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The 7 Most Endangered 2021

Programme run by **Europa Nostra**, the European Voice of Civil Society
Committed to Cultural Heritage,
in partnership with the **European Investment Bank Institute**

Five Southern Aegean Islands, Greece

Appraisal Report



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Acknowledgement

The Europa Nostra / EIB-Institute team had two missions, namely to the islands of Milos and Kimolos (4 – 6 December, 2021) and to the island of Kythira (28 February – 2 March, 2022.) On the islands the team visited archaeological sites, historic villages and locations, and appreciated the cultural heritage, the flora, fauna (where spotted) and landscape. It also inspected sites destined for large scale wind farms under evaluation or already with Energy Production License approval, some in or adjoining the Natura 2000 network. The team met with local authorities, stakeholder organisations and residents. Also, the team had virtual (zoom) meetings with the local authority representatives of Amorgos (23 March, 2022) and Tinos (6 April, 2022.) As a result, the team has had a good, if partial, overview of the endangered environment and the occasion to form a view of the Island Communities' attitude and preparedness to transition to renewable energy sources.

Additionally, the team has interacted extensively with the Greek Society for the Environment and Cultural Heritage (ELLET,) the nominator, and perused available documentation, including an internet literature survey. The team has not met with representatives either of the Government or the Electricity Companies. All meetings were held in Greek.

The author of the Report is Constantin Christofidis. However, it could not have been drafted without the input, including all of Appendix 1, of Paolo Vitti and invaluable editing suggestions of Guy Clausse. Juan Alario provided useful comments on energy policy and EIA process. ELLET provided support with highlighting and confirming relevant national legislation. References are imbedded in the Report in the form of links. They refer to specific sources, statements or paragraph sections. Omissions, if any, are unintentional and pure oversights.

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1. Summary

Contrary to the more customary Europa Nostra Most Endangered initiatives, which address a single or group of monuments or sites, the 7ME 2021 – Five Southern Aegean Islands initiative addresses a region as a whole. Five islands located in the southern Aegean Sea, Greece, have been selected as typical examples of the region's sea- and land-scape beauty, and unique cultural heritage, including its lively traditions derived over the ages from a balanced symbiosis with nature. In addition to its beauty, historical and cultural value, the southern Aegean Sea's biodiversity, much of it endemic, represents considerable scientific interest.

Climate change and the consequent need to transition to renewable energy sources (RES,) in particular the risk of construction of towering wind turbines and ancillary infrastructure works, is putting under threat this cultural heritage asset. In addition to damaging the landscape, other environmental issues, such as biodiversity, endemic species, bird migration, potentially the local microclimate, could be irretrievably disturbed and put at risk agriculture and farming activities, and tourism, the mainstay of the local and, by extension, the national economy.

The 2019 [National Energy and Climate Plan](#) (NECP), although more ambitious than the one it replaced, will yet be revised, post the recently ratified [National Climate Law](#) (in Greek,) which has aligned national to EU objectives ("[Stepping up Europe's 2030 climate ambition](#)" Com(2020) 562 final 17.09.2020) and the [European Green Deal](#) targets. The NECP sets policy measures, including decarbonising the power sector and interconnecting autonomous islands with the mainland grid to replace ageing, polluting and costly fuel oil fired generators. Both measures imply a substantial expansion of RES. The aeolian potential of the Aegean islands has led electricity companies to file an avalanche of RES license applications with the [Regulatory Authority for Energy](#) (RAE.)

Local communities only become aware of a RES project in their vicinity once RAE has posted the license application on its website. The absence of prior consultation leads to the perception that the licensing process is indiscriminate. Reasonably, communities are alarmed and antagonised, and feel coerced.

In addition to the perceived detrimental environmental effects, communities worry about the impact of large scale wind farms on the local economy. Aegean islands, such as the five of the 7ME initiative, seek to grow their economy with offers of more sustainable forms of tourism by adding to the respective island's existing attractions, of say archaeological sites or beaches,

other sought after activities, such as hiking, agrotourism, bird watching and maximising the distinctiveness of local customs, history and cultural heritage.

If today the tertiary sector, tourism, represents in the summer season the predominant economic activity in the vast majority of the Aegean islands, the primary sector, agriculture and farming, still supports a subsistence activity for many of the resident community, particularly in the off-season months. The primary sector has even proved capable of attracting new activities from a growing number of people who wish to escape the stress of contemporary urban life, thus helping stabilise population decline and diversify the economy.

Viewed from the perspective of the national economy, the authenticity of the Aegean islands represents a valuable intangible asset. RES projects, which target the fundamental environmental concern of climate change, also scar by their scale the landscape, natural environment and biodiversity, and can irretrievably upset the local economy and way of life of island communities. In the longer term, preserving the intangible cultural asset of the islands could well exceed the benefits of ill-conceived RES projects.

The proper siting of RES projects is a sensitive issue. It stresses the urgency to update the national land use plan for RES, which dates back to 2008, especially because windfarms and photovoltaic (PV) parks occupy substantial space because of their small energy density compared to fossil fuel alternatives. A recent law ([N. 4964/30.07.2022](#)) sets out the regulatory framework for the development of offshore RES. The issue of siting RES projects in relation to world heritage monuments has attracted the attention of UNESCO and the publication of an effective [Guidance Tool](#) is imminent.

The Government, the Electricity Companies, and the Island Communities are the three main actors that come into play to manage and implement the clean energy transition in the southern Aegean islands. Although all three are focused on climate change and the transition to clean energy, each has its respective objectives, priorities and obligations. It is important for them to interact constructively with the least of friction and maximum mutual benefit to effectively achieve the clean energy transition.

The EN / EIB-I team visited the islands of Milos and Kimolos and the island of Kythira. During the visits, the team toured archaeological sites, historic villages and locations, and appreciated the cultural heritage, the flora, fauna (where spotted) and landscape. It also inspected the areas, some in or adjoining the Natura 2000 network, where wind farms risk being built. The team had virtual (zoom) meetings with the local authority representatives of Amorgos and Tinos. As a result, the team has had a good, if partial, overview

of the endangered environment and the occasion to form a view of the Island Communities' attitude and preparedness to transition to RES.

Additionally, the team has interacted extensively with ELLET and perused available documentation, including an internet literature survey. The team has not met with representatives either of the Government or the Electricity Companies.

For its part, ELLET organised two webinars. The first aimed to raise the awareness of the Island Communities to climate change and the need to transition to RES. The second, post an introduction by the Europa Nostra Secretary General and team, aimed at the exchange of views between scientific speakers and island community representatives, and lead to conclusions on the protection of the natural landscape and cultural heritage of the islands, while achieving a sustainable transition to RES. Both were well attended and have attracted many views. On 4 June 2022, two lead ELLET members featured on the Greek Parliament's TV Channel in a debate dedicated to the 7ME – Five Aegean Islands programme.

The local communities, when confronted with the prospect of industrial scale windfarms on their islands, react with uncompromising denial. However, once engaged in a discussion on the need to decarbonise the economy, a more conciliatory attitude results. Milos, which has been used as a proxy for Kimolos in the current assessment largely for logistical reasons, has benefited from a small windfarm since the late 2000s to cover part of its needs. In anticipation of its interconnection to the mainland grid, Milos has yet to develop a plan to become self-sufficient in energy. PV is seen as more acceptable to aeolian, especially if tailored to private housing or hotel establishments. To the contrary, despite the island's significant potential, high enthalpy geothermal energy is viewed with apprehension because of early negative experience. The community is more accommodating with low enthalpy geothermal energy. Milos and adjoining Kimolos, should seize the opportunity to develop and put forward a plan to make use of this natural RES they are endowed with, combined with PV and aeolian, as they see fit. It would be an unacceptable waste for the island and the country if this invaluable base load RES were left unexploited.

Kythira, with the support of an independent group of citizens, are well advanced with plans for a PV park to make the island self-sufficient and are in the process of setting up an Energy Community. The local residents are actively resisting the installation of industrial scale windfarms. They envisage the preservation of the island's natural environment and the protection of its monuments and traditional settlements. Such a combined action would support

the island's sustainable economic development and best guarantee the community's longer term welfare.

The Municipality of Amorgos has been examining the alternatives of creating one or more Energy Community(ies.) It is not opposed to private initiatives and has been in negotiation with one of the major Electricity Companies. During the Zoom meeting, a graduate student of the National Technical University of Athens presented his recently completed thesis "[PV park installation to balance Amorgos energy needs.](#)" which attracted much interest from the Mayor and Councillors. To the extent assessed with the support of ELLET, the Zoom meeting and relevant literature (Internet) survey, the Municipality is well aware of the risks posed to the welfare of the island from industrial scale windfarms. It is setting a good example with its pro-active actions, which it should pursue.

Tinos, with its beauty, history and cultural assets, has achieved a thriving economy, helped also by its accessibility from the mainland. Public opinion, although initially positively inclined to small windfarms, turned when alerted to the inordinate number of windfarm applications. Sensing a threat to its way of life, the community has been actively protective and seems to have put in abeyance, if not a definite stop, to the installation of windfarms. During the Zoom meeting the Mayor and Councillors were conciliatory. They evoked the need for financial and technical support to develop local RES transition plans and achieve a constructive attitude to plan and "propose" rather than to "oppose," balancing and selecting its natural resources as the community sees best fit to its needs.

In Sikinos, the prominent church at Episkopi, built on a Roman period mausoleum, received a European Heritage Award in 2022. Even in the absence of a meeting, Zoom or otherwise, it is relatively easy to imagine the reaction of the Mayor and Councillors. An eventual approval and construction of the windfarms envisaged would fairly upset the balance of Sikinos and its small community of a mere 250 or so permanent residents. The conundrum is repeated, in Sikinos as well as in the other islands: RES to combat climate change, but at what cost to the natural environment, biodiversity, cultural heritage, way of life and local economy?

As outlined in the brief island descriptions above, in anticipation of their interconnection to the mainland electricity grid over the next few years, each Island Community should seize the opportunity to develop and put forward a plan for its transition to RES. The Government has put in place a programme to support local authorities in a variety of actions aiming at their sustainable development through subsidies and loans, some co-funded by the EU and the EIB. Regional, local and municipal authorities would be eligible for support

from European Commission programmes. At national level, Greece may claim from the emission trading system (ETS) allowances to co-finance the decarbonisation of the electricity supply of its islands. Also at national level, the EU Recovery and Resilience Facility and the Just Transition Fund would provide appropriate funding sources.

In sum, the selected five South Aegean islands, which represent a region with an unspoilt sea- and land-scape, a unique cultural heritage and tradition, and rich biodiversity, are under threat from climate change and the consequent drive for RES, in particular an inordinate construction of towering wind turbines and ancillary infrastructure works. In addition to scarring the landscape, other environmental issues, could be irretrievably disturbed and put at risk tourism, the mainstay of the local and, by extension, the national economy. The unexpected geopolitical developments, which are challenging world energy supplies and security, will spur the drive for a maximum reliance on national energy resources, especially RES. In this context, the conclusions and recommendations that follow aim to provide pointers and encourage actions to balance national interests with the protection of local communities in the transition to RES in a socially, culturally and environmentally compatible manner.

2. Conclusions & Recommendations

Based on the team's assessment, the following conclusions and proposals can be put forward:

The Island Communities need to be pro-active. The impression gained during the field visits and virtual (zoom) meetings is that the Mayor and the municipal councillors of respective islands have a cross (political) party consensus on the issue of clean energy transition. In the team's view, they should:

- overcome, where manifest, any grievance of lack of information flow by
 - regularly accessing the Government “[transparency](#)” portal and the websites of relevant Ministries to keep informed of legislative developments;
 - accessing the RAE [Geospatial Map](#) for license applications; and,
 - the websites of the HWEA and Electricity Companies for private sector initiatives;
- participate in public consultations of draft legislation;
- object to license approvals and engage in court proceedings, as they see fit;
- participate in the EIA public hearings;
- develop a strategy for the clean energy transition of their respective island. The strategy should
 - indicate the preferred choice of RES based on island specific characteristics and resources e.g. PV if aeolian is perceived to be visually too intrusive or is likely to adversely affect the local environment, biodiversity, microclimate (the morning dew in Amorgos or the “Provenza” in Kythira;) or geothermal (for Kimolos, Milos cf. [N. 4602/2019](#) in Greek)
 - nominate an implementing entity e.g. the creation of an Energy Community ([N. 4513/2018](#) in Greek,) identify possible financing sources, set a timetable.
 - refer to and use the [European Cultural Heritage Green Paper](#) as a guiding tool to raise the awareness of residents and visitors alike on how to best save, generate and use energy taking advantage of local tangible and intangible assets and traditions and matching the local environment, way of life and cultural heritage.

