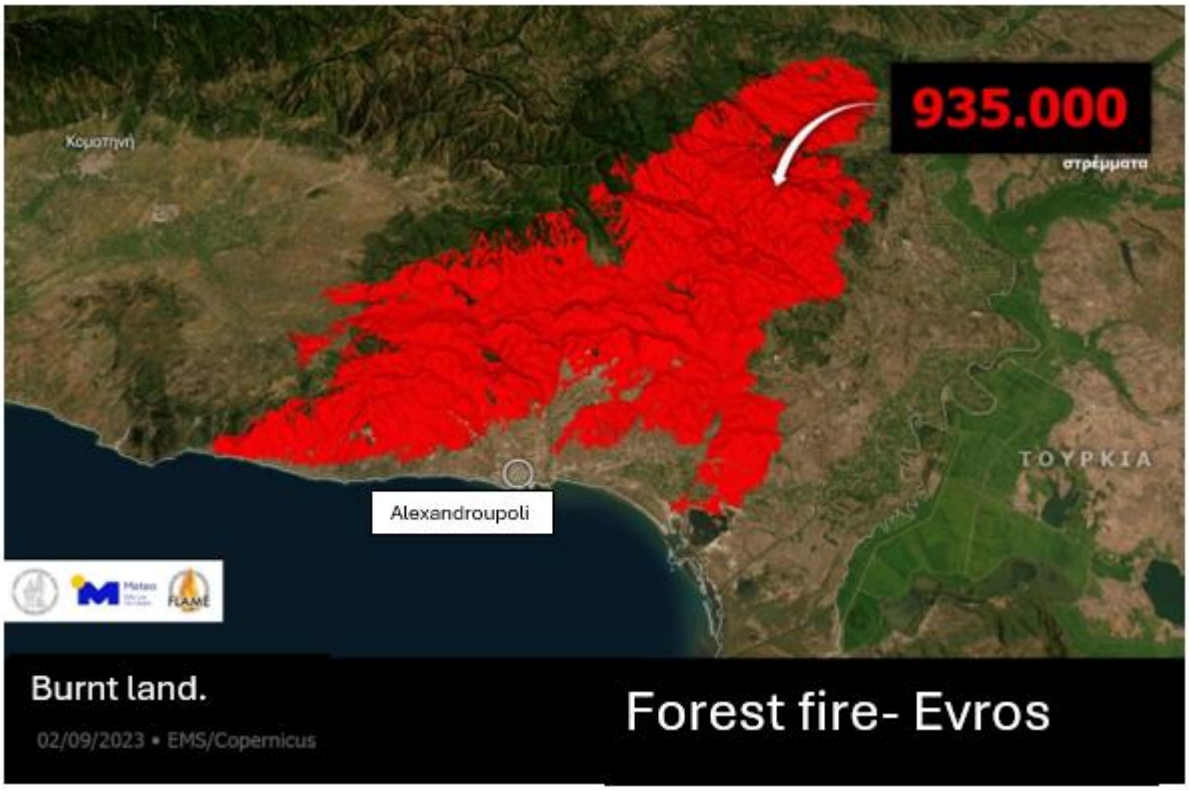
The proposed project is not expected to have any further impacts on the study area. During the construction phase, the continuous presence of manpower can contribute in case of a fire as they will be able to detect it immediately and inform the relevant authorities, while the accompanying works of the WPP, such as the opening and improvement of the forest road can help the fire brigade's work in accessing the forest.

It is important to mention the immeasurable ecological disaster that hit Alexandroupolis and Dadia in August 2023 with the burnt areas being of the total 93,500 ha of burnt area, approximately:

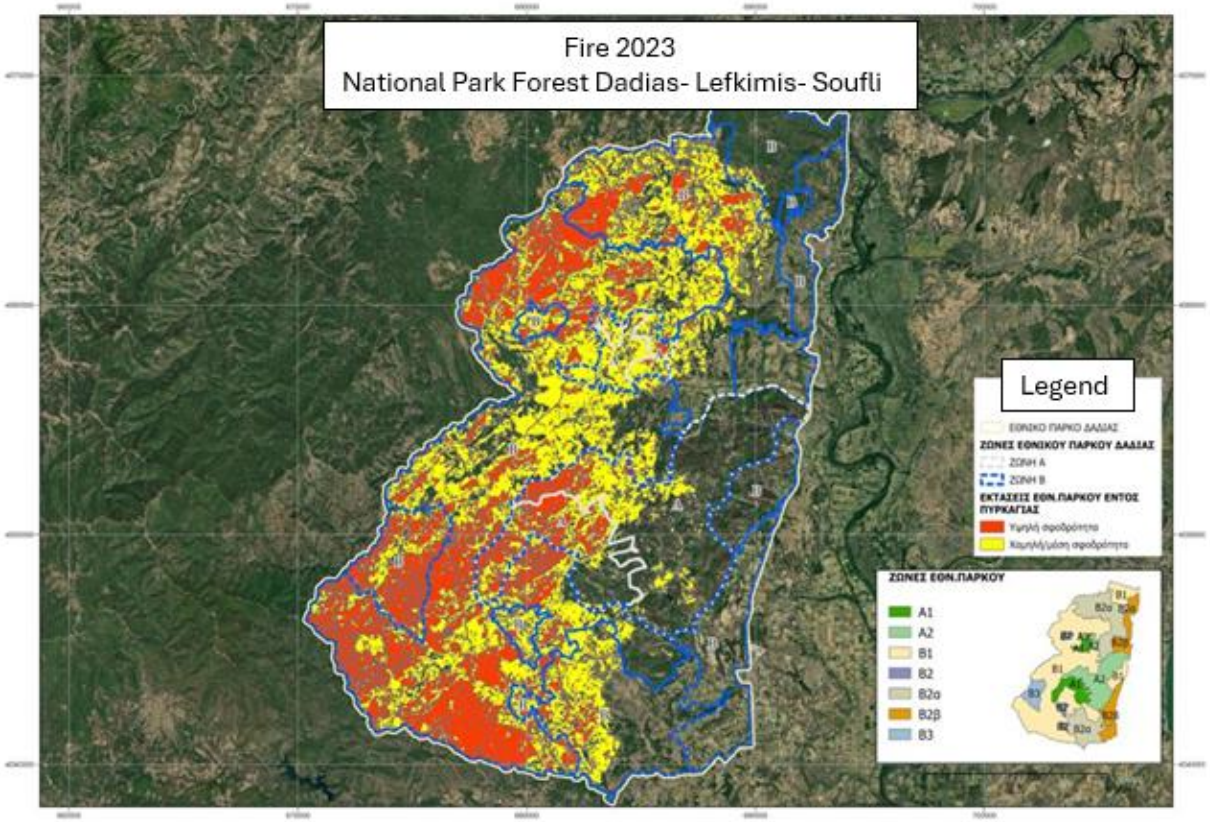
- 440.180 ha are forest areas (47%).
- 318.700 ha are scrubland (34%).
- 81.140 ha are agricultural land (9%).

The Evros forest fire has been identified as the largest mega-fire in Greece in the last 21 years. The black pine forest that was destroyed was an important habitat for raptors, the good scenario is that they are gone, and the worst scenario is that they have burned. It will take 100 to 150 years to restore the unique forest of Dadia since the soil composition of the burnt area is expected to change, as silt and ash will settle with rain, while erosion and flooding will be a major problem and soil quality decline will be inevitable. Flood and erosion control measures are a necessity to minimize the impact.

The complete destruction of the Black Vulture, Egyptian Vulture and Vulture habitat will lead to a radical redistribution of the species, with the most plausible scenario being their migration to the more northerly forests of the Balkans, especially Bulgaria, which provide similar habitats. Due to the spatial distribution of these species and the large ranges they reach, it is considered almost certain that they will not be incorporated into the neighboring GR1130011 and GR1110010 SPAs, whose influence of the adjacent forest fire will be the temporary change in air quality due to smoke and soil quality due to ash. The overall estimates and the future condition of the affected area will have a significant negative impact on the Northern Lung of Greece such as the forests of Evros. A forest fire increases by 7 times the risk of flooding, by 4 times the risk of soil erosion and by 3 times the risk of landslides, all of which contribute to the advance of desertification and of course to a further acceleration of temperature increase. This is a vicious circle, the speed of which is constantly increasing.



Map 3: Burned areas from the fire in Evros (source: https://www.meteo.gr/article_view.cfm?entryID=2907)



Map 4: Impact of the fire in the National Park Forest of Dadia - Lefkimi - Soufli (source: https://necca.gov.gr/nea-anakoinoseis-deltia-typou/o-ofypeka-sti-sxedia-2-2/)

Finally, it is noted that the project under consideration does not belong to the above-mentioned burnt areas and is located at a very long distance, namely around 20 km in a straight line, while various geomorphological elements are interfering. The project will not affect the habitats of the Dasos Dadia area. Therefore, the fact of fire does not need to be considered in the impact assessment of the study.

Synergistic/Cumulative impacts

Disturbance, displacement, and barrier creation: In the case of licensed all the under-licensed WPPs in constructive collaboration with the existing WPPs (worst case scenario) the impacts are related to the construction works of these and their accompanying infrastructure. The impact of the disturbance will last for a limited period; therefore, any potential impact will be ***short term, non-transient and reversible.***

Synergistic/Cumulative impacts during the construction phase if all adjacent licensed WPPs are licensed would be ***moderate, short term and reversible.***

Project Operation Phase

As seen from all the above exposures, the construction phase of the proposed WPP will have overall minor to moderate negative impacts, both direct and indirect, on the ecosystem, the ecosystem functions on the flora and fauna of the area. However, these impacts are expected to be local, not fragmenting priority habitats and habitats of vital importance for maintaining ecosystem cohesion, since they are short-term in character (for the duration of the construction of the WPP) and most of them are direct. Some of them are of a permanent nature, such as the construction of the wind turbines foundations. Finally, some of the impacts are manageable once the necessary measures have been taken.

Flora

During the operational phase of a wind farm, no emissions of gases, liquid or solid waste are expected to have an adverse effect on the flora and fauna of the area.

Areas that have been altered during the restoration of the project will be restored to their original condition through horticultural interventions. The habitats of the area will not be adversely affected since, as mentioned above, it will be possible to recolonize the entire area affected in the immediate study areas and not occupied by technical works.

The area that will be restored at the completion of the construction of the project consists of areas with a total area of 65.804,92 m^2 and the area that will be kept free of vegetation consists of areas with a total area of 90.751,42 m^2. However, after the project has ceased to operate, the remaining area will be restored.

Therefore, neutral impacts on flora and habitats are expected during the operational phase of the project.

Synergistic / Cumulative effects

In case only the project under study is licensed in synergy with the existing WPPs, the flora and vegetation species will be deforested in the areas occupied by the project under study **- best case scenario.**

The following table illustrates the low percentages of acreage that may be affected by habitat loss in **the entire synergistic impact study area.**

Explanation of corine land cover 2018 codes	Corine land cover 2018 codes	Covarage area in the whole of the synergistic impact study area (ha)	Area of habitat coverage of the polygons of the existing WPPs and the polygon of the WPP under study within the total synergistic impact study area (ha)	Estimated percentage of area likely to be affected by habitat loss (% of each habitat of the total synergistic impact study area)
Discontinuous urban fabric	112	51,93	0,00	0,00
Industrial and commercial zones	121	109,29	20,82	19,05
Non-irrigated arable land	211	2017,77	0,00	0,00
Grasslands	231	195,32	0,00	0,00
Composite crops	242	375,62	0,00	0,00
Land used mainly for agriculture together with significant parts of natural vegetation	243	9953,51	24,56	0,25
Broadleaf forest	311	23385,54	243,29	1,04
Coniferous forest	312	5979,40	83,57	1,40
Mixed forest	313	7500,77	0,08	0,00
Natural pastures	321	6899,88	406,40	5,89
Sclerophyll vegetation	323	25092,14	97,39	0,39
Transitional woodland and scrubland	324	2316,61	77,51	3,35
Beaches,dunes,sandy beaches	331	56,16	0,00	0,00
Areas with sparse vegetation	333	2407,08	121,09	5,03

Table 5: Calculation of habitat loss (in ha), in case that out of the total number of licensed WPPs (under production), only the project under study, in synergy with the existing WPPs within the considered synergistic impact study area (best case scenario), receives a license.

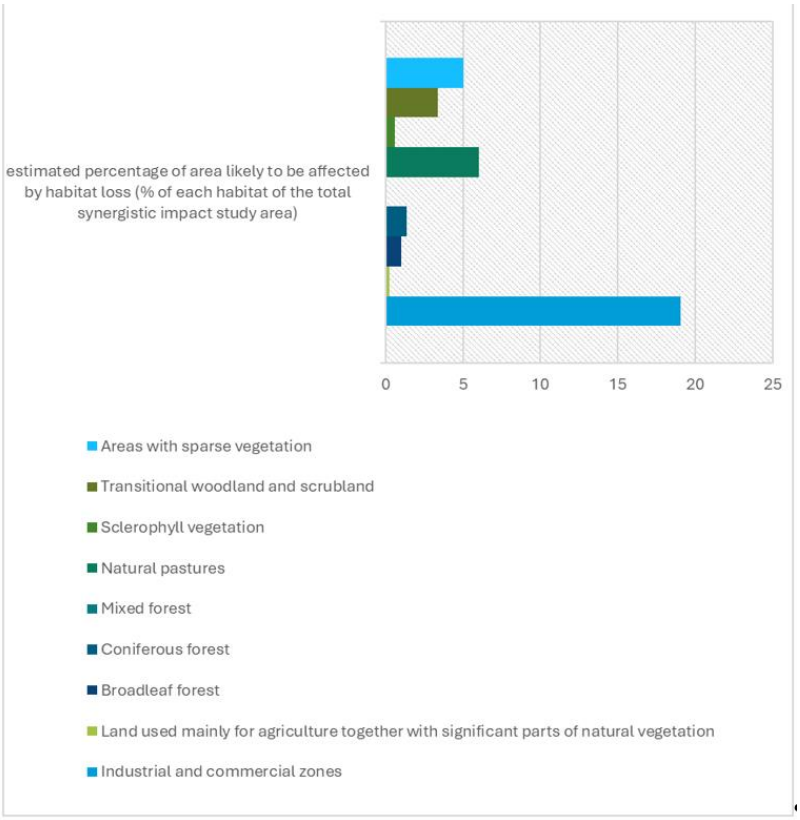


Figure 1: Graph showing the estimated percentages of area that may be affected by habitat loss (% of each habitat of the entire synergistic impact study area.

As observed from the above graph, the estimated percentages of area that may be affected by habitat loss are low and are observed only in specific habitats such as industrial and commercial zones, natural pastures, sparse vegetation, transitional woodland and scrubland, coniferous forest, broadleaf forest, hardwood forest, land mainly used for agriculture together with significant parts of natural vegetation and mixed forest.

Given that following the end of construction activities the land is expected to be restored to some extent by natural processes and that the project is located within habitats that are abundant throughout *the synergistic impact study area*, there will be minor impact on habitat degradation in the study area and the wider area.

In terms of habitat types, if all adjacent WPPs under licensing are licensed **(worst case scenario), impacts could rise to more onerous levels**. According to the following table, which is also included in the SEA, the contribution to habitat losses is calculated if the project under consideration were to operate in synergy with the adjacent licensed WPPs (existing and under production).

Explanation of corine land cover 2018 codes	Corine land cover 2018 codes	Covarage area in the whole of the synergistic impact study area (ha)	Area of habitat coverage of the polygons of the existing WPPs and the polygon of the WPP under study within the total synergistic impact study area (ha)	Estimated percentage of area likely to be affected by habitat loss (% of each habitat of the total synergistic impact study area)
Discontinuous urban fabric	112	51,93	0,00	0,00
Industrial and commercial zones	121	109,29	20,82	19,05
Non-irrigated arable land	211	2017,77	129,37	6,41
Grasslands	231	195,32	0,00	0,00
Composite crops	242	375,62	0,00	0,00
Land used mainly for agriculture together with significant parts of natural vegetation	243	9953,51	756,72	7,60
Broadleaf forest	311	23385,54	1134,54	4,85
Coniferous forest	312	5979,40	406,71	6,80
Mixed forest	313	7500,77	38,61	0,51
Natural pastures	321	6899,88	730,49	10,59
Sclerophyll vegetation	323	25092,14	1046,69	4,17
Transitional woodland and scrubland	324	2316,61	157,38	6,79
Beaches,dunes,sandy beaches	331	56,16	0,00	0,00
Areas with sparse vegetation	333	2407,08	563,99	23,43

Table 6: Calculation of habitat loss (in ha) if all of the proposed projects are approved licensing WPP (licensing stage under production), in synergy with the existing within the overall synergistic impact study area under consideration (worst case scenario)

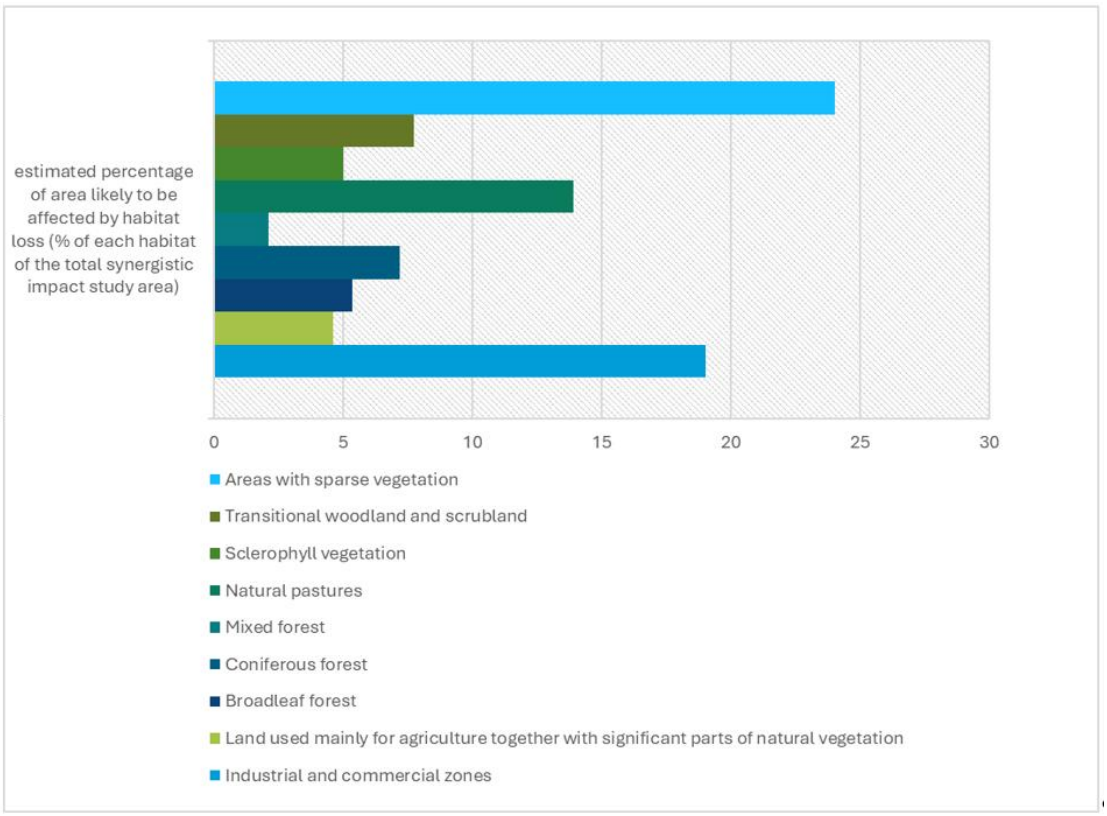


Figure 2: Graph showing estimated percentages of area that may be affected by habitat loss (% of each habitat of the total synergistic impact study area).

