

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



**MUNICIPALITY ARRIANON, SOUFLIOU, MUNICIPAL UNIT
OF KECHROU & MIKROU DEREIOU, ORFEA, IN THE
REGIONAL UNIT OF RODOPI, EVROS, REGION OF
EASTERN MACEDONIA AND THRACE**

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PROJECT PROMOTER

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1. General information on the project under consideration

The present study deals with the environmental impacts resulting from the construction and operation of a Wind Power Plant at the location "Anemoni" consisting of ten (10) wind turbines of indicative type V117-3,45MW, with a power of 3,45MW each. The Wind Power Plant in its entirety falls within the Municipal Units of Kechros and Orfeas, the Municipalities of Arriana and Soufli, the Regional Units of Rodopi and Evros and the Region of Eastern Macedonia and Thrace. The project under consideration has a **total power of 34,5MW**.

The area under study belongs to the Wind Priority Areas (WPA) according to Ministerial Decision 49828/2008 "Special Spatial Planning Framework for Renewable Energy Sources".

On the basis of the spatial plan, the wind turbines were examined according to Article 7 of the aforementioned Ministerial Decision (Special criteria for siting wind turbines on the mainland).

The operator of each project is the company AETOS WIND SINGLE MEMBER P.C., which undertakes the entire management of the project.

In summary, the project includes the following:

Main Project:

- ✓ Installation of a WPP within a total land area of 206,202.67 sqm consisting of ten (10) wind turbines with a rotor diameter of 117m and a capacity of 3.45MW each or a total capacity of 34.5MW.
- ✓ Configuration of ten (10) squares for the construction of wind turbines with a total occupied area of 93.021,34 sqm.
- ✓ Wind turbine foundations - construction of pylon bases with excavation of ten foundations
- ✓ Construction of an internal underground medium-voltage network for the transmission of the electricity produced by the generators to the control house, with a total length of 4.028,17 m.
- ✓ Construction of a control house with an area of 31,50 m² on the site of wind turbine 10.
- ✓ Construction of a 33kV underground transmission line from the control house to the 33/150KV substation "PATRIARCHIS" 33/150KV (M.T./Y.T.) with a total length of 6,509.51 m, part of which is overlapped by the internal connection.

Accompanying works:

- ✓ Construction of roads for access to the project site and internal road connection of the wind turbines at the "Anemoni" site, consisting of class C forest roads with a total length of 6,141.29 m, of which 939.76 m are new roads and 4,056.18 m are improvements to existing roads. A section of 1,145.35 m concerns the improvement and widening of roads.
- ✓ Construction of technical rainwater drainage works.
- ✓ Landscaping within part of the wind turbine installation areas, where the mobile crushers will be installed.

2. Distances of the Project from Residential Areas, Protected Areas, and Infrastructure

The proposed project concerns the construction and operation of a wind farm with a total capacity of 34.5MW which falls within the Municipal Units of Kechros and Orfeas, the Municipalities of Arriana and Soufli, the Regional Units of Rodopi and Evros and the Region of Eastern Macedonia and Thrace.

The project under consideration is located outside of the General Urban Plan, outside of the plan - residential area and established settlement boundaries. The closest settlements to the study area are:

s/n	Settlement name	POPULATION AT THE 2021 CENSUS	DISTANCE FROM THE CLOSEST WIND TURBINE (km)
1	Kalivia	32	3.2
2	Chloe	287	3.5
3	Ano Kampi	15	3.8
4	Gonikon	300	5.1
5	Virsinì	296	6.9

Table 1 : Distances of the nearest settlements to the nearest wind turbine of the wind farm

In the area of the municipality of Arriana, where the WPP is located, there are no general urban development plans or plans for the spatial and housing organisation of the open city. The substation to which the project will be connected is located in the municipality of Arriana, where there are no general urban development plans and no urban development plans. In the Rhodope Region, where the Municipality of Arriana is located, there is a Specially Regulated Urban Development Area, where the substation is located in spatial unit 4 (mountain area), as shown in the map extract (Chapter 5). In the wider area, however, the General Plan of the Municipality of Alexandroupolis is being developed, first approved by Government Gazette 9D/14-1-1988, then amended by Government Gazette 844 D/25-11-1999 and now in stage B1 (02/2021), during which the spatial development model is being evaluated. The area

in question is located in an off-plan residential area, to which the building conditions of Decree 24/1985 (Government Gazette 270 D/31-05-1985) apply.