In sum, Island Communities should anticipate developments by defining an investment plan to make the island self-sufficient in clean energy, with the

potential to export within the regulatory framework and provided the residents agree. The proposals above presuppose the Island Communities to have:

- the institutional capacity to develop the clean energy transition strategy for the island, if need be by resorting to consultants or with the support of technical assistance;
- access to funding a) on a small scale to develop the strategy, and b) on a larger scale to implement the resulting investment plan.

The Government must ensure the regulatory framework is in place to attract, encourage and facilitate the required investment to fulfil the NECP 2030 target. The unexpected latest geopolitical developments, which are challenging world energy supplies and security, will spur the drive for a maximum reliance on national energy resources, especially RES. It is imperative for Government to ensure the public sector, local residents, as represented by the Island Communities, and the private sector, as represented primarily by the Electricity Companies, interact and cooperate constructively with the least of friction for the greatest common good:

- the regulatory framework should be adapted to ensure local communities are proactively informed about and consulted on RES projects at an early stage, rather than become aware of a RES project in there region via RAE's Geospatial Map.
 - Early information can help pre-empt antagonism. Combined with extended information campaigns on the clean energy transition imperative, backed with examples of possible alternatives cf. the Sustainable Islands initiative for non-interconnected islands ([2021 Energy Market Report](#), p. 44) should ensure active participation of residents and lead to well-informed decisions.
 - the Geospatial Map of RAE layer of protected areas must be updated to include the Natura 2000 network areas, important bird and roadless areas, sites of cultural heritage value and populated areas, in particular those deemed to represent tangible and intangible assets, be they environmental attributes or cultural values.
 - the EIA procedure must reflect accepted good international practice, with respect to which environmental aspects and types of impact are covered and the information that should be provided, including a transparent approach involving environmental authorities and the public.
 - Natura 2000 network areas must be well protected, as envisaged by EU law. It is encouraging that the simplification of environmental licensing process foreseen in proposed recent legislation was withdrawn for revision and further public consultation.

- the recent law that sets out the regulatory framework for offshore windfarms complements the Climate Law ratified in 2022. There is now an urgency to complete the regulatory framework with the update of the 2008 national land use plan for RES.
- the NECP and the regulatory framework for Energy Communities should ensure that support and funding is available for Island Communities to develop their respective clean energy transition strategy. Envisaged [regulatory revisions](#) should further encourage and provide the incentives for such actions.
- in taking forward the national RES initiatives it will be important to strike the right balance between meeting the NECP 2030 targets and preserving the environment and the cultural heritage of remote communities, such as represented by the Aegean islands. Putting these at risk could compromise their tourist attraction and by extension irreversibly damage a major component of the national economy revenue.

The Government rightly expects the private sector, the Electricity Companies, to play a central role to reach the NECP 2030 targets. In particular, their potential to mobilise capital and to promote and manage investment projects. However, the regulatory framework again must strike the right balance between setting the incentives to attract and facilitate private investment and protecting the Island Communities from the impact of large scale RES projects, in particular windfarms:

- where streamlining the licensing process is envisaged, it should also ensure that the bond (bank guarantee) deposited with each license application is set at a level not just to discourage tentative applications at an early stage, but also to cover the cost of the end-of-life dismantling and removal of the RES project, and the land remediation thereafter.
- consideration should be given to increase the current 3% fee the electricity transmission operator retains from Electricity Company gross (net of VAT) sales of RES electricity (with the exemption of PV.) Remittance of the fee, which now can take several years, should be accelerated. Law [N. 3851/2010](#) (Art. 7) sets the fee, which is distributed: 1% to reduce the household electricity bills in the communities where the electricity is generated; 1.7% to the corresponding local authorities for environmental, development and social projects; and, 0.3% to the national “[Green Fund](#).” Such action would help counter the perception of communities that their resources are exploited with little of the wealth created remaining for local benefit.

- consideration should be given to encourage/require? local resident participation through shareholding in Electricity Company RES projects, as practiced in other countries cf. [Tageblatt](#). Where accepted and subject to the form such a “joint venture” might take, it would help address issues of wealth sharing and issues of institutional capacity, access to funding and project design and management (cf. Amorgos and Tinos.) Additionally, it could help overcome connectivity restrictions caused by the lack of network capacity, which requires investment in new substations beyond the technical and financial reach of small electricity producers.

The Electricity Companies, operating in the private sector, will reasonably aim to maximise the remuneration of their shareholders. In doing so, while fully respecting the prevailing regulatory framework and in the context of corporate environmental, social and governance (ESG) good practice, they should consider to:

- inform local communities of envisaged RES projects in their region, early in the investment cycle.
- engage local communities ideally in the planning of RES projects tailored to local needs with the potential to export surplus energy
- offer joint shareholding; in sum, aim to cooperate and avoid antagonism.

3. Location – Purpose

The five islands of Amorgos, Kimolos, Kythira, Sikinos and Tinos in the southern Aegean Sea, Greece.

The five islands are typical examples of the southern Aegean landscape and their villages representative of the region's characteristic settlements. Their natural beauty and history spanning a period from the 4th millennium BCE Cycladic civilisation to our current 21st century combine to make the islands a unique cultural heritage asset, including their lively traditions derived over the ages from a balanced symbiosis with nature.

Climate change and the consequent need to transition to RES, in particular the risk of construction of towering wind turbines and ancillary infrastructure works, is putting under threat this unique cultural heritage asset. In addition to damaging the landscape, other environmental issues, such as biodiversity, endemic species, bird migration, potentially the local microclimate, could be irretrievably disturbed and put at risk agriculture and farming activities, and tourism, the mainstay of the local the economy. The island communities, seeing their traditional way of life endangered, query and tend to oppose the transition to RES.

The purpose of the 7ME – Five Aegean Islands initiative is to suggest ways to reconcile the transition to RES whilst preserving the cultural heritage of the islands and protecting their landscape and environment. On the one hand, by raising the awareness of island communities to the imperative of the transition to RES and encourage the acceptance and development of appropriate solutions; and, on the other hand, by highlighting the need for the policy framework to include measures to facilitate the transition to RES, including to ensure due process and transparency in the licensing procedure to prevent inordinate and irretrievably damaging investment projects.

Solutions appropriately developed and tailored to the needs of the five selected islands, would serve as examples for other islands in Greece and abroad confronted with similar cultural heritage and environmental concerns.

4. Context

Starting from prehistoric times, through the Minoan and classical ancient Greek period until the Roman conquest of the region, the consecutive civilisations which occupied the Aegean Sea have left vestiges and imprints of their culture, making the region historically and culturally layered and outstanding. This cultural palimpsest, specific to each island's history, is one of the assets expressing their cultural identities and intertwines with the wider history of Greece. As such, the Aegean Sea is considered the cradle of many

important early civilisations, from which much of modern Western culture derived.

Successively, after the Minoan, Mycenaean, Greek and Roman civilisations, the Eastern Roman or Byzantine Empire was the dominant power. Post the Fourth Crusade and the first fall of Constantinople in 1204 CE the region was increasingly controlled by the Venetians and Genoese. After the second and final fall of Constantinople in 1453 CE to the Ottomans, the latter gradually expanded in the Eastern Mediterranean, with Venetian Crete falling in the mid-17th century. The Greek War of Independence (1821-1830) led to the foundation of the modern Greek state, on what is currently the Greek mainland and the southern Aegean Cycladic islands and offered renewed ties and exchanges with the western world.

In addition to its historical and cultural importance the Aegean Sea provides considerable scientific interest. Its natural features and intricate configuration of a multitude of large and small islands emerging from clear blue waters create a shoreline that few other areas have in the Mediterranean. The islands create biologically closed communities that serve as refuge for a variety of flora, the majority of which are [endemic](#). However, the isolation of one island from another and the resulting insular ecosystem makes endemism vulnerable to habitat destruction. The Aegean sea, although semi-enclosed from the water bodies of the Marmara and Black seas to the north, is a passage for pelagic fish, such as tuna, swordfish, bonito and mackerel; and, its underwater geomorphology preserves a high diversity of habitat and aquatic species. Notably, it is a gene pool for some of the world's critically endangered species, [including the Mediterranean monk seal \(*monachus monachus*.\)](#) The southern Aegean is the habitat of more than 300 bird species cf. [Avibase](#), including sea birds, waterbirds, raptors, and passerines. To these should be added the migratory birds for which the Aegean is a major flight path. The Barcelona Convention, [Annex II](#) List of Endangered or Threatened Species lists 25 bird species, [14 of which occur in the Aegean](#). Finally, the Aegean has a wealth of reptile fauna several of which, such as the endemic Cyclades or Milos viper, ([macrovipera schweizeri](#)), is classed as endangered.

[The main village of southern Aegean islands](#), frequently known as chora (χώρα,) consists of houses clustered at the foot of the remains of a medieval castle built inland, on an elevation, to protect from pirate invasions. The houses are built close to each other for shade and protection from the strong northerly, “*meltemi*” summer wind. Houses are simple, conforming to property boundaries, with the occasional projecting balcony or terrace and exterior access stairway. They are built of mortared rubble stone, occasionally left exposed and unpainted, but more frequently plastered and whitewashed. Most houses are accessed from the street, the entrance sometimes elevated with a

stepped platform to protect the ground floor from rain water. Some may have a court- or back-yard. Houses are usually two storied, the more noble ones, built post-independence, may have [neoclassical influences](#). The village streets wind along the natural topography, parting to form squares where churches and public buildings are situated. These urban and architectural values are preserved and markedly perceivable, particularly if the prominent positions in the natural setting are considered.

The main village is usually complemented with a picturesque seaside fishing village, sometimes called skala (σκάλα,) which also acts as the island's port and commercial hub. From the 1950s onwards, this latter function has driven development and intense building activity. Fortunately, in more recent years and in most cases the risk of damage to the island's authenticity has been appreciated and controlled.

In sum, the visual impact of the southern Aegean island landscape is characterised by the vivid whitewash of the villages contrasting the silver green of olive groves and the rocky ochre of the sun-parched land, rising from the deep blue, "wine dark" sea and the contrasting outline of the mountain crests against the limpid wind swept summer sky.

Large scale RES projects, in particular wind farms, can have a wide ranging impact on the cultural heritage, environmental importance and natural landscape of the southern Aegean islands just outlined. Modern wind turbines with a capacity of 5 MW or more are [huge structures](#), with rotor diameters of 155 m and tower heights exceeding 120 m, i.e. the rotor blade tip can exceed 200 m ($\frac{2}{3}$ the height of the Eiffel tower or 4 x the height of the tower of Pisa.) The visual impact of an array of wind turbines, such as the defacing of mountain crests, is easily appreciated. This is aggravated by the scarring of untouched landscapes caused by the access roads and associated infrastructure necessary for the transport of the large wind turbine components and for the construction of foundations, which require several hundred tonnes of concrete per turbine. But wind farms can have more insidious environmental effects as well, such as on endemic fauna and biodiversity, caused by land use change; endemic flora and agriculture, from possible microclimate changes; and the migration of birds, by the disruption of flight paths. Moreover, the construction of access roads poses a threat in itself, as it can lead to massive land development and open the way to dramatic change of the natural environment. Lastly, the proper life cycle assessment (LCA) of wind turbines is in doubt, given their 20-25 year lifespan and their [materials of construction](#), which can prove difficult to recycle and dispose of sustainably, especially the non-degradable glass fibres and resins of the rotor blades.

5. Description – Regulatory Framework – Licensing Process

In 2019, in the context of climate change and in response to the EU commitment to clean energy transition, Greece adopted a [National Energy and Climate Plan](#) (NECP.) The NECP was conceived pre the covid pandemic and the consequent EU Recovery & Resilience Facility. Although more ambitious than the NECP it replaced, it will yet be revised, now that the [National Climate Law](#) (in Greek) has been ratified, which aligns national to the EU objectives (“[Stepping up Europe’s 2030 climate ambition](#)” Com(2020) 562 final 17.09.2020) and the [European Green Deal](#) targets.