As observed from the above graph, the estimated percentages of area that may be affected by habitat loss **are higher than in the previous best-case scenario**. Again, the percentages of area observed are only in specific habitats such as industrial and commercial zones, natural pastures, sparse vegetation, transitional woodland and scrubland, coniferous forest, broadleaf forest, hardwood forest, land used for agriculture together with significant parts of natural vegetation and mixed forest.

However, most of the habitats are abundant in the study area and the wider area and given that the WPP is sited within these habitats, the project would have **minor impact on habitat loss/degradation in the study area and the wider area.**

Fauna - except avifauna

During the operational phase of the wind farm, the impacts on mammals, reptiles and amphibians will be due to the noise generated by the wind turbines and the lighting which, for reasons of flight safety, is likely to cause some fauna to move away from the wind farm site.

However, as the area where the wind turbine is installed is not fenced, there can be no isolation or reduced mobility of terrestrial fauna in the area. The displacement of small mammals and reptiles is expected.

The following section presents peripheral parameters related to the impact of wind turbines on mammals.

- Disturbance during construction may be temporary.
- The significance of impacts is likely to depend on habitat availability and existing levels of disturbance within the wider landscape.
- Avoidance of large areas around relevant infrastructure such as transmission lines.
- Displacement of nest sites for larger predators may be observed.
- New access roads may facilitate movement of individuals (but consequently bring them into contact with road traffic).
- Significant impacts may occur in more remote, mountainous and currently inaccessible areas where improved access for recreation, hunting and leisure purposes is likely to result in increased human presence and road traffic.
- Species familiarity cannot be taken for granted, as it depends
- On variation according to species, sex, age, individual, time of year and type of disturbance, as well as on the frequency and predictability of disturbance.
- The significance of the effects is likely to be directly proportional to the size of the wind energy project.
- The accumulation of many small impacts may be significant at the population level.

As far as reptiles and amphibians are concerned, the impacts caused by wind turbines are few and far between in published data.

Studies have shown that the operation of wind energy projects causes occasional mortality, resulting in long term displacement from areas with the highest concentration of wind turbines.

For example, the Greek tortoise (Testudo graeca) (classified as a vulnerable species under the IUCN Red List of Threatened Species) may be affected by habitat loss and fragmentation near access roads due to wind farm construction in southeastern Europe, particularly when wind farms are constructed in rocky or steppe habitats.

According to the study conducted by Thaker et al. 2018, indirect impacts may occur in cases where wind energy projects reduce the abundance of prey-seeking species in the reptile fauna, as indicated by the increase in reptile density and changes in their behavior, physiology, and morphology at a wind energy project in India.

Synergistic impacts on fauna would not be particularly high in the worst case scenario. Therefore, it can be considered that the potential impacts on fauna during the operational phase of the project are ***weak, short-term, and fully reversible.*** It is expected that sensitive species such as small mammals will be displaced and relocated, but at a short distance from the noise and light sources, as these are disturbance factors for these animal populations.

Avifauna

Assessment of the impact on the main species

Based on the analysis of the field records provided in the attached SEA, it is considered that the construction and operation of this WPP, in theory, may have some impact on avifauna species that are sensitive to such structures and projects.

The following table presents the records of raptor species and species considered ***"important" for the field research area***, the frequency with which these species were observed in the research and study area, and the months during which they were recorded. Note that the Table is derived from the daily and monthly field research logs.

Species of importance for the area are recorded in the table below as species observed in the field survey area that are either characterization or delimitation species of the main study area GR1110010 or the study IBA GR003 (within which the study project is located), either they are designation species of the nearest Greek SPA GR1130011 and the nearest IBA GR008, or they are species of interest (as selected in a previous section from the total number of protected areas under study) or they are included in Annex I of Directive 79/409/EOK, as encoded by Directive 2009/147/EK.

The field measurements show that 10 species listed in Annex I of Directive 2009/147/EK were identified in the area. Of these species, 8 are species of interest, while the species **Curruca melanocephala, Picus viridis και Strix aluco** were also observed, which, although they are not species of Annex I of the above Directive, are included in the table below, as they are species of interest **(species of characterization of the IBA under study).**

Thus, for the assessment of the impacts on birds, the following Table was prepared which presents the estimates of the sensitivity of avifauna to wind farms based on the EU guidelines and data (European Commission 2010). **Also presented is the assessment based on the observations and field records reported in the attached SEA.** The assessment is derived from the field data set and its analyses as presented in the section of the SEA "Analysis of records of important species (species listed in Table 30 of the SEA) - Impact risk assessment".

SPECIES	TOTAL SPECIES RECORDINGS	MONTHS (numerically 1= January etc)
Aegypius monachus	6	8/2020, 9/2020, 10/2020, 6/2021
Circaetus gallicus	5	7/2020, 8/2020, 9/2020, 4/2021, 5/2021
Dryocopus martius	1	6/2021
Falco peregrinus	1	11/2021
Gyps fulvus	6	8/2020, 9/2020, 10/2020, 3/2021
Hieraaetus pennatus	1	4/2021

Lanius collurio	5	7/2020, 8/2020, 9/2020, 6/2021
Lullula arborea	10	9/2020, 10/2020, 12/2020, 2/2021, 3/2021, 4/2021, 6/2021
Leiopicus medius	2	2/2021, 3/2021
Pernis apivorus	2	8/2020
Curruca melanocephala	2	12/2020, 6/2021
Picus viridis	2	10/2020, 4/2021
Strix aluco	2	11/2020, 12/2020

Table 7: Important species of avifauna meeting the criteria for further analysis.

Species	number of individual crossings	individual crossings per hour of predator observation	transits within Zone A (outside the zone of direct effect)	transits within zone B	transits within zone C	transits within the zone of direct influence
*Aegypius monachus**	9	0,055555555	1	3	4	
*Circaetus gallicus**	7	0,043209876	1	1	2	
Falco peregrinus	1	0,006172839		1		
Gyps fulvus	13	0,080246913		9	4	
*Hieraaetus pennatus**	1	0,006172839				
Pernis apivorus	6	0,037037037	6			

** One individual passage of Aegypius monachus, three individual passages of Circaetus gallicus and the only individual passage of Hieraaetus pennatus, took place outside the impact zones with the wind turbines of the wind farm under study (distance of more than 2 km from the location of the nearest wind turbine of the project under study)*

Table 8 : Data from the flight analysis of the important predators of the area

The graph below shows for the important species of raptors and other large birds observed in the area, the number of transits, the number of transits per hour of observation of raptors (and other large birds), as well as the number of recorded movements per impact zone A, B and C and the number of movements in the direct impact zone.

- **Zone A** which covers 250 meters either side of the project development axis and within this area raptors may be adversely affected by the project because there is an increased potential for disturbance and collision.
- **Zone B** which starts at 250 meters and extends up to 1000 meters from the project development axis, with avifauna being less affected within this zone than in Zone A.

- **Zone C** which starts from 1,000 meters and reaches up to 2,000 meters from the project development axis which in terms of risk and disturbance rating is even milder than that of Zone B, however it is assessed for large birds or raptors as their territories are large and may be affected by the project theoretically within it.

The Zone of Direct Effect was defined as the zone of 100 m radius from the installation site of each wind turbine, at a height of 30 to 150 m, which is the height at which the blades of the wind turbines rotate and is considered the zone of highest risk of impact for raptors.

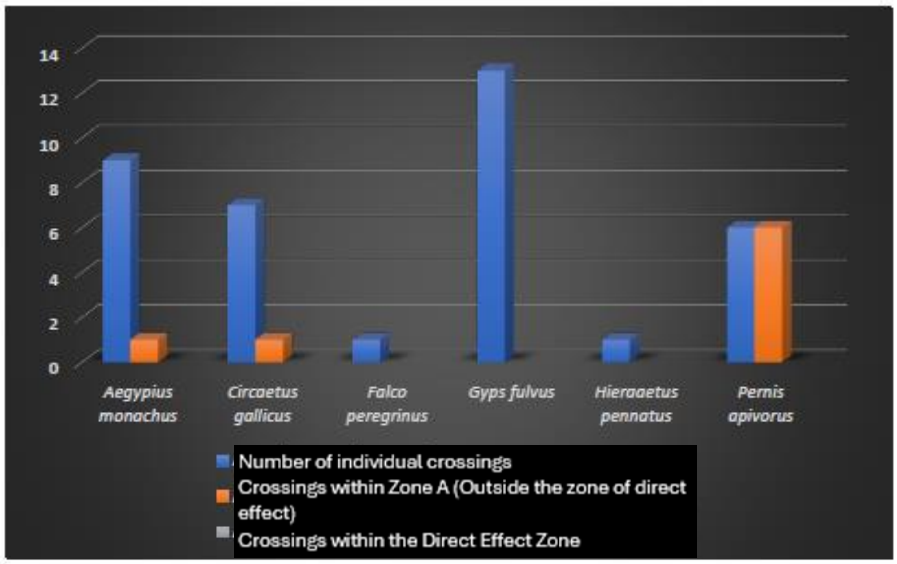


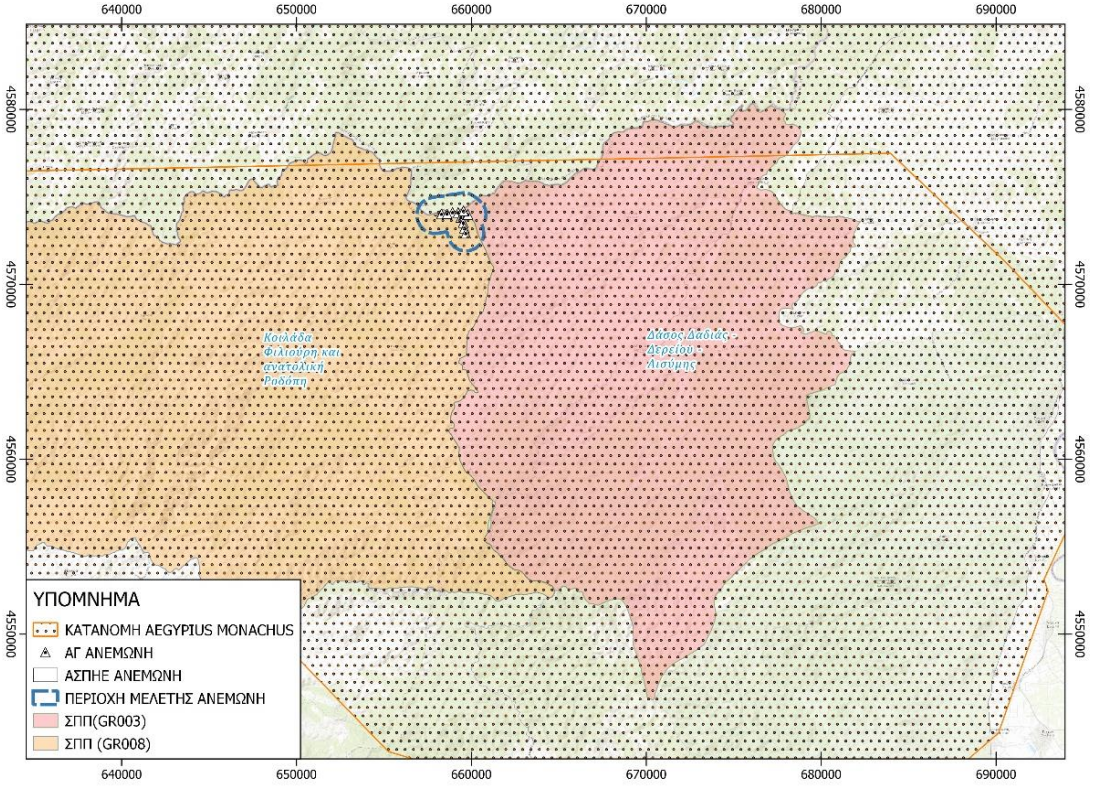
Figure 3: Total number of movements of important raptors and movements in Zone A and in the Direct Effect Zone of the WPP.

Even though the research and drafting study team of the SEA, due to the sensitivity of the wider neighboring area of the Forest of Dadia - Lefkimi - Soufli, extended the duration of the measurements, it was still not possible to calculate the probability of collision with the wind turbines to be installed for some predators due to their zero crossing of the zone of direct impact. This fact, although clearly indicating the very low probability of collision of the above predators with the wind turbines to be installed, does not in any way make the above probability zero.

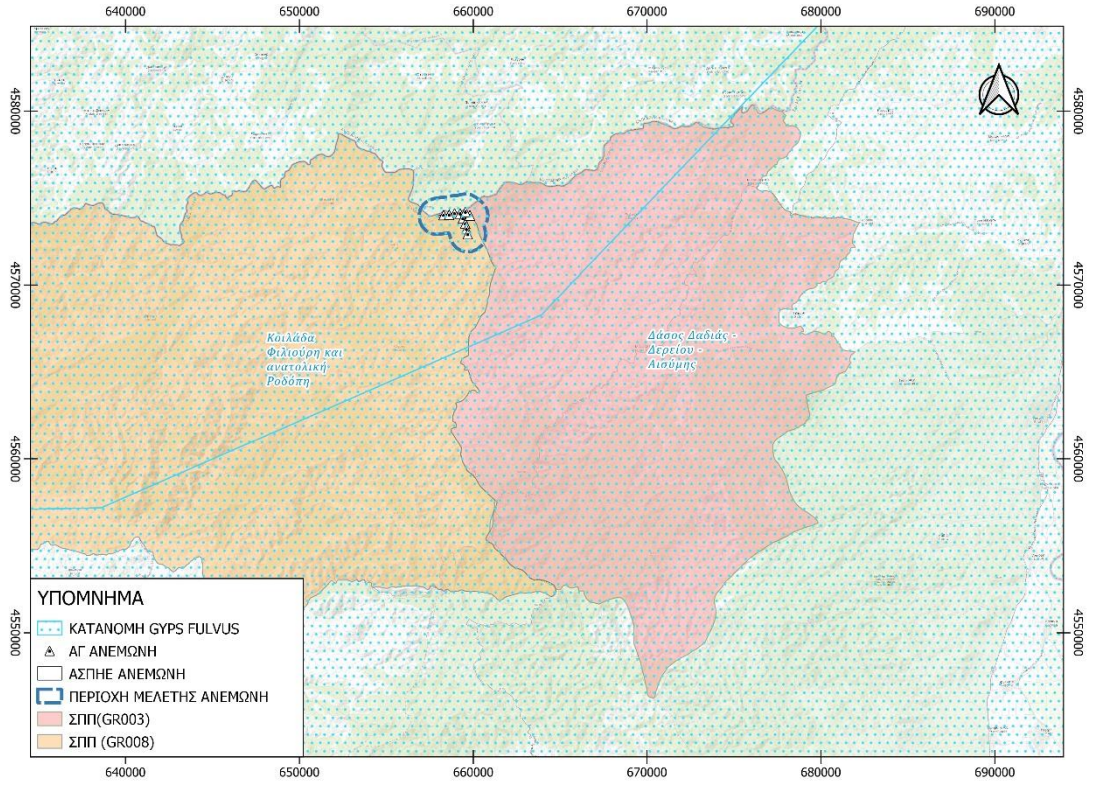
For the above reason, the study team's recording of the impact assessment for the WPPs under study is more rigorous than that which would result from an individual analysis of the field data.

Therefore, the following table lists species that are included in the EU Guidance (European Commission 2010) and in addition the black vulture for which the EU does not provide guidance but is considered as an important species for the wider Eastern Thrace

region, as well as other species listed in the EU Guidance as important species, based on the criteria they meet.



Map 5: Mapping of important areas for birds and the distribution of Aegypius Monachus



Map 6: Mapping of important bird areas and distribution of Gyps Fulvus (Source: IUCN)

Species	EU characterization			Estimation in the studied WPP		
	Habitat loss	Collision	Creation of barrier	Habitat loss	Collision	Creation of barrier
Aegypius monachus (Cinereous Vulture)	-	-	-	O	X	O
Circaetus gallicus (Snake eagle)	X	XXX	X	O	O	O
Falco peregrinus (Peregrine Falcon)	X	X	O	O	O	O
Gyps fulvus (vulture)	X	XXX	X	O	X	O
Hieraaetus pennatus (Booted Eagle)	-	-	-	O	O	O
Pernis apivorus (European Honey Buzzard)			O	O	O	O
Dryocopus martius (Black woodpecker)	-	-	-		O	
Lanius collurio (Red backed Shrike)	-	-	-		O	
Lullula arborea (Woodlark)	-	-	-		O	
Leiopicus medius (Middle Spotted Woodpecker)	-	-	-		O	
Curruca melanocephala (Sardinian Warbler)	-	-	-		O	
Picus viridis (European Green Woodpecker)	-	-	-		O	
Strix aluco (Tawny Owl)	-	-	-		O	
Passeriformes		X	X	Recorded by case		

Legend: XXX = evidence of significant risk of impact, XX = evidence of risk of impact, X = possible risk of impact, O = low or no significant risk of impact, where there is a dash (-) the species is not mentioned in the EU Guide

Table 9: Assessment of impacts on avifauna recorded on the site, in relation to the EU designations and data (European Commission 2010) for those of the above.

Impacts from collisions.

From the above table, it is therefore concluded that of the large predator-scavenger species observed in the field survey area, the vulture is considered to face a theoretical risk of impact, as it seems to use the area of the WPP installation.