The study area of the project in the area of "Anemoni" falls within the Natura Site - Z.E.P. - "Koilada Filouri" with code "GR1130011" of 37.565,9 ha and within the Natura Site - SPA "Mountainous Evros – Koilada Derio" of 48942,19 ha with code "GR1110010".

The project falls within two Important Bird Areas (GR003) "Dadia - Dereio - Aisympi forest" and the Important Bird Area (GR008) "Koilada Filiouri and Eastern Rhodope".

Important Bird Area GR008 includes three different protection regimes:

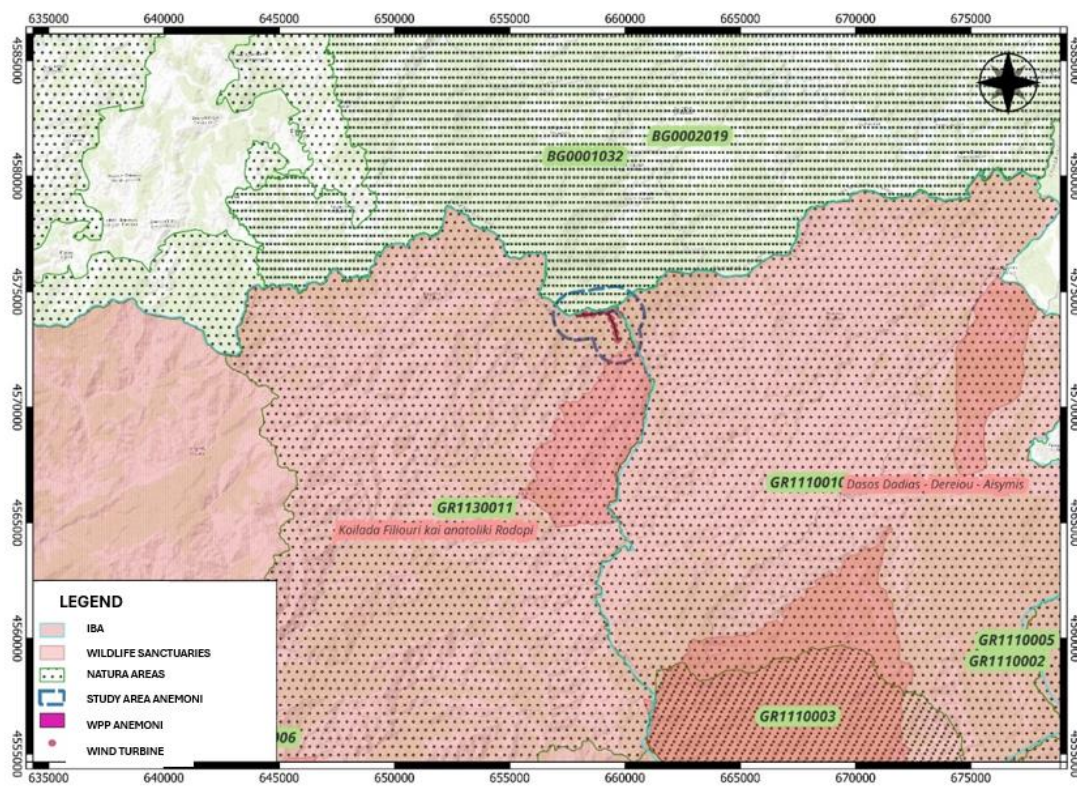
- 1) The Special Protection Area (SPA) with code **GR1130011** and the name " Koilada Filiouri " (within which the station falls).
- 2) The Site of Community Importance with code **GR1130006** and name Filiouri River, located approximately 24km southwest of the Wind Power Plant.
- 3) The wildlife sanctuaries Kechros Kerasias, Patermon - Adas of the Municipality of Komotini, Kallithea - Tris Vrisses of the Municipalities of Alexandroupolis, Orpheus, Soufli and Arriana Nea Santa of the Municipality of Acharnon and Poulia (Mikros Derio - Soufli). The Kechros Kerasias Shelter is also the closest to the project and is located 348m from the nearest wind turbine south of the wind farm.

The area encompasses the hills of southeastern Rhodope and the valley of Potamo Filiouri. The dominant vegetation is maquis, with scattered clumps of grazed oak (*Quercus* spp.). The isolation of this mountainous area to date has not allowed it to develop (network of forest roads, other types of development and management interventions), so that the character of the landscape has not yet been altered. The main land uses in the area remain traditional - extensive (agriculture, livestock farming) and contribute to the preservation of biodiversity. It is only in recent years that some infrastructure (e.g. roads) has begun to be created to serve the local population.