Even so, the current version of the NECP provides a roadmap for a 43% reduction of greenhouse gas (GHG) emissions in 2030 compared to 1990. The policy measures foreseen to achieve this reduction include:

- decarbonisation of power generation with the closure of the lignite-fired power stations and interconnection of autonomous (Aegean) islands with the mainland grid to replace ageing, polluting and costly fuel oil fired generators;
- use of natural gas as an intermediate fuel to reduce the carbon footprint of power generation;
- promotion of renewable energy sources (RES), storage systems and fuel production from RES;
- improvement of the energy efficiency of buildings, industry and infrastructures; and
- reduction of the transport sector emissions.

Decarbonising the power sector will imply a substantial expansion of aeolian and photovoltaic RES to meet the NECP target of 35% RES in final gross energy production / 61% gross electricity consumption by 2030, because of the small potential of alternative low carbon power options, such as hydraulic. Although the unexpected war in Ukraine has impacted the priority and timing of the policy measures, the underlying tenet remains unchanged and will probably emphasise the promotion of RES.

The aeolian potential, especially of the Aegean islands, has attracted interest and promoted the concept of “[Transforming the Greek Cycladic islands into a wind energy hub](#).” It is estimated that wind farms of near 260 MW capacity could be installed, generating some 770 GWh/year. Interconnecting the islands would allow 100 GWh/year to be exported to the mainland and provide investors with attractive returns, thanks also to favourable [feed in tariffs](#) (FiT.)

In recent years, this has led electricity companies to file an avalanche of RES license applications with the [Regulatory Authority for Energy](#) (RAE.) According to the [2021 Energy Market Report](#) (p. 109) 1 864 applications, of which 423 aeolian, were filed in December 2020 for a total capacity of 54 GW surpassing the NECP target by 611%. For comparison, the total installed RES capacity in mid-2021 was 7.4 GW, of which aeolian represents 3.6 GW. For 2030 the NECP installed capacity target is 7.0 GW for aeolian and 7.7 GW for PV.

RAE is the independent regulatory authority responsible, amongst others, for granting electricity generation licences. Its [Geospatial Map](#) is regularly updated and gives the details of energy units and the progress of license applications in Greece.

Provided the applicant fulfils the legal requirements, RAE will normally issue an Electricity Production License (EPL,) which allows the applicant to proceed to the next licensing step to obtain installation license (planning permission) for the energy unit. The (decentralised) Regional Authorities are responsible for issuing installation licenses, following the relevant administrative procedure, which requires, amongst others, the submission of Environmental Impact Assessment (EIA) studies and holding public hearings. Once built, RAE will issue the Electricity Generation License for the energy unit on the basis of the prevailing regulatory framework, currently [under review](#) (in Greek.)

The importance should be stressed of EIAs as a tool towards no net loss of biodiversity, as explicitly stated in the EU EIA [Directive 2014/52/EU](#). The Directive requires the EIA procedure to reflect accepted good international practice, with respect to which environmental aspects and types of impact are covered and the information that should be provided e.g. it requires a transparent approach involving environmental authorities and the public.

RAE's Geospatial Map is based on the national land use plan for RES, which dates back to 2008 ([ΦΕΚ 2464/Β/03.12.2008](#).) At the time priorities differed and the Map is primarily focused on aeolian (wind speed) potential. The Map's layer for protected areas (available only in the Greek version of the Map) is sparse, devoid of [Natura 2000](#), [important bird](#), [roadless](#) areas (the six recently designated [mountain ranges](#),) sites of special archaeological interest and populated areas. Evidently, no island areas of natural beauty or cultural heritage feature either. Consequently, the Map invites and RAE approves a multitude of preliminary EPL applications essentially on aeolian potential, many of which will fail at the next licensing step cf. the Map's layer of rejected licenses.

Considering that many windfarms under RAE evaluation or with EPL are located within or border the Natura 2000 network areas it would be appropriate to have Strategic Environmental Assessments (EU SEA [Directive 2001/42/EC](#)) as the Habitats Directive requires ([Directive 92/43/EC](#).) Given that the RAE evaluations and EPLs affect several Natura 2000 network areas it would seem suitable to have an “[Appropriate Assessment](#)” done to effectively include a landscape, even seascape approach. In this context, of note is the EU [Court of Justice 17.12.2020 decision](#) (in French,) which found the Greek State “*not having adopted, within the prescribed deadlines, all the measures necessary to establish the conservation objectives and the appropriate conservation measures with regard to the 239 sites of Community importance located on Greek territory.*¹”

In December 2021, the Ministry of Environment and Energy submitted for [public consultation Special Environmental Studies](#) (in Greek) for the Protection and Management Plans of three Natura 2000 Network Areas (in eastern Macedonia and Thrace, the Peloponnese and Crete.) The public consultation closed on 31 January 2022. Once published and the corresponding Presidential Decrees issued, it will be possible to assess the degree to which concerns related to Natura 2000 network areas are satisfactorily addressed. It should be expected that the process would be replicated for the Natura 2000 network areas in Southern Aegean Sea and lead to their satisfactory protection.

In sum, Natura 2000 network areas must be well protected, as envisaged by EU law. It is encouraging that the simplification of environmental licensing process foreseen in the proposed recent law ([N. 4964/30.07.2022](#),) which would have allowed several potentially unacceptable activities within Natura 2000 network areas, was withdrawn for revision and further public consultation.

Local communities will only become aware of a RES project once RAE has posted the EPL on the Map, within a fortnight of its approval, and the local community has consulted the Map. This leads to the perception that the EPL approval process is indiscriminate. Reasonably, communities are alarmed and antagonised; primarily because the absence of consultation at this preliminary stage leads to a feeling of coercion, but also because of concern about the impact the RES project will have on the local environment and, by extension, their way of life.

¹ and listed in Decision 2006/ 613/EC of the Commission of 19 July 2006 adopting, pursuant to Council Directive 92/43/EEC, the list of sites of Community importance for the Mediterranean biogeographical region, the Hellenic Republic has failed to fulfill the obligations fall under, respectively, Article 4(4) and Article 6(1) of Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and wild fauna and flora, as amended by Council Directive 2006/105/EC of 20 November 2006.

6. Technical & Economic Aspects

In addition to the perceived environmental effects, communities worry about the impact of large scale wind farms on the local economy. From the 1950s, comparatively isolated and remote communities, such as those of the Aegean islands, suffered from depopulation as the young moved to urban areas in search of work. Later, with improved transport and telecommunications, and especially the advent of tourism, this movement largely stopped, became more seasonal and, in recent years, has even been fractionally reversed, with the covid pandemic providing an added boost.

The importance of tourism to the Greek economy is [well documented](#). To the traditional attraction of Greek history and archaeological sites, the country's Mediterranean climate and islands have been added to the popular attractions for tourists the world over. [Estimates](#) of the contribution to GDP of travel and tourism range to over 30 billion euros or 15% prior to the covid pandemic and to the creation of some 760 000 jobs, though the pandemic about halved the revenue in 2020. Based on available [accommodation figures](#) the southern Aegean islands, excluding Crete, would account for about 25% of the country's tourism activity, whilst, conversely, tourism would represent near [50% of the region's GDP](#). [Other sources](#) (p.43, in Greek) put the Southern Aegean in first place of the national tourism GDP revenue with a contribution of 28%, whilst estimating tourism's contribution to regional GDP at well over 50%.

Evidently, tourism is not equally distributed, with the more renown islands accounting for the biggest share, such as Mykonos and Santorini. But lesser islands, such as the five of the 7ME initiative, are evidently protective of their tourism activity, which they seek to grow. In doing so, they aim to increasingly complement the services of conventional hotels, resorts and bed & breakfasts with offers of more sustainable forms of tourism by adding to the respective island's existing attractions, of say archaeological sites or beaches, other sought after activities, such as hiking, agrotourism, bird watching and maximising the attraction of their unique cultural heritage, history and local customs.

If today the tertiary sector, tourism, represents in the summer season the predominant economic activity in the vast majority of the Aegean islands, the primary sector, agriculture and farming, still supports a subsistence activity for many of the resident local community, particularly in the off-season months. The primary sector has even proved capable of attracting new activities from a growing number of people who wish to escape the stress of contemporary urban life, thus helping stabilise population decline and diversify the economy, as confirmed during the site visits.

In this context, RES projects, which are conceived to target the fundamental environmental concern of climate change, by disturbing the local visual environment and biodiversity, potentially the local microclimate and bird migration, can irretrievably upset the economy and way of life of remote communities.

The Aegean islands, which have been successfully rebuilding their economies in recent decades on their environmental attributes and cultural heritage, are a telling example. Viewed from the perspective of the national economy, the authenticity of the Aegean islands represents an intangible asset. The revenue they generate from tourism is well worth preserving as one of the major components of the national economy. In the long-term, preserving the intangible cultural asset of the islands may well equal, if not exceed, the benefits from ill-conceived RES projects.

A recent paper focusing on [biodiversity-aeolian energy-land use](#) appositely raises the conundrum of impacting biodiversity to combat climate change. It proposes a method of land use planning that would prioritise wind farms outside Natura 2000 protected areas. The paper indicates that the land still retained for wind farms would support 1.5 times the NECP's 2030 aeolian energy target and claims to resolve the conflict between land use for aeolian energy and biodiversity.

Siting RES projects in areas with intense human activity, already environmentally degraded e.g. along motorways or railway lines, PV panels on industrial and commercial buildings, should be a priority to the extent it is technically feasible and the energy density acceptable. Also, regional/local “self-sufficiency” should be targeted, provided it does not lead to wasteful added costs by not exploiting areas of higher RES potential, evidently within reason and whilst respecting the local communities, natural landscape, biodiversity, cultural heritage...

Arguably, the above considerations stress the urgency for the 2008 national land use plan for RES to be updated, especially because windfarms and PV parks with their small energy density compared to fossil fuel alternatives occupy substantial space. Recent [press articles](#) indicate that a draft update should be available by end 2022.

The issue of siting RES projects in relation to world heritage monuments has attracted the attention of UNESCO and the publication of an effective [Guidance Tool](#) is imminent. It should provide methods to avoid and mitigate the possible negative impacts of RES projects on world heritage monuments and could prove invaluable in reaching a consensus on appropriately siting RES projects.

A complementary alternative to land based RES would be to increasingly resort to offshore RES. Though not devoid of environmental impact, e.g. on aquatic life during construction, the impact of bottom fixed or floating offshore wind farms on (Aegean) islands would be less. In November 2021, in the [context of the Climate Law](#) (in Greek,) the elaboration was announced of a regulatory framework for the development of offshore wind farms, targeting a capacity of at least 2 GW by 2030. Several areas have been identified around the Aegean, the Dodecanese and the straight between the island of Karpathos and Crete. As the depth of most of the Aegean waters exceeds 60 m, the current technical limit for bottom fixed wind turbines, the use of floating wind turbines is envisaged, providing an incentive for the development and innovation of this yet less established technology. The regulatory framework for the development of offshore RES was recently ratified ([N. 4964/30.07.2022.](#))

7. Implementation

From the foregoing three main actors are seen to come into play to manage and implement Greece's clean energy transition in the southern Aegean islands, namely: the Government, the Electricity Companies, and the Island Communities. Confronted with the climate change challenge, each has its respective objectives, priorities and obligations:

For Government the objectives and priorities are laid out in the NECP. Of relevance to the current initiative are the statements *“RES share in electricity consumption to exceed 60% [by 2030.] In this context specific initiatives are already being promoted and implemented by the government, e.g. simplifying and speeding up the licensing framework, ensuring optimal integration of RES in electricity networks, operating storage systems”* (p. 5); *“speeding up the electrical interconnection of the islands.”* (p. 6); and *“if the interconnection of some small and remote electrical systems [islands] is not technically efficient and cost-effective, innovative energy applications will be implemented in these systems in the context of developing hybrid systems and ‘smart’ island policies”* (p. 73)

The Electricity Companies' objectives and priorities arguably are best represented by the [Hellenic Wind Energy Association](#) (HWEA,) whose members comprise companies and organisations active in the entire supply chain of aeolian energy. The HWEA website states that it *“serves wind energy”* and *“tries to effectively express the well-meant interests of the industry and the market.”* The Electricity Companies are almost exclusively from the private sector and are the promoters of industrial scale RES, including wind farm, projects.

Finally, the Island Communities' objectives and priorities are best expressed by the [resolution of 15 October 2021](#) (in Greek) on sustainability, balanced development and RES of 35 Mayors from Central Union of Greek Municipalities, including those of the five islands of the 7ME initiative. In sum, the resolution *“calls for a comprehensive national energy strategy which will respect the environment, the local communities and their respective special characteristics. The transition to a low carbon economy is imperative because of climate change, but there is an equal need for nature perseverance and restoration. We consider it essential to engage in a constructive dialogue between municipalities and central authorities, to mutually define the optimal solutions for our future.”*

Although all three actors are focused on climate change and the transition to clean energy, their objectives and priorities may not be totally aligned.