The recorded flights of the species and the frequency of sightings per hour of observation are detailed in the preceding section. Based on the data obtained from the analysis of the

field recordings, the above species was classified, in terms of impact, in the risk category **"potential impact risk".**

The above classification was also made given the importance of the wider area for the species, the use of the area (foraging), its size, and the fact that the above species, like most large scavenging birds, is a K-selection species in terms of its evolutionary growth strategies. It would be more appropriate to classify the above species in the milder category of 'low or no significant impact risk' in terms of impact, as not only was the species not observed within the Direct Impact Zone, but it was also not observed within the Direct Impact Zone, but also not within Zone A (of the 13 total individual crossings of the species, nine occurred within Zone B and four occurred within Zone C), while almost all of the individual crossings of the species occurred at an altitude of more than 250 metres (only one individual crossing of the species, which occurred within Zone C, had a flight altitude of approximately 150 meters)

Regarding the black vulture, although the characteristics of its flights from the field recordings in the study area did not indicate the possibility of impacting the wind turbines of the considered wind farm (only one individual crossing out of the total of nine individual crossings of the species observed during the fieldwork took place within Zone A), the above possibility cannot be excluded due to its presence. Therefore, and while this is not evident from its flight characteristics as stated above, the species was preferred to be classified in terms of impact risk, in the risk category **"potential impact risk".**

With regard to the short toed snake eagle (as for the vulture and the black vulture), the probability of impact on the wind turbines of the project under study resulting from the field records is zero (only one individual crossing out of the total of seven individual crossings of the species observed during the fieldwork took place within Zone A, while three individual crossings out of the total took place outside the impact zones at a distance of more than 2 km). However, given the importance of the wider area for this species, its low but existing presence, their size, and the fact that the above species, like black vulture and vulture, are K-selection species in terms of their evolutionary growth strategies, we consider that there is always the possibility of risk of collision.

This possibility is real, especially if other factors act in combination in the area to increase, even for a limited period, the activity of the above species (especially vulture and black vulture) in the field survey area, such as for example the presence of a dead animal in the vicinity of the WPP installation area. For the above reason, and in order to minimize the anyway very low probability of risk of the above species from collision impacts, additional measures to address the potential impacts are proposed in the following section, **the most important of which is the obligation of the project proponent to install an optical system for automated wind turbine shutdown in case of detection of a species of interest in the vicinity, in order to minimize the probability of collision.**

The other species of important predators, such as the Booted eagle, the European Honeay Buzzard, and the peregrine falcon, are in the same category as the short-toed snake eagle. Their total individual crossings are minimal. Although the above species do

not appear to be directly associated with the study area and in particular with the project site, this fact, as mentioned above, cannot exclude the possibility that these species may make accidental passages from the project site, and therefore there may be some possibility of impact for them, which is however very small, and therefore the above species have been classified as 'low or no significant risk of impact'.

For the other important species of birds of smaller body size (oystercatchers, oakleopards, etc.) it is considered that there can be no significant impact as they are species that move over short distances, usually making low flights, and in addition, no large concentrations were recorded in the field survey area.

Impacts from habitat loss.

Regarding the **impact of habitat loss** for most of the 46 species of interest, ***it is not considered to exist*** for the wind farm site, due to the very small area of project occupation and the high coverage of the respective habitats both within and outside the study area.

However, about the classification and delimitation of the main study area of the **GR1110010 SPA**, for which critical habitats for the study area have been presented (available on the website of the Ministry of Environment for 76 SPAs of the country https://ypen.gov. gr/perivallon/viopoikilotita/diktyo-natura-2000/), it is stated that the critical habitats of one of the three designation species (as there are no critical habitats, according to the above source, for the designation species of the blackbird, while the critical habitat of the crane eagle is located outside the two production license blocks of the project) are within the two production license blocks of the project under study.

With regard to the critical habitat of the demarcated species Ciconia nigra and Hieraaetus pennatus, these shall be located outside the production license polygon, while with regard to the demarcated species Circaetus gallicus and Aquila chrysaetos these shall be partially located within the production license polygon, with the percentages of critical habitat area covered being negligible, amounting to 0,022 % for Aquila chrysaetos (total area of Aquila chrysaetos critical habitat: 51.929,86 ha, area of critical habitat covered by the production license polygon of the project under study: 11,30 ha) and 0,003 % for Circaetus gallicus (total area of critical habitat of Circaetus gallicus: 47.082 ha, area of critical habitat covered by the production license polygon of the project under study: 1,43 ha).

Effects of barriers

Regarding the impact of barrier creation, the wind farm under study *occupies a small area and therefore cannot cause a similar type of impact on the above species.*

Also, given the proposal to install an automated wind turbine stopping system, each wind turbine will be stopped when birds of interest are passing through the area, further reducing the already minimal barrier area.

It is also important to note that this system can be set to operate without deterring birds but only by stopping each wind turbine, and the problems that may arise due to the topography can be overcome by the correct choice of the angle of camera placement, so that the case of a bird coming from a lower altitude than the level of the cameras is adequately covered.

This proposed automated wind turbine stopping system has not been installed in all the wind farms in the region, where the passage of important birds of prey takes place without stopping the turbines. The above proposed system, will differentiate the wind farm under study from the rest of almost all the wind farms in the wider area and will minimize the possibility of collision of important species, which in any case does not turn out to be high, raising the bar of environmental protection high for the rest of the wind farms in the wider area as well (**for a detailed description see [para 10.4]**).

The correct setting of the parameters depending on the area (correct choice of the angle of camera placement in order to adequately cover the case that a bird comes from a lower altitude than the level of the cameras due to the morphology of the terrain, correct parameterization according to the biometric characteristics of the species of the area, short response time from the detection of the species to the complete stop of the wind turbine, experimental period of operation of the system with control of its effectiveness by field observers) are necessary parameters to minimize the risk of collision for the above mentioned important species.

Field measurements did not record any concentrations or significant group movements of migratory birds that could be affected by the presence of wind turbines, despite the fact that the wider study area is an important migratory corridor. Furthermore, despite the fact that methodological efforts were made to identify and record autumn and spring migration and possible movements during winter (night observations when the moon phase allowed), it was not possible to record them. At this point it is worth noting that this fact does not, of course, negate the presence of migration in the area. However, the topography of the area where the wind farm is to be installed and the morphology of the wider area does not create narrow passages that could guide the species in crossing the site of the wind farm in question. Therefore, it is estimated that, based on the field data presented here (and for the time period in which they were conducted), no potential impacts on migratory species would occur.

Thus, for the individual potential impacts on the avifauna from the operation of the Wind Power Plants under study, taking into account the Special Ecological Assessment study attached to the relevant annex and the provisions of the Hellenic Ministry of Environment and Natural Resources/ΔΔΦΠΠΒ/68086/2149/2021 (Government Gazette 3663 Β΄/09-08-2021) "National Action Plan for the scavenging species bearded vulture (Gypaetus barbatus), Eurasian griffon vulture (Gyps fulvus) and cinereous vulture (Aegypius monachus) in Greece', it is expected that :

1. ***Impacts from collisions.***

By species of avifauna it is reported that:

- **Black vulture**: the impact intensity is expected to be high for this species in the absence of mitigation measures.
- **Vulture**: impact intensity is expected to be moderate for this species in the absence of mitigation measures.
- **Snake Eagle & other eagle species**: the impact intensity for the Snake Eagle is expected to be moderate and for other eagle species low, in the absence of mitigation measures.
- **honey buzzard**: the intensity of the impact is expected to be moderate for the raptor species, in the absence of mitigation measures.
- **Black Stork**: impact intensity is expected to be low or not significant in the absence of mitigation measures.
- **Cranes**: the intensity of the impact is expected to be low, in the absence of mitigation measures.
- **Nocturnal species**: the intensity of the impact is expected to be low for Buffalo and negligible for other nocturnal species.
- **Migratory species**: impact intensity is expected to be negligible in the absence of mitigation measures.

2. ***Impacts from direct habitat loss (and change in habitat structure)***

As reported in the literature, the scale of direct loss or change in habitat structure due to the construction of a WPP (and associated infrastructure) is generally low (Rydell et al. 2012; Bright et al. 2009; Percival 2000). Specifically, the proposed WPP installation project under consideration at the "Anemoni" site is a project that will be installed within habitat types that are abundant in the area, as the availability of similar habitat to existing habitat in the region is high. ***Therefore, the intensity of the impact on habitat types is expected to be low or negligible.***

3. ***Impact from discomfort-barriers***

In terms of the impact of the creation of barriers, the proposed WPP will not create any impacts as the EIA and the proposals/measures presented in the SEA foresee the cessation of the installation of the WPP during the breeding season of the birds. In addition, the high availability of similar habitat types in the area and the small size of the area of intervention exclude habitat fragmentation and habitat discontinuity. ***Therefore, based on the above data, the passage of birds is not impeded and therefore it is not possible to cause a corresponding impact on the species in the area.***

Synergistic/ Cumulative effects

The assessment and evaluation of the impacts on bird populations of the project in question considers the synergistic effects of **existing, approved or planned projects**, as assessed in the interpretative guide for the management of Natura 2000 sites on the basis of Article 6 of Council Directive 92/43/EOK of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora (EE L 206/22.07.1992).

A ***synergistic impact study area*** has been defined for the assessment of synergistic effects on avifauna in accordance with the Special Ecological Assessment (definition of synergistic impact study area para. 4.3.4).

An analysis of the synergistic effects was carried out in the case of the licensing of the project under consideration in synergy with the existing plants (operating license) - ***(best case scenario)*** and the case of the licensing of the project under consideration, the adjacent licensed WPPs with a production license in synergy with the existing ones ***(worst case scenario)*** was also analyzed.

The following paragraphs summarize the synergistic impacts from impacts, habitat loss and degradation, and disturbance, displacement, and barrier creation for both scenarios (worst-best scenario).

Collisions: With regard to impacts from collisions, according to the SEA the expected impact of the cumulative impact of loss of life due to impact, in the absence of mitigation measures, **will be of high importance mainly for scavenging large carnivores (black vulture and vulture)** as well as for the predators active in the SPA, the corresponding large other avian species such as storks, pelicans, swans, herons and to a lesser extent medium sized raptors.

Specifically, based on the calculations made in the Special Ecological Assessment (the calculations were based on the impact victim search program at 9 existing wind turbines in the Thrace region in 2009-2010), the estimated adjusted raptor mortality rate was calculated to be 0.152 and 0.173 for raptors and vultures respectively, per year and per wind turbine.

Regarding the existing WPP within the Synergistic Impact Study Area (SIA), the annual mortality rates amount to 24.47 and 27.85 predators and vultures respectively, while considering all 10 proposed wind turbines of the wind turbine under study, the mortality rates amount to 25.99 and 29.58 predators and vultures, respectively.

In the case, under which all the WPPs under licensing will be licensed (this estimate is the worst-case scenario), there will be 328 wind turbines (installed and under production licensing) within the Synergistic Impact Study Area (SIA), the estimated mortality rates will be 49,85 and 56,74 predators and vultures, respectively. However, the actual mortality within the entire "synergistic impact study area" may differ significantly (estimated to be much lower), as the above estimates on which they are based refer to a wider geographical area with a significantly higher presence of scavenging and predator species.

In conclusion, regarding the WPP under consideration, the contribution that the construction of the 10 W/T may have on the overall cumulative impact due to impacts on energy infrastructure of the species of interest (with emphasis on scavenging large carnivores) and other large species of interest, such as e.g. the black stork, is estimated to be initially high in the worst-case scenario.

In the above paragraph it should be taken into account that the installed wind farms where the survey was carried out from which the adjusted mortality rates for birds of prey were derived (0.152 and 0.173 for raptors and vultures respectively) were located in a wider geographical area with a significantly higher presence of scavengers and raptors, and operated with almost no mitigation measures to avoid potential negative impacts, while a number of measures are proposed to avoid conflicts in the project under study, including 10.4.1 of Ch. 10.

The contribution that construction of the project under consideration may make to the overall cumulative impact due to impacts to energy infrastructure after implementation of the proposed mitigation measures **is considered to be substantially low relative to all existing and currently permitted energy infrastructure**.

Habitat loss and degradation: the contribution of direct habitat loss or degradation from the project under consideration, compared to the total coverage area of the synergistic impact study area if all Wind Power Plants are constructed and approved, is recorded as significant. This is evidenced by the table in the Special Ecological Assessment (Table 26) in which high rates of habitat loss (worst-case scenario) are recorded.

In case only the project under consideration (Wind Power Plants at Anemoni) is licensed, the impacts on habitats will be weak, long term and reversible as the rates of habitat loss are recorded as low (Table 27 of the SEA - best case scenario).

Nuisance, displacement, and barrier creation:

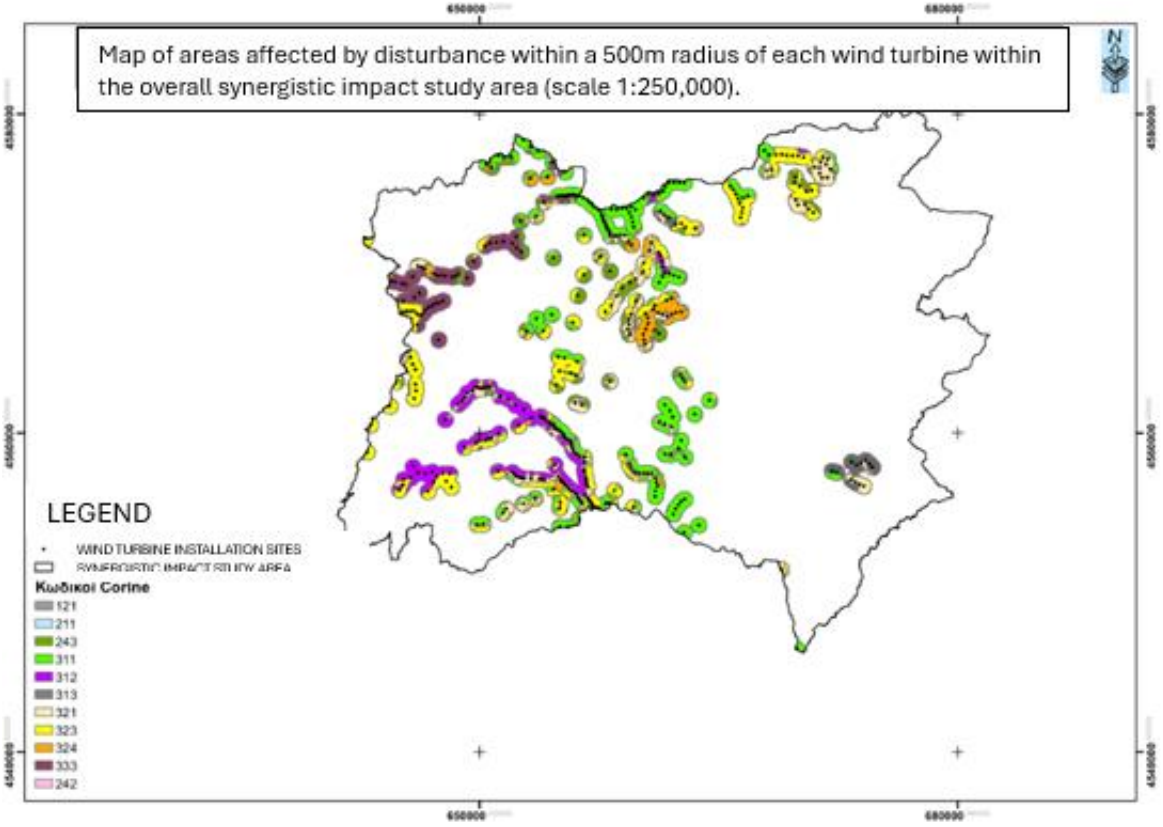
In the case of licensing all the adjacent (under licensing) WPPs in synergy with the existing WPPs **(worst case scenario)** the impacts are related to the operation of the WPPs and the use of the associated works (e.g., roads), which have been associated with displacement of species due to disturbance and avoidance efforts.

- **Nuisance - displacement and barrier creation:**

The assessment of cumulative impacts due to displacement, either as an indirect effect of disturbance or for avoidance of the wind turbine and its associated works that may be encountered by bird species, *was carried out on the assumption that total species activity is reduced by half within a 500 m radius of the wind turbine sites from the WPP. Based on this, the total area within which a reduction in the activity of species of interest by half is expected to occur was calculated, which was assumed to include* areas with scattered patches of necessary resources for avifauna, such as suitable nesting, cover, roosting, foraging, etc.

Case of approval of all the WPPs under licensing (licensing stage under production), in synergy with the existing WPPs, within the considered synergistic study area (worst case scenario).

As noted above, in any areas/locations of suitable habitat included within the above areas where impacts due to disturbance and displacement are expected to occur, ***there will not be a complete cessation of activity of avian species, therefore there is no question of loss of all such habitat.***



Map 7: Map of the affected habitat area due to disturbance within a 500 m radius of each WPP, in case of approval of all licensed WPPs (licensing stage under production) in synergy with the existing ones, within the considered synergistic impact study area (worst case scenario)

Explanation of Corine land cover 2018 codes	Corine Land cover 2018 codes	Area covered in the total synergy study area (ha)	Estimated area of affected habitat for species of interest around the perimeter of all existing and pending permits W/T (500 m radius) within the total synergistic impact study area (ha)	Estimated percentage of area likely to be affected by disturbance (% of each habitat in the synergistic impact study area)
Discontinuous urban tissue	112	51,93	-	-
Industrial and commercial zones	121	109,28	36,01	32,95
Non-irrigated arable land	211	2.017,53	3,88	0,19
Grasslands	231	195,31	-	-
Complex crops	242	375,58	14,81	3,94
Mainly agricultural land with significant natural vegetation	243	9.951,65	1.103,66	11,09
Broad-leaved forest	311	23.381,66	4.158,75	17,79
Coniferous forest	312	5.978,11	1.770,55	29,62
Mixed forest	313	7.500,28	387,46	5,17
Natural pastures	321	6.898,75	2.385,59	34,58
Sclerophyllous vegetation	323	25.088,01	3.864,02	15,40

Explanation of Corine land cover 2018 codes	Corine Land cover 2018 codes	Area covered in the total synergy study area (ha)	Estimated area of affected habitat for species of interest around the perimeter of all existing and pending permits W/T (500 m radius) within the total synergistic impact study area (ha)	Estimated percentage of area likely to be affected by disturbance (% of each habitat in the synergistic impact study area)
Transitional wooded and bushy areas	324	2.316,26	721,95	31,17
Beaches, dunes, sandy beaches	331	56,15	-	-
Areas of sparse vegetation	333	2.406,47	1.357,05	56,39

Table 101 : Estimation of the affected area (in ha) of degradation due to nuisance within 500 m radius of each WPP, in case of licensing of all WPPs under licensing (licensing stage under production), in synergy with existing WPPs, within the considered synergist

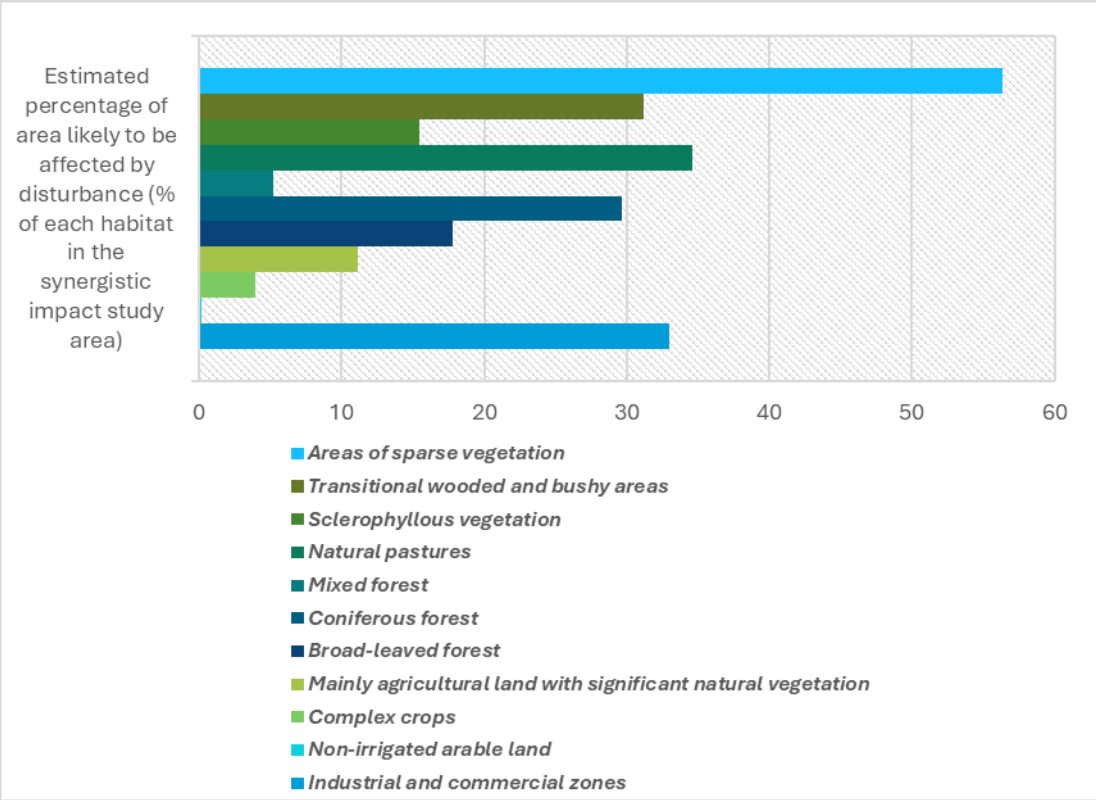


Figure 4: Estimated percentage of habitat area that may be affected (in ha) by disturbance (% of each habitat in the synergistic study area).