Important Bird Area GR003 includes three different protection regimes:

- 1) The Special Protection Area with the code **GR1110010** and the name Mountainous Evros - Koilada Derio
- 2) The Site of Community Importance with the code **GR1110003** and the name Tris Vrisses .
- 3) The Wildlife Sanctuary with code **K731** and name Kallithea - Tris Vrisses of the Municipalities of Alexandroupolis, Orpheus Soufli and the Bird Sanctuary with code K10 of the Municipality of Mikro Derio-Soufli.

It is located between the National Park of Dadia Forest and Koilada Filiouri at the western end of Evros Prefecture. It is covered mainly by oak and beech forests with small groups of pine trees and is crossed by the Diavolorema Deriou. The central part and the north-east are dominated by partially forested areas with scattered old oak trees, mainly used by free grazing livestock. The traditional agricultural activities of the local inhabitants (e.g. nomadic livestock farming, small-scale agriculture) have played an important role in the conservation of the ecosystems, maintaining sparse oak forests in part of the area. The mature oak trees that remain are used for pruning, i.e. collecting branches with leaves for goats to feed on in winter. The oak forests are also used for firewood production, while the beech forests and pine plantations are used for commercial timber.



Map 1: Protected areas in which the project falls within and adjacent to

The occupation zone of the project, according to the revised forest maps of the Regional Unit of Evros, occupies mostly forest areas. Specifically, the wind turbine squares occupy areas classified as ΑΔ (Forests and wooded areas in the aerial photographs of older photographs, forests and wooded areas in the aerial photographs of recent photographs and in autopsies) and in ΔΔ areas (Forests and wooded areas in the aerial photographs of older photographs or preexisting data, forests and wooded areas in the aerial photographs of recent photographs and in autopsies).

Regarding the new road that will be built to access the wind turbines of the project, it will mainly occupy areas with the designation of ΔΔ, ΑΔ and ΠΔ (Final acts and decisions of designation - forest), a small part of it that is other ΑΑ - (ΑΑ - other form/cover land in the earlier aerial photographs other form/cover land in the recent aerial photographs and autopsies) and ΔΑ - (ΔΑ - Forest and woodland in the earlier aerial photographs or other form/cover land in the recent aerial photographs and autopsies).

In detail, the ΑΑ areas occupy 557,12 m² while the ΔΑ areas occupy 762,99 m². The ΔΔ areas are estimated at 84.274,7 m², the ΠΔ areas occupy 63.951,4 m² and the ΑΔ areas are estimated at 6.982,62 m².

The wind turbine installation sites are compatible with social infrastructure and utilities as they are not to be affected. The nearest airport is the "Demokritos" airport of Alexandroupolis, which is located southeast of the project area. There are no social welfare facilities close to the study area, e.g. health care, education, sports facilities, urban infrastructure facilities (e.g. recycling, waste treatment, etc.), water supply facilities, livestock units, Integrated Tourism Development Areas and other Areas of Organized Development of Third Sector Production Activities, theme parks, tourist ports and other statutory or designated tourist areas (as identified within the Environmental Impact Assessment for each individual facility).

In conclusion, the proposed project is compatible with the approved boundaries of the settlements of the wider area where it is located since both the main activity (Wind Power Plant) and its associated facilities are located outside and at a satisfactory distance from these boundaries. The project is also located outside of approved Local Spatial Plans (General Urban Plan, Open City Spatial Settlement Plans) and outside of the Residential Control Zone and at a great distance from them.

3 Significant environmental impacts that may result from the implementation of the project.

The individual projects and infrastructures of the wind farm studied were designed to minimize and mitigate the impacts associated with the construction and subsequent operation of the project. The result of this approach, as documented in Chapter 9, was the integration of the project into the environment at the lowest environmental cost.

The following tables summarize the impacts that are considered to have a certain intensity and which, taken as a whole, relate to both the construction and operation phases of the project.

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

Table 2: 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)	REVERSIBLE	TREATABLE	SHORT TERM / POSITIVE - NEGATIVE
CLIMATIC & BIOCLIMATIC CHARACTERISTICS						
MORPHOLOGICAL & LANDSCAPE FEATURES	D	N	S	PARTIALLY	PARTIALLY	P
GEOLOGICAL, TECTONIC & SOIL	D	N	S	PARTIALLY	PARTIALLY	
NATURAL ENVIRONMENT	D & I	N	S	PARTIALLY	PARTIALLY	N
ANTHROPOGENIC ENVIRONMENT						
SOCIO-ECONOMIC ENVIRONMENT	D	P	S			

TECHNICAL INFRASTRUCTURE	D	N	S	YES	PARTIALLY	
ANTHROPOGENIC PRESSURES ON THE ENVIRONMENT	D	N	S	PARTIALLY	PARTIALLY	P
ATMOSPHERIC ENVIRONMENT - AIR QUALITY	D	N	S	PARTIALLY	PARTIALLY	P
ACOUSTIC ENVIRONMENT AND VIBRATIONS	D	N	S	PARTIALLY	PARTIALLY	
ELECTROMAGNETIC FIELDS						
WATER	D	N	S	YES	PARTIALLY	

Table 3: Environmental Impacts during the operational phase of the project.