The Government aims to fulfil the NECP targets in the most environmentally sustainable, socially just and cost-effective manner. The National Climate Law makes appropriate reference to, amongst others, the primary sectors, biodiversity, ecosystems, cultural heritage... though mainly in the context of protection from the effects of climate change. It also establishes the need for a stable regulatory framework for investors.

Although not explicitly stated, it is reasonable to expect that the Electricity Companies will aim to maximise the remuneration of their shareholders; of course, in full respect of the prevailing regulatory framework within which they will operate throughout the entire lifecycle of their RES projects – from mobilising investment funds, through licensing, design, construction and operation, to final dismantling, removal and site remediation.

The Island Communities, while appreciative of the clean energy transition constraints, will aim to protect their natural environment, way of life, cultural heritage and economy, and seek to avoid any disruption from RES installations.

In this context, to effectively achieve the clean energy transition it is important for the three actors to interact constructively with the least of friction and maximum mutual benefit.

8. Environment, Sustainability

The EN / EIB-I team visited the islands of Milos and Kimolos and the island of Kythira. During the visits, the team toured archaeological sites, historic villages and locations, and appreciated the cultural heritage, the flora, fauna (where spotted) and landscape. It also visited the areas, some in or adjoining the Natura 2000 network, where wind farms risk being built. The team had virtual (zoom) meetings with the local authority representatives of

Amorgos and Tinos. As a result, the team has had a good, if partial, overview of the endangered environment and to form a view of the Island Communities' attitude and preparedness to transition to RES.

On 29 March 2022, ELLET organised a webinar on the “[Cost of Decarbonising the Islands](#).” The webinar aimed to raise the awareness of the Island Communities to climate change and the need to transition to RES. The panellists were Ms. Alexandra Sdoukou, Secretary General of the Ministry of Environment and Energy, Ms. Katerina Iliadou, Assistant Professor of Law from the National Kapodistrian University of Athens, Mr. Chrysostomos (Haris) Doukas, Deputy Professor of Energy Policy at the National Technical University of Athens (NTUA) and Head of ELLET's Energy Council, and Mr. Constantine Andriosopoulos, Professor Audencia Business School and CEO Akuo Energy Greece, a private sector energy company in Greece. The webinar clearly and usefully set out the challenges and indicated possible ways forward. By mid-May it had received some 1 000 views. It can be [viewed here](#) (in Greek.)

On 25 May 2022, ELLET further organised a webinar aimed at the exchange of views between scientific speakers and island community representatives, and lead to conclusions on the protection of natural landscape and cultural heritage of the islands, while achieving a sustainable transition to RES. Post an introduction by the EN Secretary General and team, the webinar was themed on: a) the importance of preserving the cultural and natural landscape, b) the impact of RES on the natural and cultural landscape, and c) tools to achieve the goals of protection and sustainable green transition. The webinar programme is attached in Annex 3. Approximately 100 attended the live streaming and in the immediate following days some 3 000 viewed the webinar. It can be [viewed here](#) (in Greek, requires registration.)

On 4 June 2022 Messrs. D. Leventis and M. Lazoglou attended a 1:30 hour debate on the Vouli TV Channel dedicated to the 7ME – Five Aegean Islands programme. It can be [viewed here](#) (in Greek.)

The island descriptions that follow are in the order of the site visits and zoom meetings. Content is very much a function of the information collected and impressions gained during the visits and meetings. They incorporate elements from ELLET's 2021 7ME – Five Aegean Islands Nomination Form.

Kimolos

Kimolos is a small Cycladic island with an area of 37 square kilometres, a highest point of 364 metres, mount Paleokastro, and a permanent population of 910 (2011 census.) It is ideal for those seeking a calmer experience in an

enchancing setting with remarkable cultural, historical and geological monuments. The island features a rare variety of rocks, where the white colour of “chalk” (“Kimolos” means “chalk” in Greek) dominates. The island has a network of 12 hiking trails, with a length of over 50 km crossing the inland terraced landscape, still actively used for agriculture and farming. The northwest part or more than half of Kimolos and the entire neighbouring island of Polyaigos, including the surrounding sea, feature in the Natura 2000 network (areas GR4220030 and GR4220006), with a variety of rare marine species.

It has an active community with many local groups, such as Kimolistas, and the Municipality which fight for the protection and promotion of the island whilst not jeopardising its cultural and environmental attributes.

Three wind farms are currently under evaluation in the areas Mersinia, Petalia and Gampa including twenty (20) wind turbines and all three are within the protected Natura 2000 area. An additional single large windfarm of 31 wind turbines is under evaluation on the uninhabited island of Polyaigos, facing the port, Psathi, and Chorio of Kimolos. If any of these wind farms were approved they would scar and ruin the unspoilt landscape of the three island group of Kimolos, Milos and Polyaigos. Kimolos’ energy supply system is connected with the adjoining larger island of Milos, making it difficult to acquire accurate data on Kimolos annual energy needs. However, Kimolos is one of four areas in the Aegean where geothermal energy, a milder alternative RES to aeolian, is available as recently confirmed by the President of the Public Power Corporation S.A. Hellas Renewables. Thus, Kimolos can potentially meet its energy requirements with only minor impact on the landscape compared to wind turbines within a Natura 2000 area. Furthermore, the abundant geothermal energy from adjacent Milos could meet the needs of many Cycladic islands, certainly those of Folegandros, Sikinos, Ios and Thera.

Milos

Milos has been included as a proxy for Kimolos, because: a) for logistic reasons, the team travelled via and stayed in Milos to reach Kimolos, b) this allowed to meet the local authorities, stakeholder organisations and residents, whereas the meetings planned in Kimolos failed to materialise, and c) the RES issues confronting the two adjacent islands are near identical, including the potential of geothermal energy.

Milos, with an area of 151 square kilometres and a permanent population of 4 977, is a medium sized Cycladic island situated at the southwest edge of the group. The greater part of the island is rugged and hilly, culminating in mount Profitis Elias (748 metres) in the west. Similar to Kimolos, Milos is of volcanic origin. Although it last erupted some 90 000 years ago, it is considered to be a

dormant volcano. The natural harbour, which separates the island into two fairly equal parts, is the hollow of the principal crater. In some localities of the island the heat is still great confirming the potential of geothermal energy, such as the 100° C sulphurous vents at ground surface in Theiafes (Θειάφες = sulphur) by the main port of Adamantas on the eastern shore of the harbour.

Milos is rich in minerals and has an extractive history, starting with obsidian in neolithic ages. Currently, bentonite, perlite, pozzolana and small quantities of kaolin are strip- or open pit- mined in the eastern part of the island and exported all over the world. Although of considerable size, the mines are mostly tucked away behind hills and have little visual impact. With mining traditionally providing employment and dominating the island's economy, tourism has been milder than in other islands, despite the island's historical importance and archaeological interest. Best known for the statue of Aphrodite and the head of Asclepius found on the island in the 19th century, now on display in the Louvre and British museum, respectively, the ancient town of Milos and the Cycladic port of Phylakopi are notable sites, with public access and good interpretative infrastructure. In more recent years, Milos, labelled "the island of colours," has been expanding its tourism activity promoting its sea, beaches, hiking trails and wildlife.

Practically the entire western part of Milos and the entire rocky outcrop of Anti-Milos, including a wide surrounding sea-zone, feature in the Natura 2000 network (areas GR4220005, GR4220006, GR4220007, GR4220020 and GR4220030), harbouring protected avian e.g. Eleonora's falcon/Μαυροπετρίτης ([*falco eleonora*](#)), reptile eg the Milos viper/οχιά της Μήλου ([*macrovipera schweizeri*](#)), and marine species eg seals ([*monachus monachus*](#)) and turtles ([*caretta caretta*](#).)

Since the late 2000s a small windfarm comprising three turbines (2 x 600 + 1 x 850 kW = 2.15 MW) has met part of Milos' electricity needs, currently estimated at 15 MW during the peak summer period, including Kimolos. The PPC fuel oil fired power plant ensures the base load electricity needs. A fourth 850 kW turbine generates electricity exclusively for a reverse osmosis desalination unit, producing 4 500 m³/day of fresh water, which cover Milos' entire needs. Kimolos has fresh water expensively shipped by tanker from Piraeus. The windfarm is located in west Milos, across the harbour from the main town of Plaka and the port Adamantas. The four small wind turbines are now accepted as a useful feature.

In May 2022, RAE's Geospatial Map indicated 8 windfarms totalling 70 turbines in the most unspoilt western part of Milos and another 3 windfarms totalling 20 turbines in the east of the island, all mostly along the main ridge lines. All are under evaluation pending the issue of an EPL. The generating

capacity is not indicated, but can conservatively be estimated at 200 MW at least, accepting turbines at the lower “industrial” scale. Even if only a reduced number were approved and installed, they would dwarf the current windfarm, disfigure the landscape and risk upsetting the endemic fauna cf. § 4. Context.

The local community, when confronted with the prospect of industrial scale windfarms, reacts with uncompromising denial of any added wind turbine. This includes the Mayor, who is one of the 35 signatories of the Central Union of Greek Municipalities resolution cf. § 6. Implementation. The Mayor argues that Milos already contributes to the common good of Greece with its mining industry, consequently it would be appropriate not to install wind farms to supply energy to the mainland. However, once engaged in a discussion on the need to decarbonise the economy, hence accepting a transition to not exclusively aeolian RES, a more conciliatory attitude results.

Whilst opposing industrial scale wind farms, PV is seen as more acceptable, especially if tailored to private housing or hotel establishments. To the contrary, despite the island’s significant potential, geothermal energy is viewed with apprehension because of early negative experience.

The Public Power Corporation (PPC,) following initial prospection in the 1970s, successively built two 2 MW pilot plants for proof of concept. Unfortunately, these were ill-conceived. The first never functioned, for technical reasons. The second, built by Mitsubishi Heavy Industries, functioned for a cumulative period of a mere 9 months and was definitively shut down in 1989. In addition to technical mishaps, both suffered from objectionable hydrogen sulphide (rotten eggs) gas emissions. At the time, any slight emissions were deemed acceptable for a pilot plant and were not expected to cause a nuisance, but the local community protested strongly. In 1993, an added unfortunate incident resulted in a noisy, geyser-like spewing of malodorous fluids into the atmosphere for several weeks before it was brought under control. This incident, combined with PPC’s failure to remove the pilot plant, which has been rusting ever since in the location of Zephyria, has created an unredeemable attitude in the local community against geothermal, especially high enthalpy, energy – see [the unsuccessful latest attempt of the PPC-RES CEO](#).

Admittedly, the opposition is focused on high enthalpy geothermal energy for electricity or combined heat/power generation, which requires capturing geothermal fluids of around 300 °C at a depth of 800 - 1 400 meters below ground. The community is more accommodating with the use of low enthalpy geothermal energy, using heat exchangers to capture heat ≤ 100 °C from shallow ground. Several proposals have been put forward for the use of low enthalpy geothermal energy, including heating/cooling of private and public buildings, greenhouses for vegetable cultivation to cover local needs and export, drying of

agricultural produce, added desalination/fresh water production, reactivating the disused salt pans, diversifying tourism to offer thermal springs/spa & wellness attractions. Also, an up to 1 MW “organic Rankine cycle” (ORC) electricity generator could be built to run the circulating pumps of the heating/cooling network.

Law [N. 4602/2019](#) sets the regulatory framework for exploitation and management of the country’s geothermal potential. Use of low enthalpy geothermal energy is put at the discretion of local authorities. Milos and adjoining Kimolos, in anticipation of their interconnection to the mainland grid, expected in 2025, should seize the opportunity to develop and put forward a plan to make use of this natural RES they are endowed with, combined with PV and aeolian, as they see fit. Whilst benefitting the local economy, they would be setting an example by using this milder, visually less intrusive RES, which assures constant, base load energy, complementing conventional RES which rely on the sun shining and the wind blowing.