The percentages of the areas calculated in the above table refer to the case in which all the licensed WPPs will be licensed **(licensing stage under production)**, in synergy with the existing WWPs ***(worst case scenario).***

The graph and table above show high rates of habitat loss **due to displacement** relative to the total available suitable habitat within the **Synergistic Impact Study Area (SIA)**. In descending order, they are sparsely vegetated land, natural grassland, industrial commercial zones, transitional woodland and scrubland, coniferous forest, broadleaf forest, hardwood forest, land used primarily for agriculture, mixed forest, composite crops, and non-irrigated arable land.

<u>Best case scenario</u> for the approval of only the project under consideration, in synergy with the existing WPP, within the synergistic impact study area.

According to the following table (see Table 27 of the SEA) and the graph below, in the case that out of the total number of WPPs under licensing (licensing stage under installation and under production) only the project under study is licensed (best case scenario), in synergy with the existing WPPs, the estimated habitat losses due to displacement in relation to the total available suitable habitat (within SIA) where a reduction in species of interest activity of half (50%) is expected, are **<u>minimal</u>**.

Explanation of Corine land cover 2018 codes	Corine land cover 2018 codes	Area covered in the total synergy study area (ha)	Estimated area of affected habitat of species of interest around the perimeter of the licensed A/C of the project under study in synergy with the existing ones (500 m radius) (ha)	Estimated percentage of area likely to be affected by disturbance (% of each habitat in the synergistic impact study area)
Discontinuous urban tissue	112	51,93	-	-
Industrial and commercial zones	121	109,29	36,02	32,96
Non-irrigated arable land	211	2.017,77	0,07	0,003
Grasslands	231	195,32	-	-
Complex crops	242	375,62	-	-
Mainly agricultural land with significant natural vegetation	243	9.953,51	128,03	1,29
Broad-leaved forest	311	23.385,54	1568,8	6,71
Coniferous forest	312	5.979,4	828,17	13,85
Mixed forest	313	7500,77	0,25	0,003
Natural pastures	321	6899,88	929,89	13,48
Sclerophyllous vegetation	323	25092,14	594,1	2,37
Transitional wooded and bushy areas	324	2.316,61	231,24	9,98
Beaches, dunes, sandy beaches	331	56,16	-	-
Areas of sparse vegetation	333	2.407,08	381,59	15,85

Table 11 : Estimation of the affected area (in hectares) of nuisance degradation within a 500m radius of each WPP, if only the study project is approved, in synergy with existing WPPs, within the synergistic impact study area (best case scenario).

According to the SEA and documentation maps, the above table habitats are dominant, according to the database and land cover mapping (Corine land cover 2018) (see SEA Map 7), covering a total of more than 99% of the area of the synergistic impact study area.

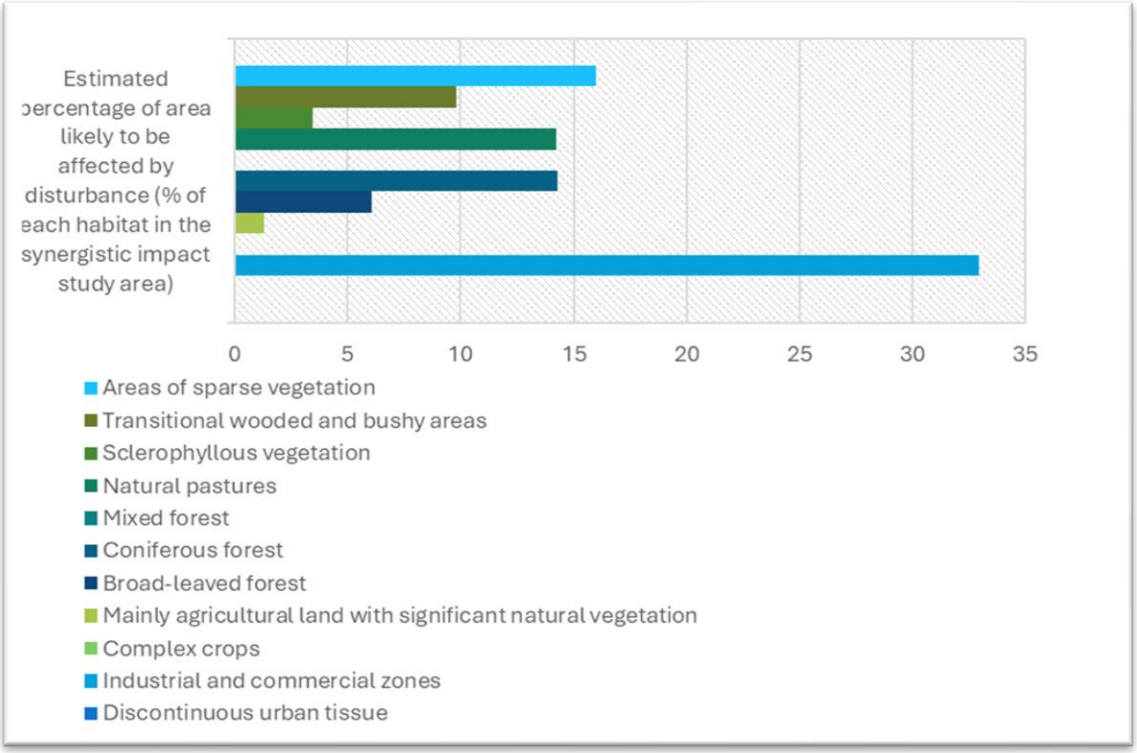


Figure 5: Description of the percentages of area that may be affected by disturbance (% of each habitat in the synergistic impact study area (best case scenario).

However, due to the fact that the project under study is located, as noted above, within habitats that are ***abundant throughout (and outside of) the synergistic impact study area,*** and due to the small contribution of this project to cumulative/co-occurring impacts (consisting of ten turbines), this project will have very little **impact on disturbance and displacement from important habitats for species of interest in the study area and the region more generally.**

With the above percentages of areas, **a reduction in the activity of bird species**, the activity of each species recorded through field surveys and their sensitivity to disturbance and displacement phenomena is obtained.

The species that are expected to experience **minor impacts** on the populations active within the study area, **in the case that all of the licensed WPPs** are licensed and installed, are **the large raptors - scavenger birds, as well as other large species of interest such as the black stork.**

Synergistic impacts on avifauna - (best case scenario)

Given all the above information, it can be concluded that *no significant synergistic impacts are expected to arise from the installation and operation of the study project in relation to* ***the existing ones in the wider area (the nearest of which is located more than 9 km away).***

Results of synergistic effects on avifauna - worst case scenario.

In the theoretical case that the worst case scenario of the installation of all the wind turbines under licensing, although the synergistic effects are expected to be relatively high, the additive effect of the ten wind turbines of the project under study, based on the above analysis, is not expected to be to such an extent as to negatively affect the protected species of the protected areas concerned, their conservation status, their conservation objectives, etc., given the fact that, in the above direction, it will contribute to the protection of the protected areas, their conservation status, their conservation objectives, etc.

Conservation objectives of the Natura 2000 site concerned and parameters contributing to the conservation value of the site.

By defining the conservation objectives for the bird species included in the Decision of the Ministers of Finance, Economy, Competitiveness and Shipping, and Environment, Energy and Climate Change (B΄ 1495), under reference 37338/1807/E.103/1.9.2010, in the Special Protection Areas (SPAs) of the national ecological network NATURA 2000, pursuant to paragraph b' of par. 3 of Article 21 of Law No. 1650/1986 (A' 160), a better assessment of the monitoring of the evolution of the protected object of the Natura site in question can be made.

The conservation objectives for the bird species referred to in par. 1 and 2 of Article 4 of Directive 2009/147/EK for all Special Protection Areas (SPAs) of the national ecological network NATURA 2000 of Greece were established by *the decision of the Deputy Minister of Environment and Energy No. ΥΠΕΝ/ΔΔΦΠΒ/50146/1786 (Government Gazette 3118/Β'/10-05-2023).*

The decision includes the annex concerning the SPAs GR1110010, GR1130011 and GR1110002 (for SPA BG0002019 no Management Plan has been prepared), within or close to which **the study area is located, which set out the conservation objectives illustrated in the tables below.**

Conservation Objectives for the OREINOS EVROS - KOILADA DEREIOU SPA (GR1110010)							
Species referred to in par. 1 and 4 of Article 4 of Joint Ministerial Decision 2 under No 37338/1807/E.103/01.09.2010							
Code	**Name**	**Type**	**Parameter**	**Unit of measurement of parameter**	**Target value**	**Specific target**	**Observations**
A402	Accipiter brevipes	r	Population	pairs	Insufficient data	Insufficient data	
A223	Aegolius funereus	p	Population	pairs	Insufficient data	Insufficient data	
A079	Aegypius monachus	p	Population	pairs	Insufficient data	Insufficient data	
A229	Alcedo atthis	p	Population	pairs	Insufficient data	Insufficient data	
A255	Anthus campestris	r	Population	pairs	Insufficient data	Insufficient data	
A226	Apus apus	r	Population	pairs	Insufficient data	Insufficient data	

A091	**Aquila crhysaetos**	**p**	**Population**	pairs	**7**	**Reach**	
A404	Aquila heliaca	c	Population	individuals	Insufficient data	Insufficient data	
A028	Adrea cinarea	c	Population	individuals	Insufficient data	Insufficient data	
A215	Bubo bubo	p	Population	pairs	Insufficient data	Insufficient data	
A087	Buteo buteo	r	Population	pairs	Insufficient data	Insufficient data	
A403	Buteo rufinus	c	Population	individuals	Insufficient data	Insufficient data	
A243	Calandrella brachydactylla	r	Population	pairs	Insufficient data	Insufficient data	
A224	Caprimulgus europaeus	**r**	Population	pairs	Insufficient data	Insufficient data	
A031	Ciconia ciconia	c	Population	individuals	Insufficient data	Insufficient data	
A030	**Ciconia nigra**	**r**	**Population**	pairs	**6**	**Conservation**	**Given the general picture of the species in the Evros region and the existence of interests (forests and the permanent flow of rivers for feeding), the population is estimated to be larger than the recorded one. The ETA is defined as the number of 6 pairs which is the maximum historical estimate.**
A080	**Circaetus gallicus**	**r**	**Population**	pairs	**8**	**Conservation**	
A081	Circus aeruginosus	c	Population	individuals	Insufficient data	Insufficient data	
A082	Circus cyaneus	c	Population	individuals	Insufficient data	Insufficient data	
A083	Circus macrourus	c	Population	individuals	Insufficient data	Insufficient data	
A084	Circus pygargus	c	Population	individuals	Insufficient data	Insufficient data	
A859	Clanga clanga	c	Population	individuals	Insufficient data	Insufficient data	
A858	**Clanga Pomarina**	**r**	**Population**	pairs	**6**	**Reach**	
A231	Coracias garullus	r	Population	pairs	Insufficient data	Insufficient data	
A113	Coturnix coturnix	r	Population	pairs	Insufficient data	Insufficient data	
A212	Cuculus canorus	c	Population	individuals	Insufficient data	Insufficient data	
A212	Cuculus canorus	r	Population	pairs	Insufficient data	Insufficient data	
A738	Delichon urbicum (urbica)	r	Population	pairs	Insufficient data	Insufficient data	
A239	Dendrocopus leucotus	p	Population	pairs	Insufficient data	Insufficient data	
A429	Dendrocopus syriacus	p	Population	pairs	Insufficient data	Insufficient data	

A236	Dryocopus martius	p	Population	pairs	Insufficient data	Insufficient data	
A447	Emperiza caesia	r	Population	pairs	Insufficient data	Insufficient data	
A379	Eperiza hortulana	r	Population	pairs	Insufficient data	Insufficient data	
A098	Falco columbarius	c	Population	individuals	Insufficient data	Insufficient data	
A100	Falco eleonorae	c	Population	individuals	Insufficient data	Insufficient data	
A095	Falco naumanni	c	Population	individuals	Insufficient data	Insufficient data	
A103	Falco peregrinus	p	Population	pairs	Insufficient data	Insufficient data	
A097	Falco vespertinus	c	Population	individuals	Insufficient data	Insufficient data	
A321	Ficedula albicollis	c	Population	individuals	Insufficient data	Insufficient data	
A320	Ficedula parva	c	Population	individuals	Insufficient data	Insufficient data	
A442	Ficedula semitorquata	r	Population	pairs	Insufficient data	Insufficient data	
A078	Gyps Fulvus	c	Population	individuals	Insufficient data	Insufficient data	
A078	Gyps Fulvus	w	Population	individuals	Insufficient data	Insufficient data	
A707	Hieraatus fasciatus (Aquila fasciata)	c	Population	individuals	Insufficient data	Insufficient data	
A092	Hieraaetus pennatus (Aquila pennata)	r	Population	pairs	6	Reach	
A439	Hippolais olivetorum	r	Population	pairs	Insufficient data	Insufficient data	
A251	Hirundo rustica	r	Population	pairs	Insufficient data	Insufficient data	
A233	Junx torquilla	r	Population	pairs	Insufficient data	Insufficient data	
A338	Lanius collurio	c	Population	pairs	Insufficient data	Insufficient data	
A338	Lannius collurio	r	Population	pairs	Insufficient data	Insufficient data	
A339	Lanius minor	r	Population	pairs	Insufficient data	Insufficient data	
A433	Lanius nubicus	r	Population	pairs	Insufficient data	Insufficient data	
A868	Leiopicus medius	p	Population	pairs	Insufficient data	Insufficient data	
A246	Lullula arborea	p	Population	pairs	Insufficient data	Insufficient data	
A242	Melanorypha calandra	r	Population	pairs	Insufficient data	Insufficient data	
A230	Merops apiaster	r	Population	pairs	Insufficient data	Insufficient data	
A073	Milvus migrans	c	Population	individuals	Insufficient data	Insufficient data	
A074	Milvus milvus	c	Population	individuals	Insufficient data	Insufficient data	
A260	*Motacilla flava*	c	Population	individuals	Insufficient data	Insufficient data	

A260	Motacilla flava	r	Population	pairs	Insufficient data	Insufficient data	
A077	**Neophron percnopterus**	**r**	Population	pairs	**2**	**Reach**	
A533	Oenanthe pleschanka	r	Population	pairs	Insufficient data	Insufficient data	
A337	Oriolus oriulus	c	Population	individuals	Insufficient data	Insufficient data	
A337	Oriolus oriolus	r	Population	pairs	Insufficient data	Insufficient data	
A094	Pandion haliaetus	c	Population	individuals	Insufficient data	Insufficient data	
A355	Passer hispaniolensis	p	Population	pairs	Insufficient data	Insufficient data	
A072	Pernis apivorus	r	Population	pairs	Insufficient data	Insufficient data	
A234	Picus canus	p	Population	pairs	Insufficient data	Insufficient data	
A210	Streptopelia turtur	r	Population	pairs	Insufficient data	Insufficient data	
A210	Streptocella turtur	c	Population	individuals	Insufficient data	Insufficient data	
A307	Sylvia nisoria	r	Population	pairs	Insufficient data	Insufficient data	
A228	Tachymarphis melba	r	Population	pairs	Insufficient data	Insufficient data	
A282	Turdus torquatus	c	Population	individuals	Insufficient data	Insufficient data	
Conservation objectives for the Koilada Filiouri SPA (GR1130011)							
Species referred to in par. 1 and 4 of Article 4 of Joint Ministerial Decision 2 under No 37338/1807/E.103/01.09.2010							
Code	**Name**	**Type**	**Parameter**	**Unit of measurement of parameter**	**Target Value**	**Specific target**	**Observations**
A402	Accipiter brevipes	r	Population	pairs	Insufficient data	Insufficient data	
A079	Aegypius monachus	c	Population	individuals	Insufficient data	Insufficient data	
A229	Alcedo atthis	p	Population	pairs	Insufficient data	Insufficient data	
A255	Anthus campestris	r	Population	pairs	Insufficient data	Insufficient data	
A226	Apus apus	r	Population	pairs	Insufficient data	Insufficient data	
A091	**Aquila crhysaetos**	**p**	Population	pairs	**3**	**Reach**	
A404	Aquila heliaca	c	Population	individuals	Insufficient data	Insufficient data	
A215	Bubo bubo	p	Population	pairs	Insufficient data	Insufficient data	
A087	**Buteo buteo**	**r**	Population	pairs	**12**	**Conservation**	
A403	**Buteo rufinus**	**p**	Population	pairs	**1**	**Conservation**	
A224	Caprimulgus europaeus	**r**	Population	pairs	Insufficient data	Insufficient data	