4. Proposed measures and actions to protect the environment.

Some weak negative impacts, which are temporary and to a significant extent reversible, will occur during the construction works of the proposed Wind Power Plant and its accompanying technical works mainly due to the excavation works resulting in the removal of vegetation, the surface alteration of the soil and the geomorphology of the intervention sites as well as the emission of dust and possibly the difficulty for vehicles to pass through the construction sections along existing roads and roads.

However, by taking appropriate measures, any adverse impacts will be minimized and addressed. However, it is estimated that positive impacts will also result from the operation of the project.

The proposed measures aim, in order, to address the following environmental impacts:

- Prevention - Avoidance
- Reduction of intensity and extent
- Rehabilitation

The installation of the wind farm and the accompanying works are expected to cause some impacts and changes in the environment of the intervention sites. However, measures are proposed to minimize the disturbance caused by the construction works of the project:

- ✚ Appropriate design of the road construction, considering the local topographical features, existing vegetation, and avoiding large volumes of

excess excavated material, with maximum levelling of embankments and trenches.

- ✚ Plant road embankments with species appropriate to the area and in an appropriate manner.
- ✚ Collect, remove, and properly dispose of all types of construction waste, after separating recyclable materials, with subsequent disposal in recycling centers.
- ✚ Operate construction sites and transport vehicles during quiet hours to minimize acoustic disturbance to nearby settlements.

Provide for the appropriate sorting, temporary and final disposal of excavated materials resulting from earthworks, in accordance with applicable legislation.

In addition, throughout the construction of the entire project, care will be taken to minimize the removal of forest vegetation and to replace it with horticultural works, in accordance with the principles of sustainable development. The plant species selected for restoration will be in accordance with the local bioclimatic conditions and the needs of the fauna, in consultation with the relevant Forestry Department.

Particular attention will be paid to restoring the site to its original natural state, to minimize any disturbance to the landscape and topography. The same effort will be made during the excavation phase to limit it to the minimum technically necessary and to ensure the smooth and safe operation of construction crews and machinery.

During the construction of the project, the necessary measures will be taken to ensure that the developer:

- compliance with environmental requirements by the developer
- the ability to address and remedy environmentally undesirable situations caused by the developer's actions or omissions.

It is also noted that:

- The scope of the earthworks contract will include planting/restoration works and the obligation to maintain them where appropriate.
- The relevant archaeological authorities will be notified on commencement of works.
- Systematic wetting of construction roads, materials, etc. will be used to reduce dust during the construction phase of the park.
- All waste materials (consumables, old machinery) will be removed from the project site and disposed of in accordance with applicable regulations.
- All forms of material burning will be prohibited in the project area.
- Special precautions will be taken to prevent any spillage of liquids (oils, etc.) into surface and ground water. Uncontrolled dumping of liquids on

the ground will be prohibited. Mineral oils used will be managed in accordance with the regulations in force.

- During the construction of the project, the smooth movement of vehicles to and from residential areas will be ensured.
- All areas suitable for vegetation will be planted. Planting will commence after the final surfaces have been formed.
- The developer will be required to:
 - The control and supervision of the construction of the external transmission network.
 - Install the electromechanical equipment necessary to connect the project to the existing substation.
 - Take emergency action if necessary.
 - Ensure that the materials required for the construction of the project are sourced from legally operating quarries in the surrounding area.
- Care will be taken to ensure that the temporarily stored materials are not washed away by rainfall.

5. Benefits from the implementation of the project/activity

The project under consideration aims at the construction and operation of a Renewable Energy Sources project and specifically a wind power plant to produce wind energy, in compliance with the legislation in force, the exploitation of the wind potential of the region and the decoupling from conventional fuels that not only increase the price of electricity but also emit polluting and harmful substances into the environment.