High enthalpy geothermal energy is classed as a resource of national importance. Its exploitation and management is placed under the authority of the Ministry of Energy and Environment. It would be to the advantage of the country for a conciliatory agreement, to be achieved, through increased information and awareness. The apprehension and reticence of the local community, concerns that the island would be serving as a “battery” for other islands, with the generated electricity exported, leaving little economic benefit locally, whilst bearing all perceived undue risks, should be overcome. The high enthalpy potential of Milos has been variously estimated at 250 MW, probably much more if Kimolos and the nearby uninhabited island of Polyaigos are included. It would be an unacceptable waste for the country if this invaluable base load RES were left unexploited.

Kythira

Kythira has been included in the nomination, despite being an Ionian Island and administratively attached to the Region of Attica, because its architecture and landscape fits well the Cycladic paradigm.

With an area of 278 square kilometres, a highest point of 506 metres mount Mermingaris and a permanent population of 4 041, Kythira is the largest of the five islands under review. Located off the southernmost point of the Peloponnese it forms a small archipelago with its nearby rocky islets and Antikythira to its south, at the meeting point of the Aegean, Ionian and Cretan seas. It acts as a biogeographical bridge to Crete, which is also its source of environmental wealth, high rate of endemism, biodiversity and existence of endangered species and habitats. The island’s environmental value is reflected

in the five separate areas in the north and east that belong to the Nature 2000 network, which also covers a large part of the archipelago (areas GR3000010 and GR3000013, areas GR3000006 and GR3000012 for Antikythira.) Birdlife International has classed the archipelago an important bird area (IBAs GR129 and GR130), some 3 000 ha as a Wildlife Refuge and 75 ha as a Special Protection Area. Two hundred and thirty-six species have been recorded, over 3 000 raptors regularly pass every migratory season and [the area is considered a migratory bottleneck](#), one of just three in Greece.

The history of Kythira starts with Greek mythology and its claim, in competition with Cyprus, as the birthplace of Aphrodite. Early settlements date back to the late 6th millennium BCE. There are references to and evidence of local populations activity during the Homeric and Classical Greek periods. In the 1st millennium CE, the island was occasionally abandoned or sparsely occupied by shepherds. In 1204, post the fall of Constantinople to the Franks, Kythira came under the control of Venice. Until the Napoleonic Wars, it was frequently attacked because of its strategic position, notably in 1537 when the Ottoman Admiral Barbarossa sacked Aghios Dimitrios, the head village of the island. Today known as Paleochora, it has remained desolate ever since. At the end of the Napoleonic Wars, and a switch between French and brief Russian-Ottoman rule the British held Kythira, along with the other Ionian Islands, from 1808 until they were handed over to the Greek State in 1864. Having never been under Ottoman rule, Kythira has preserved a markedly different character to other islands with a strategic position on maritime routes.

An important legacy of the British rule in the Ionian Islands is that public land was held in trust, on behalf of the island residents, by the Homeland Estate Committee (Επιτροπή Εγχωρίου Περιουσίας.) This is contrary to other regions of Greece where the State owns all public land. All the Ionian Islands, except Kythira and, partially, Zakynthos, have rescinded this privilege. Today, around 70% of the land in Kythira is held by the Homeland Estate Committee, with the rest privately owned.

The natural landscape of the island is rich and varied, and includes waterfalls which is unusual for an Aegean island. Despite the population fluctuations over the centuries, the island's ecosystem has been well preserved. Human activity and traditional land formation practices, such as terraces and constructions for water management, to extend cultivation, have shaped the island's character. The assimilation of these structures by the natural ecosystem has been achieved to the extent that their contemporary abandonment negatively impacts biodiversity, but these and the minor degradation of some coastal areas can be suspended and reversed. The island benefits from a remarkable architectural heritage preserved in traditional settlements, castles, monasteries and watermills. The stone-built schools and infrastructure works, notably two

bridges, built when John MacPhail was British Resident in the 1820s are added architectural features. A network of 11 signposted hiking trails, passing through the Natura 2000 areas, leads to every corner of the island, which the local authorities plan to extend to a total of 21 to cover over 110 km.

A climatic phenomenon, known as the “Provenza” or “Katsifara,” is peculiar to Kythira. Throughout the year, during the day, westerly winds accumulate clouds on the seaward, steeper west coast of the island. Then, during the afternoon and evening hours, the clouds roll over to the island’s main plateau and provide the essential moisture for wild vegetation and crops.

In May 2022, RAE’s Geospatial Map indicated 12 windfarms totalling 99 turbines along the “ridge” of the western coast and another 3 windfarms totalling 15 turbines in the east side of the island. All but one, with a single turbine on the east side, which is under evaluation, have been issued an EPL. The Map indicates that one windfarm in the west has had the number of turbines reduced by 12, leaving a total of 87 turbines. [Dynamo](#), an independent group of Kythira citizens, estimates the generating capacity at just short of 300 MW.

Construction of these industrial scale windfarms would devastate the island’s natural landscape and cultural heritage cf. § 4. Context. Some wind turbines are located prohibitively close to culturally important monuments e.g. Holy Monastery of Panagia Myrtidiotissa, Paleochora and Mylopotamos Castle, Agia Sofia Cave. Others, such as those within the Natura areas will directly affect the morphology of the island, whilst those located along the western “ridge” risk upsetting the “Provenza,” depriving flora of essential moisture, thus possibly jeopardising fauna, agriculture and farming. The tourism- and emerging agro-tourism sectors, which represent an increasing source of wealth, will also be compromised by the defaced landscape, reduced agriculture and farming activities and spoilt attractiveness of the island. The increase in the island’s population [noticed in recent years](#) and the value of land, would likely be reversed.

On 18 March 2022, RAE rejected requests to review the EPL of three windfarms, two of which in the northwest of the island within the Natura 2000 area. The legal action was initiated by the Municipality of Kythira, the Homeland Estate Committee, the Kythirian Foundation for Culture & Development (KIPIA) and some 200 island residents. However, the holders of EPLs must subsequently obtain installation license (planning permission) from the (decentralised) Regional Authorities cf. § 4. Description. This would be the next opportunity to prevent construction of the windfarms, because to obtain an installation license, the EPL holder must, amongst others, submit an Environmental Impact Assessment (EIA) study and hold public hearings. In addition, the EPL holder must have the free- or lease-hold of the land where the

windfarm will be built, which may prove difficult with the Homeland Estate Committee controlling 70% of the island.

The National Observatory of Athens (NOA) has also expressed its opposition to the construction of industrial scale windfarms in the Kythira archipelago. The NOA is in charge of a flagship Research Infrastructure, known as the PANhellenic GEophysical observatory of Antikythira ([PANGAEA](#)), which will monitor and record climate change, air quality and severe weather. PANGAEA is supported by the Greek State and has benefitted from a € 2 Mn grant from the European Research Council and a € 20 Mn loan from the European Investment Bank. The NOA is seriously concerned that installation of wind turbines in Kythira and Antikythira would render PANGAEA ineffective, essentially wasting the research infrastructure.

The Municipality along with the community and support from local associations has been proactive. Already in 2016 they commissioned a study for an [Action Plan for Sustainable Energy](#). Currently, Kythira is interconnected to the mainland and Antikythira, which forms part of the Municipality, has a 140 KW fuel oil fired generator. The Action Plan proposed a series of energy saving measures and an increased use of PV panels on buildings to improve the Municipality's energy footprint. It also proposed to make Antikythira autonomous in energy, relying purely on solar RES. The Municipality has since progressed with the design of a 12 MW PV park on a (yet to be selected) site to make Kythira self-sufficient. The solar panels would cover approximately 5 ha. The island's interconnection with the mainland will allow it to balance its energy needs, exporting surplus/importing deficit electricity as necessary. On 17 November 2021, the Municipality announced that it had decided to proceed with the creation of an Energy Community, upon the proposal of a cross-party committee of Councillors, local associations and two professional advisers.

In sum, Kythira, with its rich natural environment and cultural heritage is taking the right steps and anticipating the island's transition to RES. In addition, it must, on the one hand, continue to resist the installation of industrial scale windfarms, and on other, pursue the preservation and restoration of its flora and fauna habitats, whilst giving due attention the protection of its monuments and traditional settlements. Such a combined action would support the island's sustainable development and best guarantee the local community's longer term welfare. It would be based on traditional, pre-industrial, primary sector activities, which in turn attract and drive the tertiary sector tourism services. Proposals to convert [watermills in Karavas](#) and Mylopotamos to meet part of the island's energy needs, should be considered because they would roll RES, heritage, tourism attraction and sustainable development into one.

Amorgos

Amorgos, with an area of 126 square kilometres, a highest elevation of 821 metres and a permanent population of 1 973, is the easternmost island of the Cyclades. Same as Milos, it has Cycladic period vestiges identified on several sites.

The “[Tower of Aghia Triada](#),” which has been dated to the 4th century BCE and is named after the nearby early Christian period church, drew the attention of Europa Nostra with an Award in 2010 for its exemplary restoration using local materials and relying on local masons. EN mentions in its designation of the tower’s restoration: “the whole site contributes to the recovery of an image of the historical evolution of rural life in Mediterranean Europe from antiquity to the present day.” Another symbolic monument of Amorgos is the cliff-hanging Hozoviotissa Monastery, which houses relics and manuscripts dating back to the 11th century and an exceptional collection of Byzantine and later period ecclesiastical art.

Amorgos is known for its wild and beautiful natural landscape, with a rich indigenous flora and dozens of bird species, which use the island either as a permanent home or transit the island during their migrations. A network of 16 signposted trails, some called “The Blue Paths” because of the views they provide over the Aegean from almost any point, pass through ancient sites as well as through the island’s impressive traditional settlements. At the very north of the island, the trails cross the Natura 2000 network (area GR4220024,) which also covers the island’s northern shores (area GR4220012.)

Amorgos, similar to most Cycladic islands, is dry, but even more fragile facing imminent desertification according to a 2018 ELLET study. The natural phenomenon of morning dew (πρωινή δρόσος,) provides Amorgos with vital humidity and it is argued that it would be put at risk if wind turbines were installed. A Bank of Greece [Study on Greece’s adaptation to climate change](#) 2011 (in Greek,) provides certain pointers.

In May 2022, RAE’s Geospatial Map indicated 3 windfarms under evaluation in central and northern Amorgos totalling 28 turbines, 18 of which within the Natura 2000 area. Another 7 windfarms under evaluation totalling 21 turbines are shown in the south and 3 windfarms with EPL totalling 21 turbines are shown in the centre. Two windfarms totalling 3 turbines have been refused EPL i.e. currently, the potential total number of wind turbines is 70, of which 21 with EPL. Six of the licensed turbines would border an archaeological site and 7 would be near the monastery of Aghios Georgios Valsamitis, of special interest because it is built on a temple of Apollo. Similar to other islands, the

generating capacity of the wind farms, if built, would massively exceed the island's energy needs.

The Municipality has been pro-active in protecting the island's natural environment. A Committee is in charge of tracking the licensing of wind farms and in taking action. Two licenses dating back to 2011 have not progressed and two from 2013 are in difficulty. Whilst, objections were raised on 19 November 2011 against five license application filed in 2020 – the outcome is pending. The Committee is also aiming to persuade citizens who have leased land for windfarms to renege their leases. The Municipality organised a webinar in summer 2021 to raise the local community's awareness and gain support for its actions. Based on attendance and response to questionnaires, the webinar was deemed a success. A second is envisaged in 2022.

During the Zoom meeting of 23 March, 2022, a graduate student of the NTUA presented his recently completed thesis "[PV park installation to balance Amorgos energy needs](#)." Summarily, it indicates that PV panels of a 9MW capacity covering an area of 4.2 ha, within a wider dedicated area of 12.9 ha, would adequately meet Amorgos' forecast housing, commercial and municipal energy requirements, including water desalination unit(s) for 1 600 m³/day. The investment cost is estimated at €4.7 Mn, results in an attractive LCOE 36.1 €/MWh and generates a good return on capital, based on the model's reasonable assumptions. Allowing for the licensing and implementation lead time, the PV park could be operational in time for Amorgos' interconnection with Naxos, currently envisaged for 2027.

The presentation attracted much interest from the Mayor and Councillors attending the Zoom. They have been examining the alternatives of creating one or more Energy Community(ies.) They are not opposed to private initiatives and indicated that they have been in negotiation with one of the major Electricity Companies. However, these fell through because a) they initially concerned a hybrid RES (generation + storage,) which became redundant when the island's interconnection was confirmed, and b) the Electricity Company was requesting "exclusivity" for the island, which was deemed unacceptable.