A031	Ciconia ciconia	c	Population	individuals	Insufficient data	Insufficient data	
A030	Ciconia nigra	r	Population	pairs	Insufficient data	Insufficient data	
A080	**Circaetus gallicus**	**r**	Population	pairs	**8**	**Conservation**	
A081	Circus aeruginosus	c	Population	individuals	Insufficient data	Insufficient data	
A082	Circus cyaneus	c	Population	individuals	Insufficient data	Insufficient data	
A083	Circus macrourus	c	Population	individuals	Insufficient data	Insufficient data	
A084	Circus pygargus	c	Population	individuals	Insufficient data	Insufficient data	
A858	Clanga clanga	c	Population	pairs	Insufficient data	Insufficient data	
A858	**Clandga pomarina**	**r**	Population	pairs	**2**	**Reach**	
A231	Coracias garrulus	r	Population	pairs	Insufficient data	Insufficient data	
A738	Delichon urbicum (urbica)	c	Population	individuals	Insufficient data	Insufficient data	
A738	Delichon urbicum (urbica)	r	Population	pairs	Insufficient data	Insufficient data	
A429	Dendrocopus syriacus	p	Population	pairs	Insufficient data	Insufficient data	
A236	Dryocopus martius	P	Population	pairs	Insufficient data	Insufficient data	
A379	Emperiza hotulana	r	population	pairs	Insufficient data	Insufficient data	
A100	Falco eleonorae	c	Population	individuals	Insufficient data	Insufficient data	
A095	Falco naumanni	c	Population	individuals	Insufficient data	Insufficient data	
A103	Falco peregrinus	p	Population	pairs	Insufficient data	Insufficient data	
A321	Ficedula albicollis	c	Population	individuals	Insufficient data	Insufficient data	
A320	Ficedula parva	c	Population	individuals	Insufficient data	Insufficient data	
A442	Ficedula semitorquata	r	Population	pairs	Insufficient data	Insufficient data	
A076	**Gypeatus barbatus**	**p**	Population	**pairs**	**1**	**Reach**	**The species has suffered a great historical decline both locally and nationally. In this case, the population of the species in the SPA before the extinction was calculated as ORP. It is assumed that if anthropogenic threats (poison baits) are eliminated, there is suitable habitat and food for the SPA species. The target in an annual SPA**

							is to increase to at least 1 pair of the species.
A078	**Gyps fulvus**	**p**	Population	**individuals**	**15**	**Conservation**	**Due to the species' biology and social lifestyle the conservation goal will be the minimum population of individuals to establish a colony. As 10% to 50% of the individuals in a colony are likely to nest, the target at the SPA level will be an increase to 15 adults of the species.**
A092	**Hieraatus pennatus (Aquila pennata)**	**r**	Population	pairs	**8**	**Reach**	
A439	Hippolais olivetorum	r	Population	pairs	Insufficient data	Insufficient data	
A251	Hirundo rustica	c	Population	individuals	Insufficient data	Insufficient data	
A251	Hirundo rustica	r	Population	pairs	Insufficient data	Insufficient data	
A338	Lanius collurio	r	Population	pairs	Insufficient data	Insufficient data	
A339	Lanius minor	r	Population	pairs	Insufficient data	Insufficient data	
A868	Leiopicus medius	p	Population	pairs	Insufficient data	Insufficient data	
A246	Lullula arborea	p	Population	pairs	Insufficient data	Insufficient data	
A230	Merops apiaster	r	Population	pairs	Insufficient data	Insufficient data	
A260	Motacilla flava	r	Population	pairs	Insufficient data	Insufficient data	
A077	**Neophron percnopterus**	**r**	Population	pairs	**2**	**Reach**	
A337	Oriulus Oriulus	r	Population	pairs	Insufficient data	Insufficient data	
A072	Pernis apivorus	r	Population	pairs	Insufficient data	Insufficient data	
A210	Streptopella turtur	r	Population	pairs	Insufficient data	Insufficient data	
A307	Sylnia nisoria	r	Population	pairs	Insufficient data	Insufficient data	
Conservation Objectives for the SPA Dadias forest - Soufli (GR111002)							
Species referred to in par. 1 and 4 of Article 4 of Joint Ministerial Decision 2 under No 37338/1807/E.103/01.09.2010							
Code	**Name**	**Type**	**Parameter**	**Unit of measurement of parameter**	**Target value**	**Specific target**	**Observations**
A402	Accipiter brevipes	r	Population	pairs	6	Reach	
A168	Acitis hypoleucos	c	Population	individuals	Insufficient data	Insufficient data	
A079	Aegypius monachus	r	Population growth rate	pairs per year	0.7	Reach	The trend of the species at local (and therefore

							national) level is medium and long-term positive, the conservation objective is to maintain the growth rate (0.7 pairs/year) until the population finally stabilizes and the carrying capacity of the SPA is reached.
A247	Alauda arvensis	r	Population	pairs	Insufficient data	Insufficient data	
A229	Alcedo atthis	p	Population	pairs	Insufficient data	Insufficient data	
A053	Anas platyrhynchos	r	Population	individuals	Insufficient data	Insufficient data	
A255	Anthus campestris	r	Population	pairs	Insufficient data	Insufficient data	
A226	Apus Apus	r	Population	pairs	Insufficient data	Insufficient data	
A091	Aquila chrysaetos	p	Population	pairs	Insufficient data	Insufficient data	
A404	Aquila heliaca	w	Population	individuals	Insufficient data	Insufficient data	
A215	**Bubo bubo**	**p**	Population	pairs	**5**	**Reach**	
A087	**Buteo buteo**		Population	pairs	**128**	**Reach**	
A403	**Buteo rufinus**	**r**	Population	pairs	**3**	**Reach**	
A243	Calandrella brachydactylla	c	Population	individuals	Insufficient data	Insufficient data	
A224	Caprimulgus europaeus	**r**	Population	pairs	Insufficient data	Insufficient data	
A031	Ciconia ciconia	r	Population	individuals	27	Reach	
A030	**Ciconia nigra**	**r**	Population	**pairs**	**32**	**Conservation**	
A080	Circaetus gallicus	r	Population	pairs	41	Reach	
A081	Circus aeruginosus	c	Population	individuals	Insufficient data	Insufficient data	
A082	Circus cyaneus	c	Population	individuals	Insufficient data	Insufficient data	
A083	Circus macrourus	c	Population	individuals	Insufficient data	Insufficient data	
A084	Circus pygargus	c	Population	individuals	Insufficient data	Insufficient data	
A859	Clanga clanga	w	Population	individuals	4	Conservation	
A858	**Clanga Pomarina**	**r**	Population	pairs	**22**	**Reach**	
A231	Coracias garullus	r	Population	pairs	Insufficient data	Insufficient data	
A113	Coturnix coturnix	r	Population	pairs	Insufficient data	Insufficient data	

A738	Delichon urbicum (urbica)	r	Population	pairs	Insufficient data	Insufficient data	
A239	Dendrocopus leucotus	p	Population	pairs	Insufficient data	Insufficient data	
A429	Dendrocopus syriacus	p	Population	pairs	Insufficient data	Insufficient data	
A236	Dryocopus martius	p	Population	pairs	Insufficient data	Insufficient data	
A026	Egretta garzetta	c	Population	individuals	Insufficient data	Insufficient data	
A447	Emperiza caezia	r	Population	pairs	Insufficient data	Insufficient data	
A379	Emperiza Hortulana	r	Population	pairs	Insufficient data	Insufficient data	
A101	Falco biarmicus	p	Population	pairs	1	Reach	
A098	Falco columbarius	c	Population	individuals	Insufficient data	Insufficient data	
A100	Falco eleonorae	c	Population	individuals	Insufficient data	Insufficient data	
A095	Falco naumanni		Population	individuals	Insufficient data	Insufficient data	
A103	Falco peregrinus	p	Population	pairs	3	*Reach*	
A099	Falco subbuteo		Population	pairs	11	Insufficient data	
A097	Falco vespertinus	c	Population	individuals	Insufficient data	Insufficient data	
A321	Ficedula albicollis	c	Population	individuals	Insufficient data	Insufficient data	
A320	Ficedula parva	c	Population	individuals	Insufficient data	Insufficient data	
A442	Ficedula semitorquata	r	Population	pairs	Insufficient data	Insufficient data	
A125	Fulica atra	r	Population	pairs	6	Reach	
A076	**Gypaetus barbatus**		Population	pairs	**1**	**Reach**	
A078	Gyps fulvus	c	Population	individuals	115	Conservation	
A078	Gyps fulvus	p	Population	pairs	11	Insufficient data	
A075	Haliaeetus albicilla	w	Population	individuals	Insufficient data	Insufficient data	
A707	Hierraaetus fasciatus (Aqila fasciata)	r	Population	-	Insufficient data	Reach	
A092	Hierraaetus pennatus (Aquila pennata)	r	Population	pairs	24	Insufficient data	
A439	Hippolais olivetorum	r	Population	pairs	Insufficient data	Insufficient data	
A251	Hirundo rustica	r	Population	pairs	Insufficient data	Insufficient data	

A233	Junx torqilla	r	Population	pairs	Insufficient data	Insufficient data	
A338	Lanius collurio	r	Population	pairs	Insufficient data	Insufficient data	
A339	Lanius minor	r	Population	pairs	Insufficient data	Insufficient data	
A433	Lanius nubicus	r	Population	pairs	Insufficient data	Insufficient data	
A868	Leiopicus medius	p	Population	pairs	Insufficient data	Insufficient data	
A246	*Lullula arborea*	*p*	Population	pairs	Insufficient data	Insufficient data	
A242	Melanorypha calandra	r	Population	pairs	Insufficient data	Insufficient data	
A230	Merops apiaster	r	Population	pairs	Insufficient data	Insufficient data	
A875	Microcarbo pygmaeus	c	Population	individuals	Insufficient data	Insufficient data	
A073	Milvus migrans	r	Population	pairs	2	Reach	
A073	Milvus migrans	w	Population	individuals	Insufficient data	Insufficient data	
A074	Milvus milvus	c	Population	individuals	Insufficient data	Insufficient data	
A260	Motacilla flava	r	Population	pairs	Insufficient data	Insufficient data	
A077	Neophron percnopterus	r	Population	pairs	12	Reach	
A077	Neophron percnopterus	c	Population	individuals	Insufficient data	Insufficient data	
A023	Nycticorax nyctirorax	c	Population	pairs	Insufficient data	Insufficient data	
A337	Oriolus oriolus	r	Population	pairs	Insufficient data	Insufficient data	
A094	Pandion halliaetus	c	Population	individuals	Insufficient data	Insufficient data	
A355	Passer hispaniolensis	r	Population	pairs	Insufficient data	Insufficient data	
A072	Pemis apivorus	r	Population	pairs	28	Insufficient data	
A391	Phalacrocorax carbo sinensis	c	Population	individuals	Insufficient data	Insufficient data	
A234	Picus Canus	p	Population	pairs	Insufficient data	Insufficient data	
A249	Riparia riparia	r	Population	pairs	Insufficient data	Insufficient data	
A210	Streptopella turtur	r	Population	pairs	Insufficient data	Insufficient data	
A307	Sylvia nisoria	r	Population	pairs	Insufficient data	Insufficient data	
A228	Tachymarptis melba	r	Population	pairs	Insufficient data	Insufficient data	
A282	Turdus torquatus	c	Population	individuals	Insufficient data	Insufficient data	
A142	Vanellus vanellus	w	Population	individuals	Insufficient data	Insufficient data	

Table 2 : Conservation objectives for the Natura sites "Forest of Dadia - Soufli", “Oreinos Evros – Koilada Dereiou”, and “Koilada Filiouri”.

In conclusion, the above tables show that for most species there is insufficient data and therefore it is not possible to set the relevant targets. The conclusions on the conservation objectives and impact assessment of the station under consideration are discussed in section 10.4.1 (Chapter 10).

Impact assessment of associated projects

Regarding the associated works of this WPP project, it is estimated that they will not cause any negative impact on the site and the integrity of the area or on the species living there, due to the proposed undergrounding of the cabling for the transmission of the electricity generated.

Concerning the drilling for the installation of the wind turbines, it will be of noticeably short length and will also not cause any negative impact on the Natura 2000 site and its protected objects, due to the correct placement (and the relevant proposals herein).

The impacts of the project synergistically with other projects in the vicinity of the site (projects under permitting) would be minor given that **the mitigation measures for potential impacts identified in the attached SEA would be implemented.**

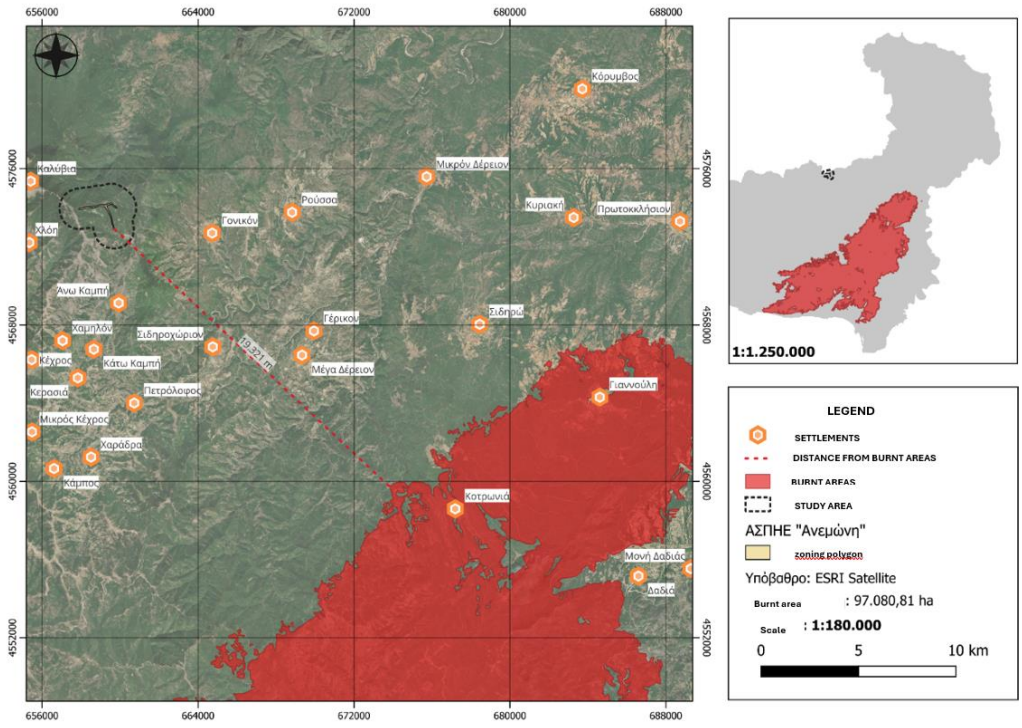
Forest fire impact assessment

The nature of the WPP project is not expected to create favorable conditions for forest fires during the operational phase. The project has no emissions of flammable materials, nor is it expected to experience emissions of pollutants or hazardous materials in general during its lifetime. The expected maintenance of the project as well as the occasional measurements that will be conducted will make a positive contribution as there will be a human presence that in case of fire or strange mobility will inform the competent authorities immediately. The access of the crews will ensure that the forest road is cleared so that it is also accessible for fire trucks in case of emergency. The sustainability of the project and its protection by the company is not only about the project itself but also about the surrounding area, which is a forest area of great ecological value. In addition to the use of renewable energy sources to optimize the quality of life of all organisms on the planet and to reduce to zero the negative effects of the use of fuels used so far, it is important to preserve the natural environment in its entirety, as it constitutes the natural lungs of the earth but also houses the unique biodiversity that is essential for the life cycle of every organism. The harmonization of renewable energy projects with the environment is a successful bet as the development of technology has made it possible for projects to be fully compatible with the natural environment. It is also worth mentioning that the wind turbines have installed a fire detection system for fire safety which is mounted on the nacelle of each wind turbine and with appropriate, advanced technology and high-resolution IRPanoramic cameras so that it can detect fire (even small-scale, when it is in an early stage) with a range of up to 5 km.

In the case where the forest area has been classified as reforestation due to fire damage, the project promoter, in cooperation with the competent Forestry Department, will carry

out the necessary protection and restoration measures, such as reforestation, flood and erosion control works, The necessary measurements to be carried out in the study area of the WPP during the operational phase of the project may be combined with the preparation of a report on the evolution of the area and the progress of natural or technical reforestation, always in full consultation and cooperation with the competent Forestry Department.

Finally, it is noted that the project under consideration does not belong to the burnt areas and is located at a very long distance, namely around 19,32 km in a straight line, while various geomorphological elements are interfering. The project will not affect the habitats of the Dasos Dadia area. Therefore, the fire event does not need to be considered in the impact assessment of the study.



Map 7: Mapping of the plot and the burnt areas

Impact on the well-being of populations

As a company fully aware of the state of the forests of Evros and Rodopi and because we consider the biodiversity of the area where we are planning our projects important, we would like to express our views and intentions for our future participation in actions that aim to indirectly benefit the conservation of endangered scavenger species and the rest of the avifauna of the region.

Our projects may be aimed at establishing energy independence and addressing the ecological problems of the planet by solving the problem of non-renewable fossil fuel reserves, but this does not mean that fighting local ecological problems is not our priority. Based on the overall environmental value of each project study area and its future conservation to benefit a cleaner planet through the installation of the project, we can

contribute to actions that will ensure the survival and reproduction of these species in their range.

For example, as we know, based on the National Action Plan for the Egyptian Vulture in Greece, the abandonment of traditional farming practices and legislation imposing strict sanitary and veterinary rules is one of the decisive factors that have led to the reduction of the available food for the Egyptian Vulture, and not only for that species. Therefore, providing "secure food" to Egyptian Vultures through the establishment of a network of raptor feeding sites is essential and this is what we intend to work on.

Our aim is therefore to contribute to efforts to ensure that there is stable food for both breeding pairs and wandering individuals so that they can colonize abandoned territories.

Thus, one of the measures considered is the provision of supplementary food in artificial feeding stations, so-called "feeders", which have been recognized as a good management tool for maintaining populations of all vulture species including the Egyptian vulture. It has been found that these supplementary feeding programs usually provide carcasses, in fixed locations and in areas with insufficient food, aim to support scavenger predator populations by increasing their reproductive capacity thus ensuring a high survival rate in their juveniles and reducing the risk of poisoning of the species, while helping to maintain large concentrations. However, it should be noted that there is a risk that the use of these feeders will be minimal due to the unsuitable location, the reduced food supply and the inadequate protection of wildlife in neighboring areas, while it should be stressed that the Egyptian vulture is very sensitive to disturbance during its breeding period, which requires strict planning of various activities (road construction, recreational activities, military exercises, forestry work, etc.).

From the above and since the vulture species are in a critical situation, it becomes necessary to assess and design a strategy for the enhancement of the natural population in the country using the method of captive breeding. Since the natural recovery of the wild population of these birds is extremely difficult due to the low number of individuals left in Greece, as well as the strong presence of specific threats that are difficult to eradicate (poisoned baits, etc.), early planning and preparation for action to strengthen the natural population will bring about a halt to the population decline through the creation of safe breeding areas with a reduced risk of poisoning and increased food availability.