Renewable energy sources are known as soft forms of energy because their use does not require any energy input (e.g., combustion), as they use a form of energy generated by natural processes. They have been used since ancient times to meet energy needs and, unlike fossil fuels, are inexhaustible. Renewable energy sources have a zero-energy footprint. The energy footprint is the amount of carbon dioxide (CO₂) emitted into the atmosphere.

The development of the project under study and wind energy projects in general contributes to the objectives of the European Union for increasing the penetration of Renewable Energy Sources and to the objectives of the Greek government for the decarbonization of electricity production. Wind Power Plants do not occupy a large area and are able to share land with sectors such as agriculture and livestock making wind energy space efficient. Wind turbines are a form of energy generation with minimal maintenance requirements and reliability of operation.

At the local level, the realization of the project under study will lead to the creation of jobs during the construction phase and during the operation phase. According to a measurement by the association of power generators (report ELETAEN), jobs

are created in the areas of maintenance, operation in wind turbine suppliers and in the areas of construction of the project's foundations. During the operation of the project, jobs are created to monitor and supervise the operation of the wind turbine on a continuous basis.

The project under consideration and wind projects in general strengthen the economy of local communities. According to Article 7 of Law 3851/2010, as in force, it is stipulated that the 1.7% is attributed at a rate of 80% to the local authorities. A' degree, within the administrative boundaries of which the RES plants are installed and 20% to the local authority or local authorities A' degree, through the territorial area of which the line connecting the plant to the System or the Grid passes. If the stations are installed within the administrative boundaries of more than one local authority, 1% shall be attributed to the licensee's supplying electricity to the household consumers of the first-degree local authority in which the RES stations are installed and shall be refunded through the electricity bills of the household consumers. An amount of 0,3 % is paid to the green pay (green pay.gr).

Furthermore, benefits accrue to the local community from the construction of utility projects as a compensatory measure from the installation and operation of the Wind Power Plant as well as sponsorships that serve local needs. The project under study, when implemented, will promote a form of alternative tourism of an educational nature with a visit to the site of the Wind Power Plant. Therefore, a wind energy project not only does not have a negative impact on the environment but also contributes to its restoration and to the achievement of the national objectives of the country by avoiding the emission of pollutants into the atmosphere.

6. Alternatives

The selection of the location for the installation of all ten (10) wind turbines and the accompanying works was made after a thorough examination of the area to satisfy initially the data for high potential and subsequently the restrictions provided in the relevant legislation for the protection of the environment, the existing settlements, and the general activities of the wider area.

The selection of the position in relation to the above parameters and the more general parameters was:

- I. The highest possible wind potential in the area.
- II. Access roads to ensure the ability to transport the wind turbine sections with the least possible disruption to the existing network and the least possible widening of the road network within and outside the ten (10) wind turbine sites.

- III. The distances from neighboring settlements shall be above the limit that allows them to blend into the landscape and minimize visual disturbance.
- IV. Land uses shall not prohibit the project boundary.
- V. Projects should, as far as possible, be located outside protected areas or archaeological sites and at a sufficient distance from them to ensure compatibility.
- VI. Wind turbines should be sited in a position suitable for connection to the transmission grid.
- VII. The configuration and technical characteristics of the terrain shall be suitable for the construction and development of the project.
- VIII. The area shall be sufficient for the development of the project.
- IX. Cause the least possible visual disturbance.
- X. Compatibility with the provisions of the legislation in force and the provisions of Ministerial Decision 49828/2008 "Special Framework for Spatial Planning and Sustainable Development for Renewable Energy Sources and its Strategic Environmental Impact Study".
- XI. The electrical connection shall have as little energy loss as possible.

Interconnection projects are subject to constraints depending on the nature of the project. However, there are technical and non-technical constraints associated with the relevant system operator. The above constraints also apply to the project access road network, considering the topography of the area.

For the routing of the internal access roads of the Wind Turbines within the Wind Power Plant land, the routing that is finally proposed has the least environmental impact and the smallest slopes. Based on the above, scenarios (alternatives) were considered exclusively for different locations of the Wind Turbines as the topology of the area does not allow for the creation of alternative roads, nor does it allow for a different location of the Wind Power Plant. In chapter 7 of the present environmental impact study the alternatives of the Wind Power Plant are analysed both in terms of the location of the wind turbines of the project and in terms of the access road to the wind turbine site and their electrical interconnection with the Greek Electricity Transmission System. Finally, an analysis of the scenario of the zero solution was carried out, i.e. not siting and installation of the project, which was rejected as the negative impacts from the construction and operation of the Wind Power Plant appear to be clearly lower in intensity and duration than the positive impacts of the development of the project under study.