Concluding, Amorgos with its distinctly representative Cycladic landscape, archaeological sites and later historical monuments spanning the millennia from the late neolithic to our current era, is a typical southern Aegean island. Its natural environment, flora and fauna, and cultural heritage would be put at serious risk from the installation of towering wind farm arrays cf. § 4. Context. To the extent assessed with the support of ELLET, the Zoom meeting and relevant literature (Internet) survey, the Municipality is well aware of the risks posed to the welfare of the island. It is setting a good example with its pro-active actions, which it should pursue.

Tinos

Tinos, with an area of 194 square kilometres and a permanent population of 8 636, sits along the northern periphery of the Cyclades, between the much larger island of Andros to the west and cosmopolitan Mykonos to the east. The landscape is varied with smooth bays and beaches contrasting jagged and sheer shores, both in the north and south of the island. In the east of the island is the highest mountain Tsiknias (750 metres.) Nearby, is the valley of Volax, scattered with almost spherical boulders of all sizes, creating an akin to lunar landscape. A rocky outcrop, Exombourgo, dominates the main town or Chora of Tinos and is the site of a Venetian castle. The hilly terrain of the whole island is crisscrossed with dry stone walls and footpaths interconnecting the villages. Amongst the hills are arable plains, cultivated thanks also to the island's springs. The landscape is pockmarked with a multitude of windmills and picturesque dovecotes.

Similar to other Cycladic islands, although to a lesser extent, vestiges of the Cycladic period exist and a small domed tomb of the Mycenaean period was discovered in 1979 near the Kyra Xení monastery, in the northwest of the island. During the classical period of Greece, Tinos was part of the Alliance of Delos, which Athens headed. There followed periods of independence, before Tinos passed under the rule of the Ptolemies and then of Rome. The Byzantine period, similar to other Aegean islands, was characterised by the risk of pirate attacks and the population moved inland for security. In 1207, the Venetians conquered the island and until the early 18th century provided protection from repeated Ottoman attacks, also with the help of the locals. This relative stability allowed the development of agriculture, the creation of wealth and art and crafts started to flourish. Tinos managed to retain many privileges during the Ottoman rule post 1715. The locals had the freedom to build churches and schools, and developed further commercial, industrial and shipping activities. By 1821, when Greece declared its independence, Tinos was one of the most populated and prosperous islands in the Cyclades.

A legacy of the Venetian rule is the high proportion of Catholics in Tinos, currently around 40% of the population. Villages tend to be Catholic or Orthodox, though many are mixed. They retain, especially the churches and monasteries, respective architectural styles. The communities live in perfect harmony.

Tinos, with its rich history, has numerous cultural assets. The most renowned is the church of Our Lady of Tinos (Παναγία Ευαγγελίστρια της Τήνου / Panagia Evangelistria of Tinos.) The renaissance style church was built to house an icon of the Virgin Mary found in 1823. Tradition has it that the icon was found after

the Virgin appeared to a nun and revealed to her where the icon was buried. The church was inaugurated in 1830 and ever since has been the major pilgrimage site in Greece.

Modern Tinos has a thriving economy driven mostly by tourism, but also based on agriculture and small industry, marble carving and a craft brewery. Its ready accessibility by short ferry trip from Attica has made Tinos a sought after week-end destination for Athenians or those seeking a secondary residence. It has developed a network of hiking trails that exceeds 150 kilometres, which frequently follows age old stone footpaths and leads to all corners of the island: the impressive geological formation of Volax, the villages with their respective traditional architecture and little sprawl beyond their boundaries, through marble quarries and the near infinite kilometres of dry stone walls and terraces, which have earned the island the sobriquet of “the hand-made island.” The trails go through the Natura 2000 network, which covers almost the entire north (area GR4220031) and north east coasts, and the Myrsini – Livada land mass (area GR4220019.)

In May 2022, RAE’s Geospatial Map indicated EPL applications for 3 windfarms and a solitary wind turbine totalling 13 turbines under evaluation in the northwest of Tinos. Another 3 windfarms with EPL totalling 10 turbines and one with installation license for 5 turbines are shown approximately in the same area. Finally, two windfarms of 3 and 2 turbines, have operating license, more to the centre of the island. The location of Tinos in the northern periphery of the Cyclades, in the central Aegean Sea, where the aeolian (wind speed) potential is highest, attracted a multitude more of applications in recent years. All license applications, the Map shows at least 17, including the 3 turbine windfarm with operating license, seem to have been rejected or revoked(?) The 17 would have been located in several locations all over the island, including within the Natura 2000 network.

Public opinion, although initially positively inclined to small windfarms, apparently turned when alerted to the inordinate number of EPL applications. The result was violent protests in 2020 against the installation of a 3 turbine 1.8 MW windfarm, smaller than the operational one on Milos – the perception being that its construction would act as a precursor to larger ones. In the circumstances, the outcome of RAE’s licensing process outlined above is unpredictable, cf. the number of rejected license applications.

During the Zoom meeting the Mayor and Councillors were conciliatory. Recognising the imperative of the transition to RES, but arguing that the outdated 2008 land use plan for RES disregarded local preferences and the specific island character of Tinos. Stressing that the community was in favour of RES, as evidenced by allowing the completion of the small windfarm in

2021, that the community would support PV parks in preference to windfarms and that action was in progress to reconcile opposing parties. Reference to the Amorgos PV park thesis appealed because it was perceived that it potentially could be accepted as a local bottom-up approach and attract support, rather than a top-down imposition of a fait accompli. The need was evoked for financial and technical support to develop local RES transition plans and achieve a constructive attitude to plan and “propose” rather than to “oppose.”

Summarising, with its beauty, history and cultural assets, Tinos has achieved a thriving economy, helped also by its accessibility. Sensing a threat to its way of life the community has been actively protective. It seems, to have put, at the very least, in abeyance, if not a definite stop, to the potentially inordinate installation of windfarms cf. § 4. Context. It should now aim to reconcile opposing parties and constructively develop a plan for the island’s transition to RES, balancing and selecting its natural resources as the community sees best fit to its needs.

Sikinos

Sikinos sits in the southern periphery of the Cyclades, to the southeast of Milos and Kimolos, and almost diametrically opposite Tinos. It is a smallish island with an area of 42.5 square kilometres, a highest elevation of 552 metres and a permanent population of 260. There are just two villages, the Chora, comprising two adjacent settlements, Kastro and Chorio, up on the island’s hilly crest, and Aloprounia, the island’s port on the south coast. The landscape is bare and imposing, with extensive terraces some still used for agriculture. The island has seen little development, it is unspoilt and preserves well the beauty of the southern Aegean landscape.

A brief note of the Ministry of Culture cites that Sikinos has been in the shadow of history. Even so, archaeological vestiges indicate that Sikinos was inhabited in the Mycenaean period. During the classical period of Greece Sikinos was part of the Athenian alliance. The Roman period left the prominent mausoleum at Episkopi. Built in the 3rd century CE to house a grave, it was first converted to a temple of Apollo before being converted to a Byzantine church in the 5th century. Later alterations and additions respected and preserved almost intact the original architecture. The church is perceived as one of the few examples of an ancient monument preserved in good condition, in Greece. In 2018, during restoration works, the 3rd century grave of a Greek lady, complete with artifacts and jewellery, was discovered in a concealed crypt, leading to multiple hypotheses on the identity of the lady attributed the name of Niko (Νεικώ) based on a rough funerary epigram carving. As such, the church provides a

special narrative of the island's history. It received a European Heritage Award in 2022.

Sikinos has been designated nationally as a wildlife refuge and features as an important bird area (IBA GR157), some 19 000 ha, together with the neighbouring island of Ios. Large tracts in the east and west of the island, along with the rocky islets of Adelfia, Kalogeroi and Kardiotissa form part of the Natura 2000 network (area GR4220004.) The traditional footpaths connecting the settlements and sites is well preserved. In recent years, ELLET has signposted seven in the context of the "Greek paths of Culture" programme.

In May 2022, RAE's Geospatial Map indicated EPL applications for 3 windfarms totalling 8 turbines in the centre and west, and for 3 windfarms totalling 30 turbines in the north of the island. All applications are under evaluation. The largest, in the north, comprising 17 turbines, is indicated as "hybrid" i.e. with electricity storage. Another 2 hybrid installations under evaluation feature in the centre of the island. Apart from those in the centre, the windfarms are located within or on the border of the Natura network, and one is next to the Episkopi mausoleum.

Sikinos is currently interconnected with neighbouring Folegandros, to the west, which has a fuel oil fired power plant covering the two islands electricity needs, similar to Milos covering Kimolos' electricity needs. Also, Folegandros and by extension Sikinos, should be interconnected to the mainland grid in 2025, similar to and via the former two islands. Once interconnected, expensive hybrid RES installations will become difficult to justify on Sikinos. Still, even excluding the hybrid RES installations, the EPL applications for windfarms will vastly exceed the needs of Sikinos.

Even in the absence of a meeting, Zoom or otherwise, it is relatively easy to imagine the reaction of the Mayor and Councillors. An eventual approval of the EPL applications and construction of the windfarms envisaged would fairly upset the balance of Sikinos and its small community of a mere 250 or so permanent residents. It is also easy to appreciate the constraints a community of this size is faced with to develop and propose a plan for the island's transition to RES, setting aside actions to prevent the construction of the windfarms.

In conclusion, the conundrum is repeated, in Sikinos as well as in the other islands previously reviewed: RES to combat climate change, but at what cost to the natural environment, biodiversity, cultural heritage, way of life and local economy?

9. Financing Possibilities

As outlined in the island descriptions above, in anticipation of their interconnection to the mainland electricity grid over the next few years, each Island Community should seize the opportunity to develop and put forward a plan for its transition to RES. This will require funding and technical assistance, first for preliminary studies and subsequently to implement the plan.

The Government has put in place the [Antonis Tristis² Development and Solidarity Programme for Local Government](#)." (in Greek) The Programme aims to support local authorities in a variety of actions aiming at their sustainable development. It provides funding for studies, procurement of goods and services, and construction works with a special focus on environment. The [Consignment Deposits & Loan Fund](#) (CDLF – Ταμείο Παρακαταθηκών και Δανείων) manages an envelope totalling € 2.5 bn, including EIB funding. The CDLF has a mechanism that will provide an up to 20% subsidy of the cost of studies. In addition to the Antonis Tristis programme, CDLF manages € 0.5 bn of the [Electra Programme](#), which covers the energy upgrading of public buildings.

Regional, local and municipal authorities would be eligible for support from the European Commission [European Local ENergy Assistance](#) (ELENA) programme. The EIB manages the programme, which provides technical assistance for energy efficiency and renewable energy investments targeting buildings and innovative urban transport.

At national level, Greece may claim up to 25 million emission trading system (ETS) allowances for the co-financing of up to 60 % of the decarbonisation of the electricity supply of islands within its territory, where such projects could otherwise not be realised and where the EIB confirms the financial viability and socio-economic benefits of the project ([EU Directive 2018/410](#) article 10a (9) p. L76/15.) The Ministry of Energy has focused investments on the electrical interconnection of the islands, the modernisation of electricity and charging infrastructure, and RES. The size of the envelope, which will be deployed over the next years, will depend on the carbon price at the time of auctioning the ETS. It is expected to lie between € 1.5 and 2.0 bn.

Also at national level, added funding sources are the EU [Recovery and Resilience Facility](#), which helps the EU achieve its target of climate neutrality by 2050 and sets Europe on a path of digital transition, creating jobs and

² the politician who served as Minister of Urban Planning and later was Minister of National Education and Religious Affairs under the PASOK Administrations in the 1980s. In 1991-92 he was Mayor of Athens and strong advocate of environmental and cultural initiatives. He died of a stroke in April 1992.

spurring growth in the process; and, the [Just Transition Fund](#), which provides grants for identified territories expected to be the most negatively impacted by the green transition, supporting the economic diversification and reconversion of the territories concerned.