An integrated population model has shown that population enhancement with captive-bred individuals would reduce the probability of extinction by 2049 from 48% to < 1% if 12 or more birds were released each year for 30 years. The model and a feasibility study suggest that a 4% improvement in wild survival combined with releasing 9 birds annually for 20 years or 6 birds annually for 30 years would result in a stable population while releases continue. Thus, an optimal goal is to release at least 9 individuals per year on average. However, to achieve this goal, a set of actions must be implemented to increase the size of the captive breeding pool and the success of captive breeding pairs of scavengers to ensure the above required number of birds per year.

Trial releases have shown that the delayed release method is the most successful approach leading to higher survival of released individuals compared to the survival of

wild juveniles during the first 6 months. Therefore, delayed release can be applied as the main method to enhance the population of scavenging species and the Egyptian vulture population.

Thus, considering the above, our company intends to cooperate with all relevant bodies (Ministry of Environment, Natural Environment & Climate Change Agency, N.E.C.C.A., Forestry Services, etc.) by contributing to direct actions to increase the reproductive rate of vultures (e.g. captive breeding, participation in feasibility studies for reintroduction programs, creation of feeders, etc.) which will indirectly benefit the conservation and increase of this species and serve the conservation objectives of the critical bird fauna, as established in the legislation.

Impact on the human-made environment

Spatial planning - Land use

The siting of the wind power plant will be carried out in an isolated mountainous area and specifically in a Wind Priority Area, as according to the Special Spatial Framework for Renewable Energy Sources, these areas have comparative advantages for the installation of wind power plants (such as the existence of exploitable wind potential, increased demand for the installation of wind turbines, etc.). The areas where the wind turbines will be installed have different land cover classifications. Specifically, the subject wind farm at the Anemoni site falls within areas of hardwood vegetation, broadleaf forest, land used primarily for agriculture along with significant portions of vegetation, and areas of hardwood vegetation.

The land use of the wider area will not change as the area where the Wind Power Plant will be built is essentially small compared to the available undeveloped land in the wider area.

For the part of the land that will be affected during the construction phase, a specific landscape restoration and reforestation study will be carried out after the end of the works, under the guidance of the relevant Forestry Department, and therefore the study area will not undergo any change in land use.

It is important to note that the proposed wind turbine installation sites are located outside exclusion areas and incompatibility zones under Art. 6 of the Special Spatial Planning & Sustainable Development Framework for the Renewable Energy Sources.

In conclusion, according to the above data, the land that will be affected during the construction phase will be restored after the end of the works and therefore there will be no permanent change in land use. Given the ultimately limited land occupation by the project during the operational phase, the impacts from installation and operation on existing land uses from permanent land occupation would be minor.

Synergistic / Cumulative Impacts

Table 27 of the SEA presents the calculation of habitat loss in the case of construction **of only the approved project** at the "Anemoni" site **in the synergistic impact study area**

(best case scenario). The calculated percentages of estimated habitat loss are small, therefore the impact of the project under consideration on habitats and therefore on land use will be minimal and there will be no permanent change in land use (see Table 27 of the SEA).

To better assess the impacts of the simultaneous approval of all wind farms within **the considered synergistic impact study area (worst case scenario)**, a calculation of habitat loss has been carried out in the SEA (Table 26 of the SEA). The rates of habitat loss will, as is normal, be higher than the rates of habitat loss in the case of construction of the project under consideration alone **(best case scenario). Therefore, the impacts can be considered as more obvious.**

With regard to the synergistic/Cumulative effects of the project under consideration for the Spatial Planning, no synergistic/co-synergistic effects arise as the compatibility test is only carried out for the Wind Power Plant under consideration as envisaged.

Spatial Planning - Land Use						
Project phase	**Type**	**Probability of occurrence**	**Intensity**	**Synergistic action**	**Reversibility**	**Impact**
CONSTRUCTION	DIRECT	LOW	LOW	NO	/	/
OPERATION	INDIRECT	MEDIUM	MEDIUM	YES	YES	YES
CESSATION OF OPERATION	/	/	/	NO	/	/

Table 3: Spatial planning - land use assessment table

Structure and functions of the anthropogenic environment

The wind turbines will be installed at a great distance from the nearest settlement and from anthropogenic activities and as has been thoroughly analyzed in Chapter 5 of this study, generally the distances defined by the Ministerial Decision 49828/08 (Government Gazette 2464B'/03.12.2008), which approved **the Special Spatial Planning & Sustainable Development Framework for the Renewable Energy Sources in Annex II, Table Δ, from residential activities, are met.**

The construction and operation of the project under consideration is not expected to alter the main characteristics of the settlements of the wider area (Ano Kampi, Ksefoto, Kissos, Goniko, Chloi and Mikraki). There is no risk of fragmentation of the urban fabric, nor any tendency to deterioration. No settlements, of any category, are identified within 500 m from the location of the Wind Power Plant under consideration, nor are there any traditional settlements or other types of organised housing in the immediate study area of the project.

Therefore, the implementation of the project is not expected to result in any change in the residential environment of the area.

In addition, according to the Noise Propagation Study prepared for the Wind Power Plant, the noise levels will not exceed the 45 db limit in any settlement or point of interest (see centers of archaeological site declarations).

Specifically, the noise generated by the wind turbines, which reaches the nearest settlements of Ano Kampi, Ksefoto Goniko and Chloi, is below the maximum permitted level, as shown in the table below.

Points of interest	Nearest W/T	Distance (m)	Noise Level dB(A)
Settlement – Chloi	W/T 1	3.141 m	29,36
Settlement – Ksefoto	W/T 10	3.445 m	29,12
Settlement – Ano Kampi	W/T 10	3.649 m	27,68
Settlement – Kissos	W/T 10	4.167 m	27,49
Settlement – Goniko	W/T 10	4.480 m	28,74
Settlement – Mikraki	W/T 10	4.784 m	26,21

Table 4: Evaluation table for the noise level for the "Anemoni" site

Synergistic impacts / Cumulative impacts:

In addition to the examination of the noise level for the Wind Power Plant under consideration at the location "Anemoni" in relation to the settlements, a calculation of the noise level **from the cumulative operation of all four (4) Wind Power Plants at the sites "Pyramis Vrachou", "Agathea", "Drakos", "Patriarchis"** was conducted.

Thus, the noise level towards the nearest settlements of Ano Kampi, Ksefoto, Kissos, Goniko, Chloi and Mikraki **is again below the maximum permissible limit and is reflected in the following table (Table 5.3, Noise Study).**

Points of interest	Nearest wind turbine	Distance (m)	Noise level (dB(A)) Produced by the proposed Wind Power Plant at "Anemoni"	Noise level (dB(A)) Produced by the cumulative operation of five (5) Wind Power Plants
Settlement – Chloi	W/T 1	3.141 m	29,36	38,13
Settlement – Ksefoto	W/T 10	3.445 m	29,12	43,23
Settlement – Ano Kampi	W/T 10	3.649 m	27,68	40,67
Settlement – Kissos	W/T 10	4.167 m	27,49	42,55
Settlement – Goniko	W/T 10	4.480 m	28,74	43,71
Settlement – Mikraki	W/T 10	4.784 m	26,21	44,38

*Table 5: Distances of settlements from wind turbines (measured from the closest point to the turbines) and noise level with wind speed 10 m/s. (*The cumulative operation of five WPP (5) wind turbines includes the under-study WPP at the "Anemoni" site and four (4) adjacent WPP at the "Pyramis Vrachou", "Agathea", "Drakos" and "Patriarchis" sites.*

The conclusions of the assessment of the project's impacts on the structure and functions of the anthropogenic environment are summarised in the following table.

Structure and functions of the anthropogenic environment						
Project phase	**Type**	**Probability of occurrence**	**Intensity**	**Synergistic action**	**Reversibility**	**Impact**
CONSTRUCTION	DIRECT	LOW	LOW	NO	/	/
OPERATION	/	/	/	NO	/	/
CESSATION OF OPERATION	/	/	/	NO	/	/

Table 6: Structure and functions of the anthropogenic environment

Cultural heritage

In the study area of the polygon of the Wind Power Plant there are two archaeological sites named "Mesimler Kale" which is located 8,6km from the nearest wind turbine and the archaeological site "Koum-Tarla" which is located at a distance of 8,9 Km from the nearest wind turbine of the project under consideration.

The Wind Power Plant under consideration in relation to the archaeological sites has been considered in the Compatibility Document in Appendix II and is compatible. Therefore, no impacts to historic sites or other sites of historical and cultural interest are anticipated during the operation and construction phase of the Wind Power Plant.

Synergistic impacts / Cumulative impacts

Regarding archaeological sites, no cumulative impacts of the project in relation to other projects have been identified. According to the photorealistic illustration carried out for the project under consideration and for the nearest WPPs (WPP adjacent WPP at the "Pyramis Vrachou", "Agathea", "Drakos", as well as the under operation WPP of the company H.ROKAS AB.E.E. at the location "Patriarchis"sites.), it is noted that no archaeological sites will be affected. However, the W/T of the WPP at the Anemoni site will be partially visible.

Therefore, Synergistic impacts / Cumulative impacts in terms of archaeological sites will be of low intensity. The assessment conclusions are summarized in the following table.

Cultural Heritage						
Project phase	**Type**	**Probability of occurrence**	**Intensity**	**Synergistic action**	**Reversibility**	**Impact**
CONSTRUCTION	DIRECT	LOW	LOW	NO	YES	/
OPERATION	/	/	/	NO	/	/
CESSATION OF OPERATION	/	/	/	NO	/	/

Table 7 : Impact assessment table for cultural heritage

Socio-economic impacts

Demographic situation

The construction and operation of the Wind Power Plant will not affect the demographic situation of the Municipality of Soufli and Arrianon.

Productive structure of the local economy

During the construction phase of the project, temporary jobs will be created as local labour will be recruited for the infrastructure works.

These actions will bring significant help to the local economy of the region. The increase in local income and local employment through the implementation of the project will lead to the retention of the local population and at the same time the development of the living standards of the region.

During the operation phase of the project, there will be personnel responsible for monitoring the proper functioning of the system (wind turbines, step-up substations, metering system and systems installed by HEDNO (Hellenic Electricity Distribution Network Operator), for the immediate disconnection or reconnection of the wind farms to the grid in case of emergency, as well as for the maintenance of all equipment. The staff employed during the operation of the project need not have any specialization but must have a basic technical understanding.

Finally, with the direct financial benefit gained by Local Authorities, according to Law 3468/06 (Government Gazette 129A'/27.06.2006), as amended by Law 3851/10 (Government Gazette 85A'/04.06.2010) and Law 4555 /2018 (Government Gazette 133 A'/19.07.2018) will be supported towards the development of other activities and the promotion of infrastructure projects, such as sewerage network, internal road works, cultural and tourism upgrading projects, in order to further increase jobs and improve per capita income.

Positive effects on the economy are therefore expected from the creation of new jobs and on the local economy in general (indirect impact).

Social - Economic Environment						
Project phase	**Type**	**Probability of occurrence**	**Intensity**	**Synergistic action**	**Reversibility**	**Impact**
CONSTRUCTION	/	/	/	NO	/	POSITIVE
OPERATION	INDIRECT	MEDIUM	LOW	NO	/	POSITIVE
CESSATION OF OPERATION	/	/	/	NO	/	

Table 8 :Assessment of impacts on the Socio-Economic Environment.

Impact on technical infrastructure

Impact on road network

During the construction and operation phases of the project, the technical infrastructure networks of the area are not expected to be affected, only the local road network. During the construction of the project, there will be an increase in road traffic in the area due to the movement of vehicles, construction machinery, transport of wind turbines and other equipment. At the same time, all necessary safety measures (road markings, etc.) will be taken to ensure traffic safety.

During the operational phase of the project, there will be no impact on road traffic in the area, as the movement of vehicles due to the repair of damage to the wind turbines or emergency situations will be almost negligible.

Impact on the water supply network

During the construction phase of the project as already calculated and analyzed in the relevant section of Chapter 6, approximately 21 m^3/day will be required for construction. Water requirements will be met by tankers (water trucks). There will therefore be no changes to the water supply network in the wider area.

Effects on the sewerage system

During the construction phase of the project, chemical toilets will be installed for staff use.

It will not be possible to connect the works to the city's sewerage network, so there will be no change to the existing state of the sewerage network, which is located a long distance from the turbine sites.

During the operational phase of the project, since it will not be possible to connect to the sewerage network, it is planned to construct a system of cesspits (septic tanks and absorption or chemical toilets) in accordance with the existing urban planning regulations.

Impact on energy resources

During the construction phase of the ten (10) W/Ts there will be no change in the energy resources but only the connection of the energy transmission network through the existing substation (150/33kV) PATRIARCHIS.

During the operation phase of the ten proposed wind turbines (1 WPP), the available wind potential will be exploited and therefore electricity generation will take place, thus helping to achieve the country's environmental objectives and international obligations.

Impact on the telecommunications network

No impacts to the telecommunications network are anticipated during the construction phase, and during the operational phase. The change will be to connect the projects via fiber optic cables, which will be installed within the medium voltage cable laying channels.

The only infrastructure expected to be changed to support the main project is the road network (e.g., through the new road widening/improvements) and the electricity transmission network (through the "Patriarchis" Step up Substation and the additional medium and high voltage network to be constructed).

As has been mentioned in Section 9.3, there are significant benefits from improving/expanding the infrastructure such as improving accessibility for residents engaged in activities, improving accessibility for grazing, improving accessibility for the relevant Forestry Services, improving accessibility for emergency response such as fire suppression and upgrading electricity transmission infrastructure.
No likelihood of adverse cumulative/synergistic effects is indicated by the proposed project design with other projects under permitting.

Technical infrastructure						
Project phase	**Type**	**Probability of occurrence**	**Intensity**	**Synergistic action**	**Reversibility**	**Impact**
CONSTRUCTION	/	/	/	NO	/	/
OPERATION	/	/	/	YES	/	/
CESSATION OF OPERATION	/	/	/	NO	/	/

Table 21: Impact assessment table for Technical Infrastructure

Correlation with anthropogenic pressures on the environment

The proposed interventions to be made by the project under consideration (roads, squares, etc.) will not increase existing anthropogenic pressures. The minor pressures that will occur will have a specific timeframe (different impact in each phase: construction, operation, cessation of operation and rehabilitation). However, with the use of appropriate preventive measures, medium-scale impacts can be reduced to low-scale impacts.

The construction of the plant under study is not expected to cause any additional environmental impact either during construction or operation.

Synergistic / Cumulative impacts

The isolation of the study area to date has resulted in the main land use and human activities in general in the area remaining traditional - extensive (agriculture, livestock farming), so that no significant problems or pressures on the environment have arisen. Overgrazing and illegal logging in some cases create pressures on the area concerned. Cumulative impacts on the environment may result from several projects and activities with similar impacts, which interact with each other, on the ecological integrity of the Natura site.

The potential for significant cumulative/synergistic effects from the proposed project design with other projects of a similar nature relates to the operational phase of the project. However, as analyzed in the supporting Special Ecological Assessment of Special Protection Area GR1130011, the possibility of moderately significant synergistic/cumulative effects is apparent if all of the adjacent Wind Power Plants are licensed in conjunction with the existing ones in the study area (refer to paragraphs 9.5.1 and 9.5.2).

However, it is estimated that the contribution of the Wind Power Plants under consideration is expected to be low after mitigation measures are implemented.

Social - Economic Environment						
Project phase	**Type**	**Probability of occurrence**	**Intensity**	**Synergistic action**	**Reversibility**	**Impact**
CONSTRUCTION	DIRECT	LOW	LOW	YES	YES	/
OPERATION	DIRECT	MEDIUM	MEDIUM	YES	YES	/

CESSATION OF OPERATION	DIRECT	/	/	NO	/	/

Table 22: Assessment table for anthropogenic pressures on the environment

Impact on air quality

Construction phase of the Project

Negative impacts on air quality are limited during the construction phase of wind farms.

During construction, air pollution impacts will include the following:

- Dust from the movement of vehicles - lorries, machinery, the handling and processing of materials and earthworks during the construction of access roads, internal road construction, the shaping of the turbine support surfaces and the excavation of the ground for the underground connection of the turbines to the substation.
- Exhaust gases from the movement of lorries and construction machinery around the site.
- Emissions from the transport of construction materials and wind turbines to and from the site.

These emissions are expected to increase in the project area due to the operation of construction sites, earthmoving, excavation, and material stockpiling. These factors will be exacerbated by wind drift of dust particles. These impacts will be localized and, with appropriate measures, can be considered negative and negligible. Their duration is related to the construction period of the project, as the construction period of the project is estimated to be short and the number of vehicles and machinery involved in its construction is estimated to be small.

Project Operation Phase

During the operational phase of the project, no negative impacts on air quality are expected as the project does not emit any gaseous pollutant. It also does not emit dust particles (respirable and nonrepairable) and odors. Furthermore, wind turbines do not cause thermal pollution of the atmosphere, as they do not emit hot gases or use atmospheric air to cool their parts and circuits. The exploitation of wind power does not involve any chemical, physical or biological process of any kind, which may result in the generation and release of any gaseous pollutants into the environment as final or intermediate products. On the contrary, the project under study is expected to have a positive effect on the general state of the atmospheric environment, as its operation will contribute to an increase in electricity generation through renewable, environmentally friendly energy sources. The amount of electricity produced by the wind power plant under study will contribute positively to the country's energy deficit by developing energy production from renewable resources and meeting part of the annual energy demand.

Finally, any impacts from vehicle movements for maintenance or repair works are considered negligible.

Considering the size and nature of the project under study, it is estimated that the impacts during the operational phase of the project under study on the atmospheric environment will be **moderately positive and long term.**

Synergistic /cumulative effects

Regarding synergistic effects, there is no likelihood of significant cumulative synergistic effects of the proposed project design with other projects of a similar or different nature.

During the construction phase there is no issue of cumulative/synergistic impacts as the simultaneous construction of all the adjacent Wind Power Plants under licensing is unlikely to take place. Even in the case of simultaneous operation of the licensed adjacent Wind Power Plants, no air pollutants would be emitted but instead the installation of the projects would reduce air pollutants in the study area.

The wind power plants produce electricity by using renewable energy sources such as the wind potential of the Rodopi and Evros region, replacing polluting sources such as lignite and oil, etc. The contribution of these projects is considered important in addressing global environmental phenomena such as global warming and climate change, etc.

The conclusions of the air quality impact assessment are summarized in the following table.

Air quality						
Project phase	**Type**	**Probability of occurrence**	**Intensity**	**Synergistic action**	**Reversibility**	**Impact**
CONSTRUCTION	DIRECT	MEDIUM	MEDIUM	YES	YES	/
OPERATION	/	/	/	NO	/	/
CESSATION OF OPERATION	/	/	/	NO	/	/

Table 23: Air quality assessment table

Effects from Noise or Vibration

In general, wind turbines are quiet machines, which do not cause noise pollution or disturbance to residents of the surrounding area. The sound level at 40 meters from a wind turbine is 50- 60 dB(A), which is equivalent to the volume of a conversation (European Commission, 1999). At 200 meters, the noise level drops to 44 dB(A), downwind of the wind turbine, for a wind speed of 8 m/s. The aerodynamic noise generated by the rotating blades of the machine is incredibly low and in no way comparable to the noise level of corresponding conventional power plants. Technological studies conducted by educational institutions and organizations (National Technical University of Athens, Centre for Renewable Energy Sources, Danish Ministry of Energy, etc.) show that the noise level of an average modern wind turbine does not exceed 45,3 dB within a radius of 150 m.