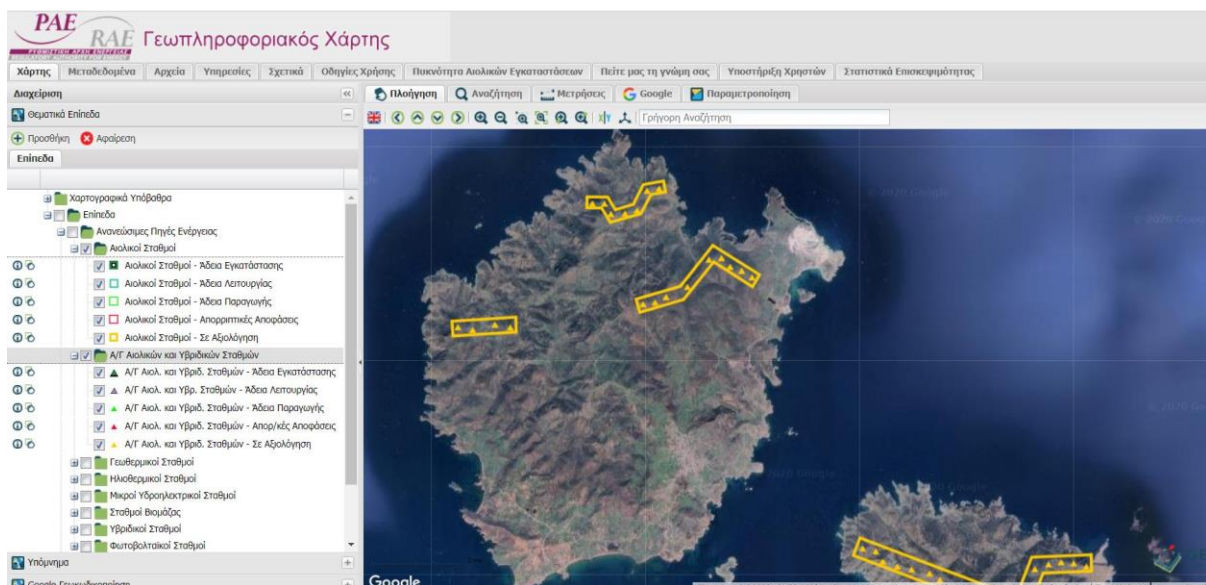
Heritage and environmental assets threatened by the massive installation of wind turbines

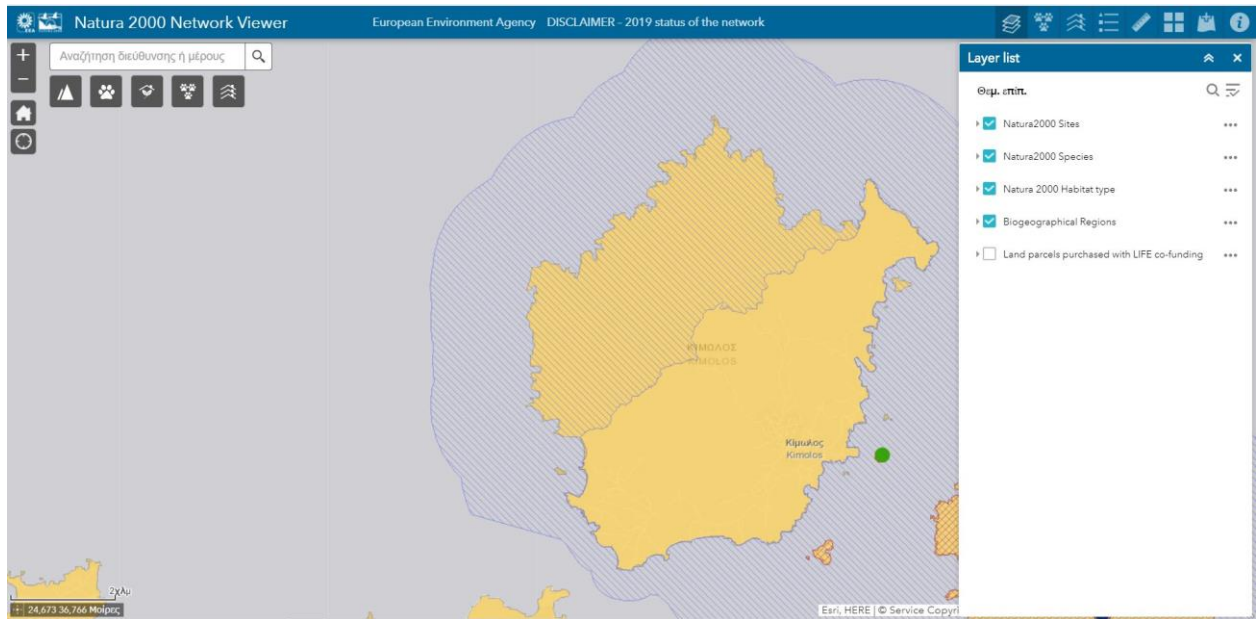
Kimolos

Surface 37.426 Km²
Population: 910
Highest mountain: 364 m asl



Kimolos – House in Cave – Photo courtesy of Kimolistes





The installation of Wind farms is going to have a strong impact on the historic environment of this small island. Wind turbines are expected to be installed on the northern part of the island, thus not directly visible from the main village and port and the archaeological sites where most findings come from (Ellinika). However, the historic settlement will be severely impacted by the wind farms that have been proposed on the nearly uninhabited (2 inhabitants) island of Polyaiagos, just in front of it.

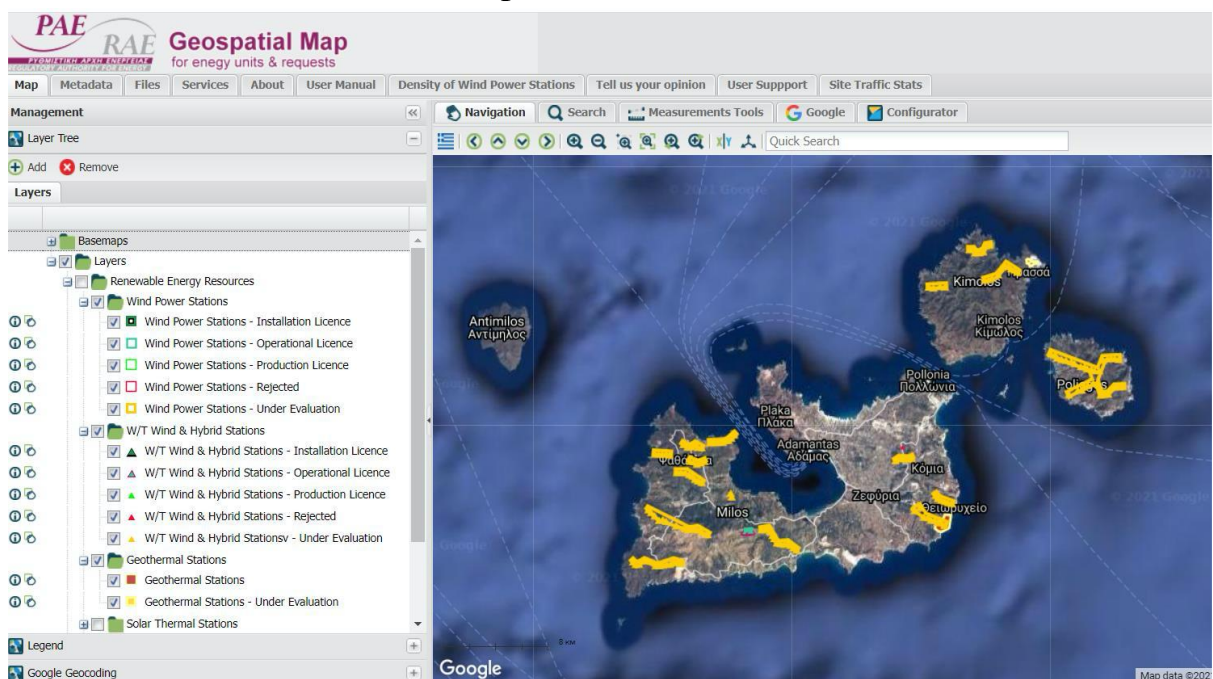
- More than half of its land is protected by the Natura 2000 designation.
- Large part of its territory keeps living traditions in land use and agricultural activities.
- The village keeps a distinguished character, in contrast to a territory which has few constructions. Wind turbines will alter the historical contraposition between the built village and the rural character of the rest of the island.
- The island features a unique variety of rocks, where the white colour of “chalk” (“Kimolos” means “chalk” in Greek) dominates. The natural character, also of anthropic additions, to the natural environment will be impacted by the huge metal towers, expression of a technology which is alien to the history of the island.
- The island has a network of 12 hiking trails, with a length of over 50 km.
- The north-western part of Kimolos and the neighbouring island of Polyaiagos, including the sea that surrounds them, feature in the NATURA 2000 network (areas GR4220030 and GR4220006), with a variety of rare marine species.
- The unique setting around the little island of Ag. Georgos offers a characteristic untouched Aegean environment, with the three islands of Milos, Kimolos and Polyaiagos closely grouped.

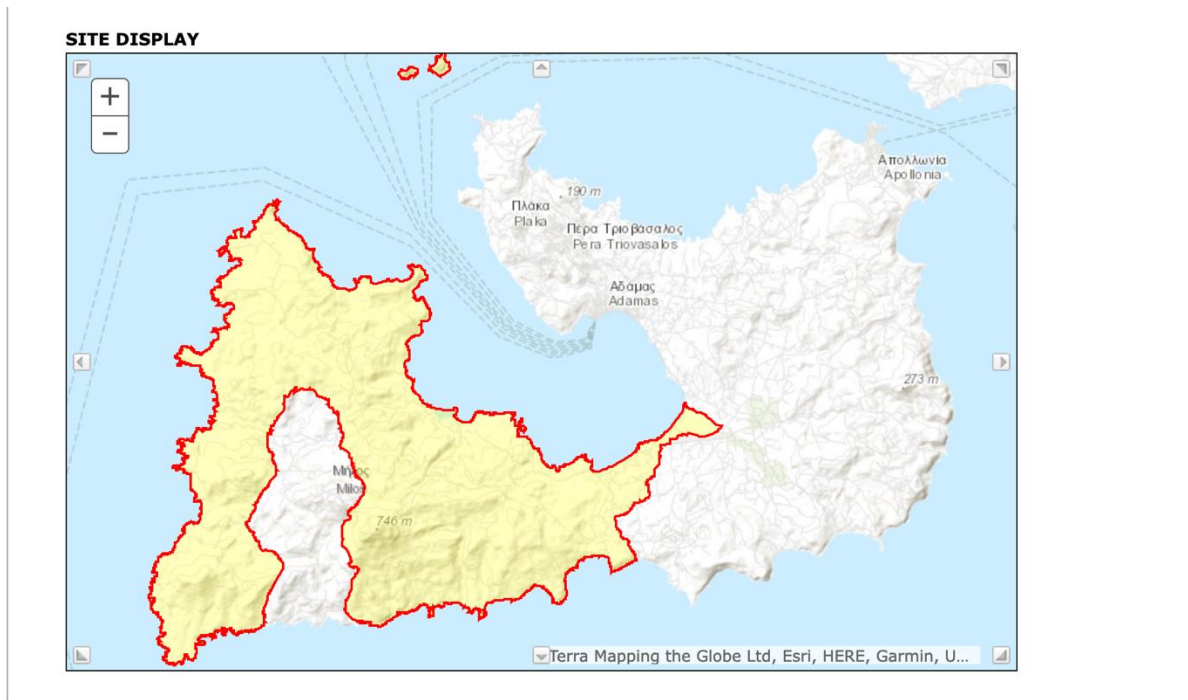
Milos

Surface 160.147 Km²
Population: 4,977
Highest mountain: 748 m asl



Milos – Sarakiniko coast – own photo





Milos is distinguished by the deep natural harbour, which divides the island in two distinct parts, geomorphologically markedly different. The east side is rich in natural materials like bentonite, perlite, pozzolana and small quantities of kaolin, which are actively mined and contribute to the economy of the island. Ancient and modern settlements are on this side of the island. The west side, on the contrary, has very few constructions and more hilly landscape. This is a Natura 2000 area and is where most of the wind turbines were proposed. The main mountain, Profitis Elias, creates a steep junction between the two sides of the island.