Thus, this section provides a summary of the noise and vibration impacts. The data analyzed below during the construction and operation of the proposed Wind Power Plant has been extracted from the Special Noise Study, attached as an Appendix to the Environmental Impact Assessment, together with literature data.

Construction phase of the Project

The first and main source of noise during the construction of a Wind Power Plant is the machinery used at the construction site (excavation or soil loosening machinery, loading of excavated materials, spreading and compaction of materials, etc.) and the second source is the noise from the traffic of heavy vehicles transporting excavated materials to the site disposal areas. Noise from vehicles is also likely to affect areas away from the site as vehicles use the local road network to reach their destination.

However, the disturbance caused by heavy vehicles and machinery on site will be short-lived and reversible as vehicles will only use the local road network during construction.

Those who will be affected by the noise generated will be the project workers. The duration of the disturbance will also be transient here as it will only apply during the construction of the proposed Wind Turbine Generating Station. If necessary, for the safety of the workers, earplugs will be provided to them at the responsibility of the company constructing the works. More information regarding the noise section is presented in the attached Annex to the Environmental Impact Assessment.

At this stage it is not possible to record the operating data of the site (types of machinery, actual operating times, etc.), so the assessment of noise impacts will be approximate.

We consider a mobile construction site of 12-hour operation with the following composition:

- 1 excavator
- 1 loader
- 1 leveler
- Trucks
- 1 road roller

The results of the prediction of the noise level Leq(12) for a receiver located at distances of 15 to 400 m from the source are presented in the following table:

Receiver distance (m)	**15**	**30**	**50**	**100**	**200**	**400**
Leq(12) dBa (rural area)	81	75	71	65	59	53
Leq(12) dBa (urban area)	84	78	74	68	62	56

Table 9: Noise level measurements for a receiver located at distances of 15 to 400 m

The noise caused by the operation of vehicles and machines used for the foundation and construction of the wind turbines and the road construction project will not exceed 50 dB(A) (at more than 500m), as defined by the relevant legislation for the urban environment (Π.Δ. 1180/1981). More specifically, according to Article 2, par. 5 of Π.Δ. 1180/81, the maximum permissible level of noise emitted by installations - activities is determined, which is measured at the boundary of the land on which the installation - activity is located.

α/α	**REGION**	**MAXIMUM LIMIT NOISE IN dB(A)**
1	Established Industrial Areas - Quarry Areas	70
2	Areas where the industrial element predominates	65
3	Areas where the industrial and urban elements are equally dominant	55
4	Areas where the urban element is dominant	50

Table 10: Maximum permissible noise limit from installations

Any impacts from the operation of the sites are localized and can be significantly reduced by taking appropriate remedial measures, as proposed in the relevant section of this chapter 10 to minimize impacts on the acoustic environment.

Indicative examples are:

- Locating construction sites as far as possible from settlements and human-made activities.
- The use of construction machinery and site vehicles with strict noise emission standards.
- Application of the most stringent regulations, both Greek and EU.
- Selective routing of heavy vehicles.

Finally, any impacts on the acoustic environment are considered fully reversible, as they last as long as the construction phase of the project.

From the above data, it can be concluded that the acoustic disturbance of the project will be negligible, as indicated by the acoustic map of the attached Special Noise Study, since the nearest settlement is 3.1 km from the nearest wind turbine.

The same applies to the construction of medium-voltage transmission lines. Finally, appropriate measures will be taken to ensure that vehicles transporting all the necessary equipment for the project (foundations, cables, etc.) pass as little as possible through sensitive areas (residential areas, settlements) so that acoustic disturbance is kept to a minimum and to zero during quiet hours.

Another characteristic of noise during the construction of such projects is its variation over time. Construction sites usually operate from 7 a.m. to 3 p.m. and therefore there is no problem in the afternoon, evening, and night hours. Usually, unless there is a need to expedite work, no work is performed at a wind farm construction site on weekends.

In conclusion, the assessment of the impact of the construction of the projects (main and associated works) could be considered as medium scale, in the light of the fact that no noise emissions can be identified in the existing situation - i.e. this is semi-mountainous land that is not host to technical works or facilities, and is surrounded by small settlements. However, with the implementation of the above mitigation and/or other precautionary measures, the impacts are estimated to be of low magnitude.

Synergistic effects

During the construction phase of the project there will be no possibility of cumulative/ synergistic effects as it is not feasible to build all the projects at the same time. Therefore, impacts on the acoustic environment of the project area would **be negligible, short-term, and fully reversible**.

Project Operation Phase

Wind turbines are machines that do not cause noise disturbance in the surrounding area. The noise generated during the operation of a wind turbine is the aerodynamic noise generated by the rotating blades of the machine, which is quite low compared to the noise levels of other power plants. In addition, the mechanical noise caused by the operation of the bearings and the generator has been reduced thanks to modern technologies.

The aerodynamic noise produced by wind turbines is only noticeable at low wind speeds. When the wind speed exceeds 8 m/s, the aerodynamic noise of the wind turbines is more than compensated for.

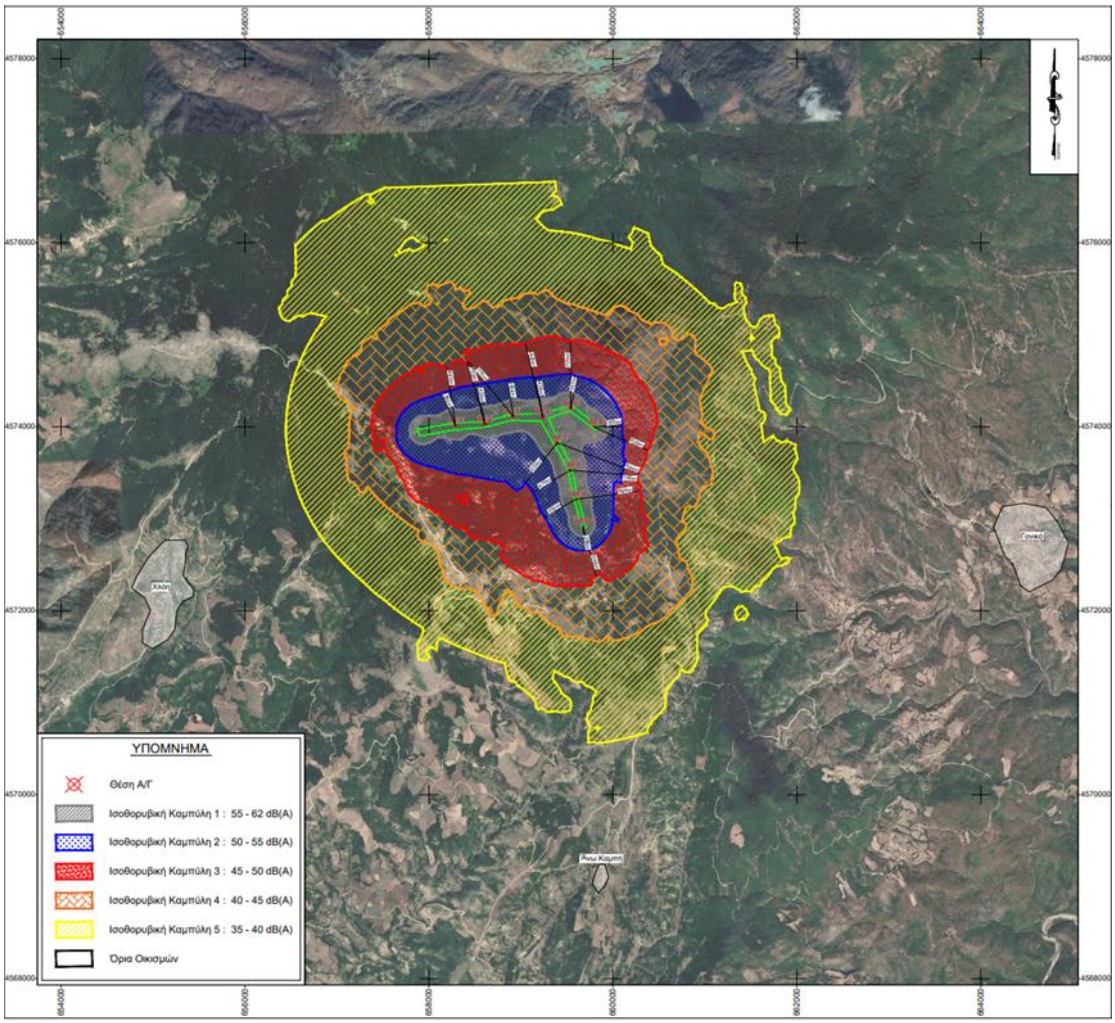
The wind turbines to be installed in the wind farm under study are state-of-the-art and have all the necessary quality and operational certificates (IEC 61400, IEC WT 01 IEC, ISO 2813, etc.). Specifically, the wind turbines to be used will be Vestas type V117, with a rated power of 3.45 MW, a rotor diameter of 117 m and a hub height of 91.5 m.

The logarithmic law of sound transmission was used to estimate the noise generated by the wind farm in question, and therefore by the 10 turbines, and to draw the isothermal

curves. This was done using the specialized WindPro software from the Danish company EMD International A/S. The calculations are based on the approved standard ISO 9613-2, which is a widely used standard for predicting noise levels.

The main parameters of the model were the locations of the wind turbines, the dimensions of the wind turbines and the hub height and the noise emission at the source (LW,ref) at a given wind speed.

Following the analysis described in the attached Special Noise Study, isothermal curves were obtained, as shown in the map below:



Map 8: Equilibrium curves in relation to the nearest settlements for the Wind Power Plant at Anemoni

The above leads to the following conclusions:

- The equal-noisiness contours that exceed the maximum permissible noise limit of 45dB(A), as set in the Special Spatial Plan for Renewable Energy Sources and in the P.D. 1180/81 (Government Gazette 293/A/6-10-1981), extend to radii of less than 994m from the centers of the wind turbines.
- The nearest settlements to the wind farm are Ano Kampi, Gonikon and Chloi where the noise generated by the wind turbines is below the maximum permissible limit.

- The noise generated by the turbines at less than 200 m (equal-noisiness contour 1), an area within which no point of interest is located, is the same as that heard during a normal conversation.

Equal – noisiness Contours	**W/T**	**Minimum Distance (m)**	**Generated Noise (dB(A))**
Equal – noisiness Contour 1	W/T 1 - 10	0 - 200	**55 - 62**
Equal – noisiness Contour 2	W/T 1	382	**50-55**
	W/T 2	439	
	W/T 3	404	
	W/T 4	438	
	W/T 5	357	
	W/T 6	305	
	W/T 7	553	
	W/T 8	470	
	W/T 9	392	
	W/T 10	258	
Equal – noisiness Contour 3	W/T 1	643	**45-50**
	W/T 2	702	
	W/T 3	776	
	W/T 4	825	
	W/T 5	725	
	W/T 6	629	
	W/T 7	944	
	W/T 8	745	
	W/T 9	694	
	W/T 10	548	

Table 11: Noise generated at the nearest points of interest.WPP at the "Anemoni" site.

Points of interest	**Nearest Wind Turbine**	**Distance(m)**	**Noise level (dB(A))** *Production from the operation of the Wind Farm "Anemoni"*
Settlement - Chloi	Wind Turbine 1	3.141 m	29,36
Settlement - Ksefoto	Wind Turbine 10	3.445 m	29,12
Settlement – Ano Kampi	Wind Turbine 10	3.649 m	27,68
Settlement – Kissos	Wind Turbine 10	4.167 m	27,49
Settlement – Goniko	Wind Turbine 10	4.480 m	28,74

Settlement – Mikraki	Wind Turbine 10	4.784 m	26,21

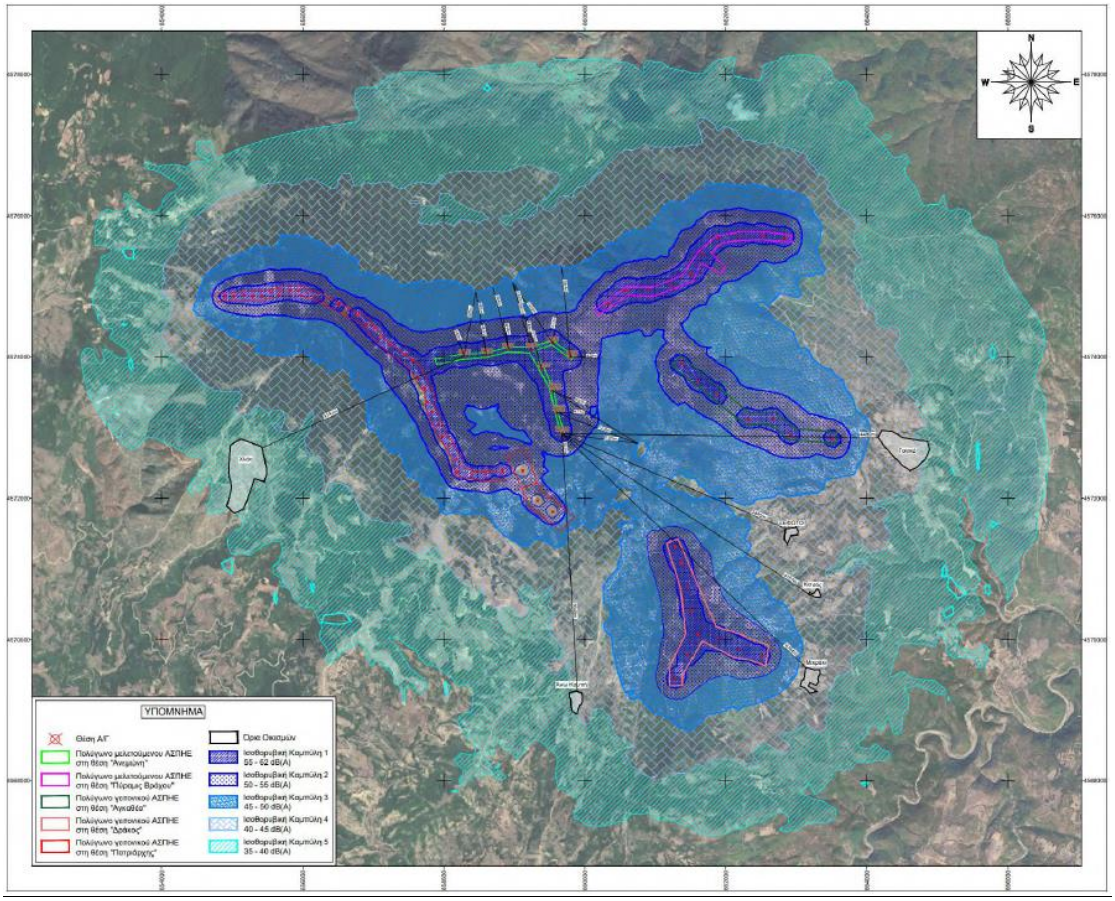
Table 27: Distance of points of interest from W/T and noise level at a wind speed of 10 m/s.

According to the limits of the Special Spatial Framework for RES and the limits defined by the PD 1180/81, it is concluded that although the worst case scenario for the implementation of the study was taken into account, the installation of the Wind Power Plant with a total capacity of 34.5MW will not create any acoustic impact on the surrounding area as the noise levels produced are expected to be negligible. During the operational phase of the project, there is no risk of exposure of people to high noise levels. It should be recalled that the normal sound noise level in a quiet room without any human activity exceeds 60dB(A), a value that occurs only in the narrow core of each Wind Turbine individually.

Synergistic/cumulative effects

In addition to the examination of the noise level for the wind power plant under consideration at the "Anemoni" site, a calculation of the noise level from **the cumulative operation of the other four (4) neighboring wind power plants at the sites, "Pyramis Vrachou", “Agathea”, “Drakos” and "Patriarchis",** was also conducted.

According to the cumulative study, the equal-noisiness contours that **exceed the maximum permissible noise limit of 45dB(A)** extend to radii of less than 1.427m from the centers of the wind turbines. The noise generated by the wind turbines at less than 200m (equal-noisiness contour 1), an area within which no point of interest is located and is identical to that heard during a normal conversation. The following maps and tables show the results of the cumulative study of the five Wind Power Plants to illustrate the above.



Map 9: Map of equal-noisiness contours for the cumulative function of the syudied WPP at the "Anemoni" site and the four (4) neighboring projects at the sites "Pyramis Vrachou", "Agkathea", "Drakos" and "Patriarchis".

Equal – noisiness Contours	**W/T**	**Minimum Distance (m)**	**Generated Noise (dB(A))**
Equal – noisiness Contour 1	W/T 1 - 10	0 - 200	**55 - 62**
Equal – noisiness Contour 2	W/T 1	440	**50-55**
	W/T 2	485	
	W/T 3	444	
	W/T 4	466	
	W/T 5	417	
	W/T 6	409	
	W/T 7	773	
	W/T 8	600	
	W/T 9	471	
	W/T 10	322	
Equal – noisiness	W/T 1	920	**45-50**

Contour 3	W/T 2	903
	W/T 3	904
	W/T 4	987
	W/T 5	1025
	W/T 6	1264
	W/T 7	1300
	W/T 8	1427
	W/T 9	1228
	W/T 10	1079

Table 28: Distances of equal - noisiness from W/T and noise generated by the cumulative operation of the studied wind turbine at the "Anemoni" site and the four (4) neighbouring wind turbines at the "Pyramis Vrachou", "Agathea", "Drakos" and "Patriarchis" sites.

Points of interest	**Nearest wind turbine**	**Distance (m)**	**Noise level (dB(A))** Produced by the proposed Wind Power Plant at "Anemoni"	**Noise level (dB(A))** Produced by the cumulative operation of five (5) Wind Power Plants
Settlement – Chloi	W/T 1	3.141 m	29,36	38,13
Settlement – Ksefoto	W/T 10	3.445 m	29,12	43,23
Settlement – Ano Kampi	W/T 10	3.649 m	27,68	40,67
Settlement – Kissos	W/T 10	4.167 m	27,49	42,55
Settlement – Goniko	W/T 10	4.480 m	28,74	43,71
Settlement – Mikraki	W/T 10	4.784 m	26,21	44,38

Table 29: Distances of settlements from Wind Turbines (measured from the closest point to the wind turbines) and noise level with a wind speed of 10 m/s.

*The cumulative operation of five (5) WPPs includes the WPP under study at the "Anemoni" site and four (4) neighbouring WPPs at the "Pyramis Vrachou", "Agathea", "Drakos" and "Patriarchis" sites.

Noise						
Project phase	**Type**	**Probability of occurrence**	**Intensity**	**Synergistic action**	**Reversibility**	**Impact**
CONSTRUCTION	DIRECT	MEDIUM	MEDIUM	NO	/	/
OPERATION	/	/	/	NO	/	/
CESSATION OF OPERATION	/	/	/	NO	/	/

Table 30: Impact assessment table for Noise

Effects Related to Electromagnetic Fields

No electric and magnetic fields are expected to be generated during the construction phase and therefore no impacts of any kind will occur.

During the operational phase at the proposed Wind Power Plants, the parts of the facility that will emit low-level electromagnetic radiation are the generator and the transformer which is located within the generator. The electromagnetic field generated by the generator will be at low levels and will be confined to the engine shell, which is located 91.5 meters above the ground.

Regarding the power transmission and interconnection works of the project, it is noted that the Medium Voltage (MV) connection lines will be underground as they will be placed within channels that will follow the route of the wind farm internal roads. In addition, the interconnection of the Wind Farm with the power transmission grid will be conducted through underground 33kV medium voltage lines that will start from the shaft of each wind turbine and end at the proposed substation. Therefore, there will be no electromagnetic field emissions during any of the above power transmission and interconnection operations of the proposed Wind Power Plant.

From the above it is concluded that there will be no increase in the level of electromagnetic radiation from the installation and operation of the proposed Wind Power Plant.

Synergistic/ cumulative effects

In the case of simultaneous construction of all Wind Power Plants in the study area, no effect on electromagnetic fields is expected. During the corresponding simultaneous operation of all Wind Power Plants in the study area (with a license and/or a producer's certificate), there will be no correlations with electromagnetic fields.

Electromagnetic Fields						
Project phase	**Type**	**Probability of occurrence**	**Intensity**	**Synergistic action**	**Reversibility**	**Impact**
CONSTRUCTION	/	/	/	NO	/	/
OPERATION	/	LOW	LOW	YES	YES	/
CESSATION OF OPERATION	/	/	/	NO	/	/

Table 31: Impact Assessment Table for Electromagnetic Fields

Impact on water

During both the construction phase and during operation of the project, no disturbance to the hydrologic condition of the immediate and wider study area is anticipated due to the mild nature of the project.

Construction phase of the Project

With respect to surface water, no major modification to the water balance of the area is expected since the excavation and other operations will take place outside the aquifer, and therefore will not affect groundwater. During the construction of the Wind Power Plant and associated works, special attention will be paid to possible spills of small quantities of liquid waste from the construction site to be established in the project area, which are mineral oils from the maintenance of vehicles and machinery, oil or petrol from the movement of vehicles, liquid waste from the washing of concrete vehicles and domestic wastewater from the site personnel.

No changes in surface water movement would occur, nor would the current situation change in terms of the rate of water runoff or soil leaching. No works (e.g., major earthworks) are also envisaged which could affect the course of flood waters or indirectly create risks of exposing people or property to flood damage.

Project Operation Phase

During the operation of the wind plant, no activity capable of affecting water flow is anticipated. The liquid waste generated during the operation of the wind farm is only in the oils from the maintenance of the wind turbines and municipal wastewater from the personal cleaning of the staff. No negative impacts are expected from surface runoff of water on roads. The proposed technical drainage works (tubular culverts - box culverts) are intended both to divert rainwater at road intersections and to drain the drainage ditches (pressurized drainage ditches) to ensure good hydraulic function of the road. The operation of Wind Power Plant does not involve any production process wastewater, nor does it pose any risk of thermal pollution of neighboring surface or groundwater receptors, as no cooling water is used. Any impacts from liquid waste can only result from accidental oil spills from damage or during maintenance of the wind turbines. All circuits of the generators are closed so that they are immediately shut down in case of a fault, without any oil leakage. As for the liquid waste resulting from the scheduled replacement of the oils of these devices, their management will be conducted in accordance with the provisions of the applicable environmental legislation by qualified technicians of the manufacturer. The solid waste expected during the operational phase is minimal and will be of an urban type, generated by the staff and will be collected in special metal bins placed in suitable locations inside the installation site of the wind power plant.

In conclusion, as there are no major watercourses in the project area, the proposed works cannot de facto lead to a reduction in the amount of water available to the public and will not affect existing water intakes.

Synergistic/ cumulative effects

No likelihood of significant synergistic/ cumulative effects is apparent from the proposed project design with other projects of a similar or different nature.

No impact is anticipated during the construction phase as the adjacent licensed Wind Power Plants are unlikely to be constructed at the same time. During the operation phase, if all the licensed Wind Power Plants under production permit are licensed, there is no possibility of a reduction in the quality and quantity of surface and groundwater in the surrounding area.

Water						
Project phase	**Type**	**Potential for occurrence**	**Intensity**	**Synergistic action**	**Reversibility**	**Effect**
CONSTRUCTION	/	/	/	NO	/	/
OPERATION	/	/	/	NO	/	/
CLOSURE OF OPERATION	/	/	/	NO	/	/

Table 32: Table for the assessment of impacts on water

Impacts from project vulnerability and the occurrence of accidents

The vulnerability of the project and its associated projects is very low due to the nature and characteristics of the project. The likelihood of a major accident is also considered to be incredibly low and there is no possibility of a domino accident. No hazardous materials (fuels or toxic substances) or waste will be present in the project. Its construction and operation are designed to be completely safe.

This safety will be ensured by

- The distances between the wind turbines, which comply with current legislation.
- The construction of an underground connection to the 33 kV medium voltage grid.
- The foundation of the wind turbines on reinforced concrete bases.
- The assembly of the individual parts of the wind turbines in accordance with international standards and the manufacturer's instructions.
- Installation of an operational monitoring system.
- Regular maintenance by specialized technicians.
- Implementation of Approval of Environmental Terms (AET).
- Fire protection and fire detection system within a radius of 5 km.

In any case, the safety of the project and its environment is of paramount importance to the company.

The project under study is not subject to the provisions of the KYA 172085/2016 (Government Gazette 354/B/2016) for the "Determination of measures and conditions for dealing with the risks of major accidents in establishments or units, due to the presence of dangerous substances, in compliance with the provisions of Directive 2003/105/ EK "amending Council Directive 96/82/ EK on the control of major-accident hazards involving dangerous substances" of the European Parliament and of the Council of 16 December 2003.

This chapter analyses the impacts arising from the vulnerability of the project to natural disaster or major accident hazards.

Vulnerability refers to the characteristics and conditions of a community, system or asset that make it susceptible to the harmful effects of hazards. Vulnerability is the degree of loss of a given asset or group of assets at risk because of the occurrence of a natural phenomenon of comparable magnitude.

A quantitative assessment of the significance of each risk is then carried out using the following evaluation criteria:

Probability - Frequency of occurrence of the phenomenon

High Probability	**3**
Medium Probability	2
Low Probability	1

Table 33: Probability - Frequency of occurrence

Vulnerability of the project

High	**3**
Medium	2
Low	1

Table 34: Vulnerability of the project

Severity - Size of Risk Impact

Large Scale	**3**
Medium Scale	2
Small Scale	1

Table 35: Severity - Risk Impact Size

The sum of all the criteria is the overall threat score and they are ranked accordingly as high, medium and low importance.

A score equal to or greater than 8 is considered a serious threat of high importance and immediate action should be taken to address it.

For a score of 5 to 7 it is considered a threat of moderate importance and requires action and controls in the near future.

Finally, a score of 3 to 5 is considered a low threat and no immediate measures and actions are required.

First, scenarios that could potentially cause serious impacts on the project and the natural environment of the area are identified.

The potential risks that the project may face are:

- Flooding
- Earthquakes
- Forest fires
- Forest fires
- Pollution from an accidental event

A detailed presentation of the implications of these risks follows.

Floods

The most serious and dangerous type of flood is flash flooding. They usually occur with little or no warning and last for a very short period of time. They result from a sudden and rapid rise in water levels, accompanied by high velocities. They occur particularly in hilly or mountainous areas with steep slopes. The surface runoff they cause is very significant for the duration of the flood and poses a serious threat to the structural integrity of buildings and infrastructure. Important factors in this type of flooding are the intensity and duration of rainfall, the morphology and slope of the terrain in the area and the prevailing surface conditions. The station site is located outside the potentially high flood risk zone. It is a gently sloping piece of land. It is also important to note that no

watercourses are found in the project under study, but small half-gorges have been identified in the vicinity of the project.

Based on paragraph 2 of Article 1 of Law 4258/2014 (Government Gazette A94/14.4.2014), half-grains are defined as "the receptors of surface water runoff, with a watercourse catchment area of less than or equal to 1.0sq. mm. when located outside the boundaries of a residential area, or less than or equal to 0.50sq. mm. for those within the boundaries of a residential area".

According to paragraph 6.8 and paragraph 8.14, the delimitation of a watercourse is not an issue, as this is a matter of ensuring unimpeded surface water flow and environmental protection of the watercourse, which is not the case in the study area.

Earthquakes

An earthquake is a phenomenon that usually occurs without clear warning, cannot be prevented and, despite its short duration, can cause major material damage to human infrastructure. The impact that an earthquake is likely to have on the area and thus on the project depends on its intensity and on the susceptibility of the natural environment in the area concerned.

The area where the project is to be located is a low seismic risk area, so the chances of a catastrophic earthquake occurring are minimal. Due to the low vulnerability of the site to earthquakes the potential damage in the event of a major earthquake is expected to be very small without significant impact on the environment.

Forest Fires

Forest fires are a large-scale natural phenomenon which belongs to the category of natural disasters and can have catastrophic consequences.

The causes of fires could be classified into the following cases:

A) Natural causes

This category includes fires caused by lightning, volcanoes and volcanoes.

Natural fires are few in number and do not exceed 3%.

B) Negligent arson

This category includes fires caused by the dumping of cigarettes, burning of rubbish and dry grass, lighting fires in forests, engine sparks, etc. Negligent arson is the main cause of forest fires, with a confirmed percentage of more than 50% of cases.

C) Arson with intent

This is the most devastating cause of forest fires. It accounts for about 30 % of forest fires.

D) Unknown causes

They make up the remaining 17 % and are those causes that cannot be logically explained or proven.

Human activities very often cause fires to occur, reducing the resilience of the ecosystem and thus its ability to regenerate and sustain itself.

In a fire, the wind and its speed play a decisive role in determining the extent of its spread. The effects that are likely to result from the occurrence of a fire are:

- Fragmentation of the ecosystem of the area where the fire occurred
- It degrades the quality of the air, causing health effects
- Negatively affects the surrounding areas

The project's vulnerability to fire is low, as noted above in paragraph 8.14 of Chapter 8 the nature of the Wind Power Plant project is not expected to create favourable conditions for forest fires during the operational phase. The project will not generate hazardous emissions of gaseous pollutants due to the absence of flammable materials during the construction phase and during the operation phase. The maintenance of the project and the occasional measurements that will be carried out will help to prevent accidents. There will be a presence of staff where, in the event of fire or strange activity being observed, the competent authorities will be informed and the forest road will be cleared to make it accessible to fire engines in case of emergency.

Explosion challenge

The risk of explosion is unlikely to occur as no flammable substances will be used during either the construction or operational phase of the project.

Leakage of Hazardous Liquids into the ground or groundwater of the site.

Sources of risk that could cause spills are almost non-existent since the project will manage the liquid waste appropriately during operation.

During the construction phase, special attention will be paid to possible spills of small quantities of liquid waste from the construction site that will be installed on the project site, which are mineral oils from the maintenance of vehicles and machinery, oil or petrol from the movement of vehicles, liquid waste from the washing of concrete vehicles and domestic wastewater from site personnel.

During the operation phase of the project as already mentioned in paragraph 9.13, any impacts from liquid waste can only arise from accidental oil spillage due to damage or during maintenance of the Wind Turbines. All circuits of the generators are closed so that they are immediately shut down in the event of a failure, without any oil leakage. As for the liquid waste resulting from the scheduled replacement of the oils of these devices, their management will be carried out in accordance with the provisions of the applicable environmental legislation by qualified technicians of the manufacturer.

The measures to deal with accidental leakage of hazardous liquid waste during the construction and operation phase are described in detail in paragraph 10.12.

It is important to note that according to paragraph 6.8 there are no watercourses for which delineation is required, only half-groups in the vicinity of the project.

The project cannot de facto lead to a reduction in the amount of water available to the public and will not affect existing water intakes as water needs will be met by water carriers.

DANGER-THREAT	PROBABILITY-FREQUENCY OF OCCURRENCE	VULNERABILITY OF THE PROJECT	SEVERITY - MAGNITUDE OF IMPACT ON THE ENVIRONMENT	OVERALL RISK ASSESSMENT	SIZE OF THREAT	JUSTIFICATION
NATURAL DISASTERS						
Floods	1	1	2	4	Low	The project is free of streams and other types of runoff as there are no watercourses but only half-grabens. Therefore there is no need for a watercourse delineation as has been documented in detail in paragraph 6.8
Earthquakes	1	1	1	3	Low	According to the Greek Seismic Regulation (EAK 2000), as amended by the decisions of the Minister of Environment and Physical Planning Δ17α/67/1/ΦΝ275/03 (Government Gazette 781/B/16-6-03) and Δ17α/115/9/ΦΝ275/03 (Government Gazette 1154/B/12-8-03), the area is included in the seismic risk zone I. The earthquake detected in the project area occurred in 1999, with a magnitude of 3 on the Richter scale, at a depth of 10 km and at a distance of 6.1 km from the project study area.
Fire	1	1	3	5	Low	The project is not particularly at risk of fires, as it is located in an area with sparse vegetation. Moreover, all fire protection and fire safety measures have been taken during the design of the project.
MAJOR ACCIDENTS						
Pollution from leakage of hazardous liquids (mineral oils from maintenance or accidental leakage of oils from damage or maintenance of wind turbines)	2	1	1	4	Low	The project does not produce liquid waste. During the construction phase, oil or petrol from the maintenance of vehicles and machinery and from the movement of vehicles may be generated. During the operation phase it can only arise from accidental oil spillage from a breakdown or during maintenance of the wind turbines. The vulnerability of the project from such leakage is considered negligible since all necessary preventive measures have been taken in paragraph 10. 12.
Explosion - Fire	1	3	3	7	Medium	Causing a fire - explosion. A fire may be caused during the operating phase by electrical or mechanical faults involving friction or high heat release which may lead to a fire in the wind turbine's nacelle. These types of fires are usually of short duration and are not easy to extinguish because of their

						location. If the fire develops, the hot parts may fall and lead to localised fires in the wider area of the works (with possible extension and major accident, with or without vegetation). During the maintenance of the wind turbines, and in particular when lubricating them, volatile substances (resins) will be used which may ignite with the increase in temperature. In this case it is almost impossible to cause a major accident, provided that large quantities of chemicals are not kept in a place for maintenance or repair. **The vulnerability of the activity is considered moderate as all prevention measures have been taken in the design of the activity in order to minimise the likelihood of such events occurring.**

Table 36: Assessment of the project's vulnerability to natural disasters and accidents

Impact of the project on climate and the project's vulnerability to climate change, vulnerability and adaptation of the project (climate resilience)

An assessment of the adaptation, of renewable energy projects, to climate change should consist of two phases, the pre-assessment and the detailed analysis. During the pre-audit the vulnerability analysis of the project to climate change is carried out. **From the vulnerability analysis it is decided whether the detailed analysis is required or not.**

Where required, such as for renewable energy projects, the detailed analysis shall include the risk analysis of each significant source of risk identified in the vulnerability analysis. The risk analysis shall assess each source of risk, which now constitutes the inherent risk, in terms of its level of significance.

For significant intrinsic risks **it is required to consider climate change adaptation measures that reduce each significant intrinsic risk to an acceptable level of residual risk.**

Therefore, therefore, the integration of climate vulnerability assessment and risk analysis will take place from the beginning of the development process, as this will usually ensure the widest possible range of options for selecting the best adaptation options.

A detailed presentation of the expected change in climate parameters can be found in the National Information Web Hub on Climate Change Adaptation (https://adaptivegreecehub.gr) developed under the LIFE-IP AdaptInGR project

(www.adaptivegreece.gr). The data from the Hub has been used for the analysis methodology in the Project Evaluation Framework.

The climate resilience assessment of the project is presented in chapter 5.2.1.

Summary of impacts in tables

ENVIRONMENTAL PARAMETERS	DIRECT (D) / INDIRECT (I)	POSITIVE (P) / NEGATIVE (N)	SHORT-TERM (S) / LONG-TERM (L)	REVERSABLE	TREATABLE	SHORT TERM / POSITIVE - NEGATIVE
CLIMATIC & BIOCLIMATIC CHARACTERISTICS						
MORPHOLOGICAL & LANDSCAPE CHARACTERISTICS	D	N	S	PARTICULARLY	PARTICULARLY	P
GEOLOGICAL, TECTONICS & SOIL	D	N	S	PARTICULARLY	PARTICULARLY	
NATURAL ENVIRONMENT	D & I	N	S	PARTICULARLY	PARTICULARLY	N
ANTHROPOGENIC ENVIRONMENT						
SOCIOECONOMIC ENVIRONMENT	D	P	S			
TECHNICAL INFRASTRUCTURE	D	N	S	YES	PARTICULARLY	
ANTHROPOGENIC PRESSURES ON THE ENVIRONMENT	D	N	S	PARTICULARLY	PARTICULARLY	P
ATMOSPHERIC ENVIRONMENT - AIR QUALITY	D	N	S	PARTICULARLY	PARTICULARLY	P
ACOUSTIC ENVIRONMENT AND VIBRATIONS	D	N	S	PARTICULARLY	PARTICULARLY	
ELECTROMAGNETIC FIELDS						
WATER SOURSIES	D	N	S	YES	PARTICULARLY	

Table 37: Environmental impacts during the construction phase of the project

ENVIRONMENTAL PARAMETERS	DIRECT (D) / INDIRECT (I)	POSITIVE (P) / NEGATIVE (N)	SHORT-TERM (S) / LONG-TERM (L)	REVERSABLE	TREATABLE	SHORT TERM / POSITIVE - NEGATIVE
CLIMATIC & BIOCLIMATIC CHARACTERISTICS	I	P	L			
MORPHOLOGICAL & LANDSCAPE CHARACTERISTICS	D	N	L	PARTICULARLY	PARTICULARLY	P
GEOLOGICAL, TECTONICS & SOIL				PARTICULARLY	PARTICULARLY	
NATURAL ENVIRONMENT	D & I	N	L	PARTICULARLY	PARTICULARLY	N
ANTHROPOGENIC ENVIRONMENT						
SOCIOECONOMIC ENVIRONMENT	D & I	P	L			
TECHNICAL INFRASTRUCTURE						
ANTHROPOGENIC PRESSURES ON THE ENVIRONMENT	D	N	L	PARTICULARLY	PARTICULARLY	P
ATMOSPHERIC ENVIRONMENT - AIR QUALITY	I	P	S	PARTICULARLY	PARTICULARLY	P
ACOUSTIC ENVIRONMENT AND VIBRATIONS						
ELECTROMAGNETIC FIELDS						
WATER SOURSIES						

Table 38: Environmental impacts during the operational phase of the project.