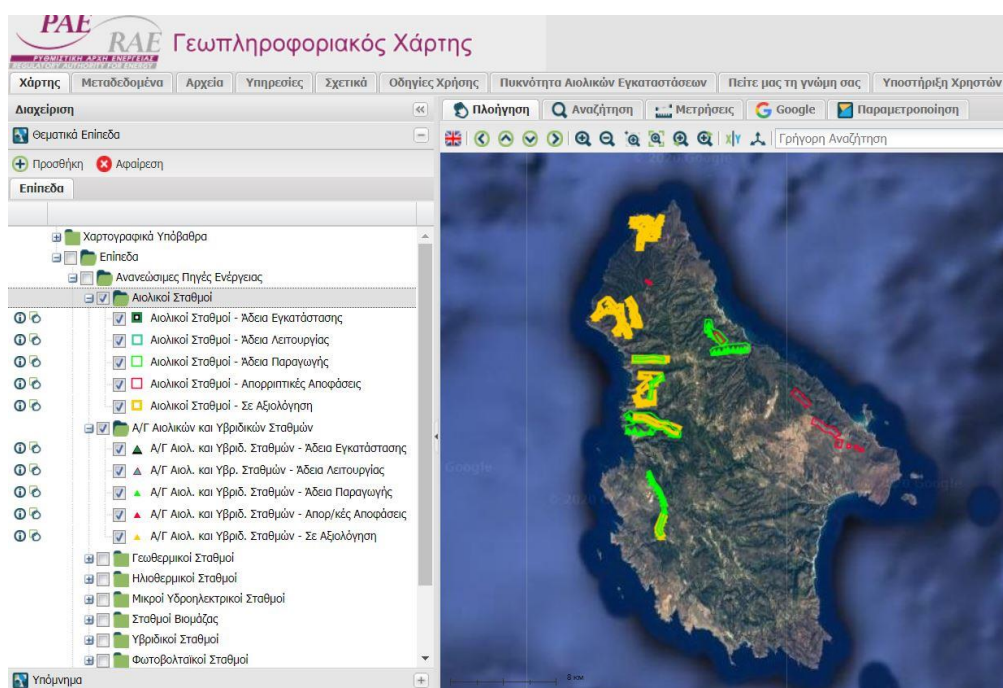
- Most of the west side is protected by the Natura 2000 designation
- The west side has over 800 different taxa, including 35 which are endemic to Greece.
- Birds like Eleonora's falcon/Μαυροπετρίτης (*[falco eleonora](#)*) are distinguished fauna of the island.
- The Milos viper/οχιά της Μήλου (*[macrovipera schweizeri](#)*,) is well known for the poison, which is collected for commercial use.
- The main archaeological site (Greek and Roman Period) dominates the natural harbour and the natural scape of the west side of the island. Its main remains -the theatre and the city walls (where the Milos Aphrodite was discovered)- are noteworthy for their monumental scale and setting. On the north coast there is an earlier site dating to the Bronze Age, with noteworthy remains of buildings and the fortification.

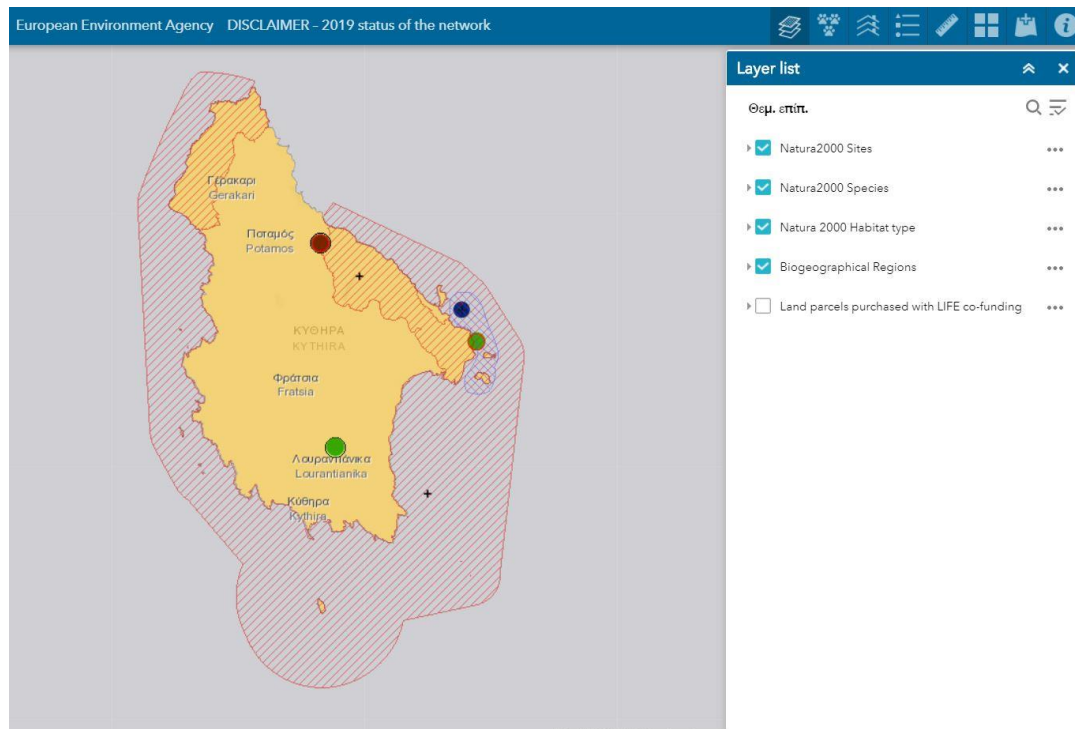
Kythira

Surface 277,746 Km²
Population: 4,041
Highest mountain: 506 m asl



Kythira – Mount Mermygkaris – Photo courtesy of Dynamo Kythira





The Island of Kythira has a vast territory which has preserved its environmental and historic settlement values. There are several traditional farming activities which remain connected to historic practices. The installation of wind farms is concentrated on the west and north side of the island, with a group of wind turbines expected on the ridge of the mountains of the Est side. The wind turbines will not be visible from the main settlement, on the south edge of the Island, but they will impact natural, heritage and environmental values of all the areas around the wind farms.

- Kythera has been a crossroads of civilizations due to its strategic location. Its history is remarkably unique, compared to other islands and tangibly perceivable in its landscapes, which keep a distinct character, particularly in the area where the wind farms will be installed.
- Settlements keep a distinct historical character, with very few inappropriate constructions -ie construction which are alien to the materials and scale of the island's built environment. The character of these settlements is in symbiosis with the natural environment, and their values are in the way environment is perceived from the settlements and settlements are perceived from the around environment. The altered skyline around the historic settlements will jeopardize such values.
- The territory of Milopotamos, with its historic water mills, waters, gorges and nature, including the Medieval bourg of Kato Chora -with its Venetian Castle- are directly exposed to the invasiveness of installations, and will lose the relationship with the natural environment.

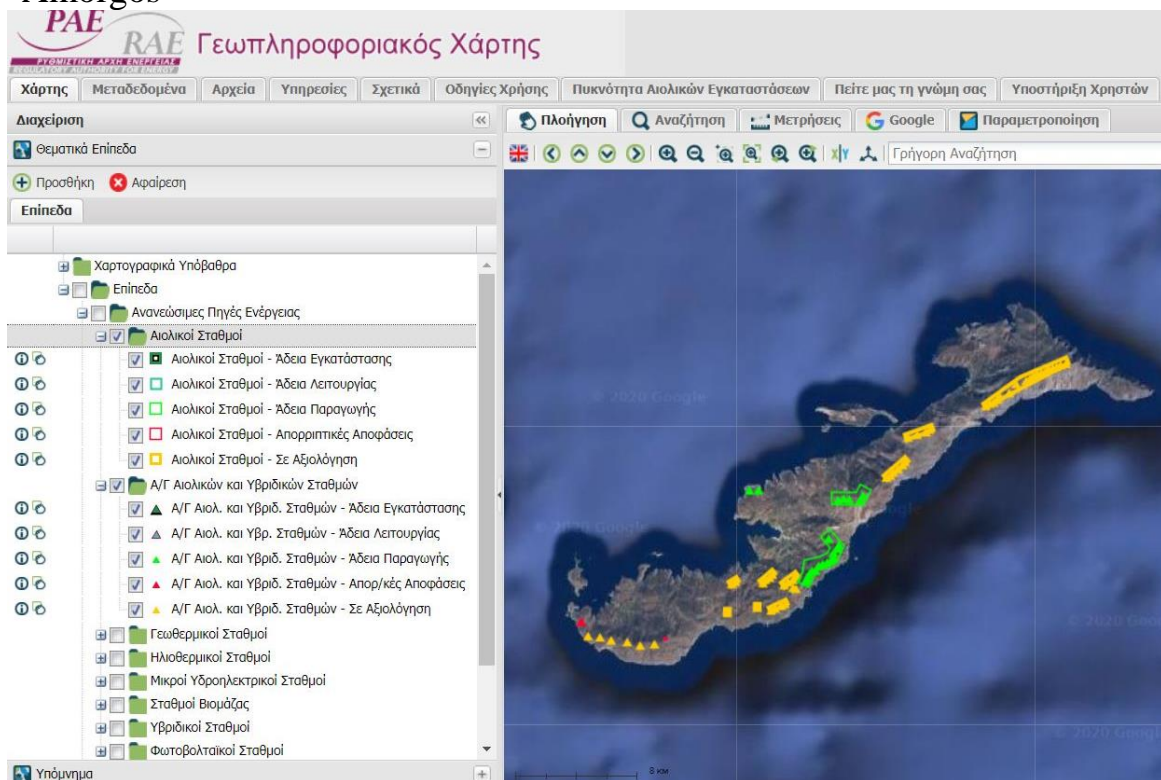
- The natural Karavas watershed with its functioning watermills (Europa Nostra Award 2010) are another noteworthy heritage (and energy) resource at the north of Kythera.
- The abandoned settlement of Paleochora, with its ruined churches and houses spread on a hill top dominating two gorges, stands as one of the most impressive testimonies of the history of the island -it was abandoned after being sacked by the Ottoman Admiral Barbarossa. The wind farms on the East side of the island will be installed just opposite of the village.
- Bird migration -including over 3,000 raptors regularly passing through every autumn- will be impacted by the installation of wind turbines.
- A great network of signposted hiking trails leads to every corner of the island, and the local authorities plan to extend the network of trails to a total of 21 that will cover a total distance of over 110km. The trails pass through the two Natura 2000 areas at the north and east side of the island (area GR3000013).

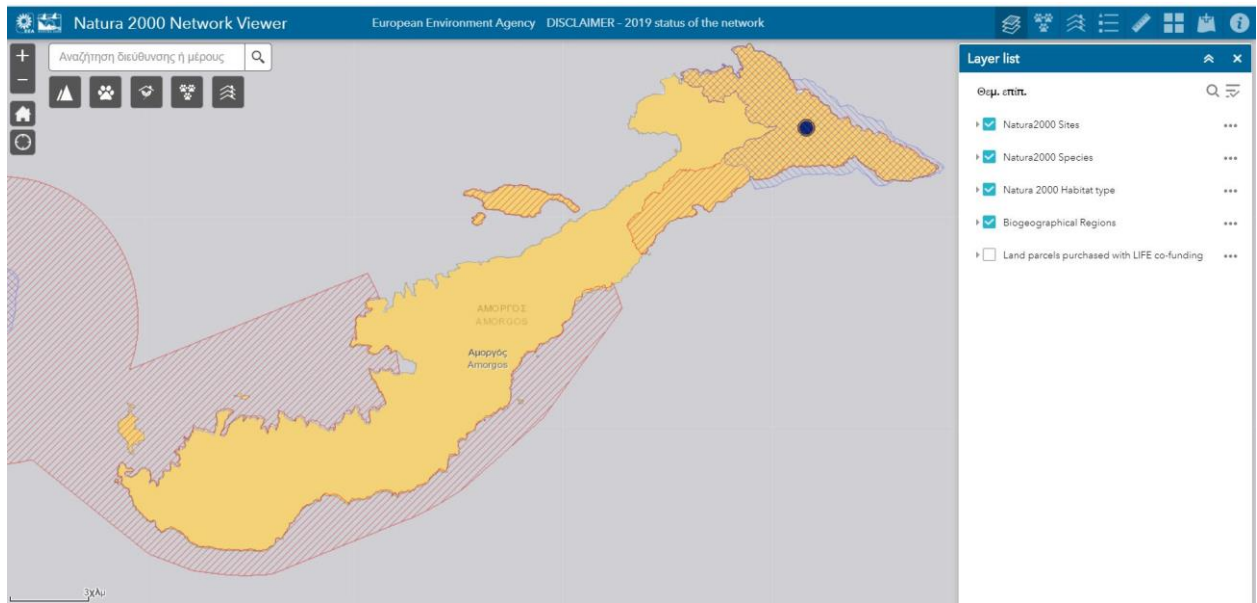
Amorgos

Surface 126.346 Km²
Population: 1,973
Highest mountain: 821m asl



Amorgos – Ancient Vigla Tholaria – Photo courtesy of Municipality of Amorgos





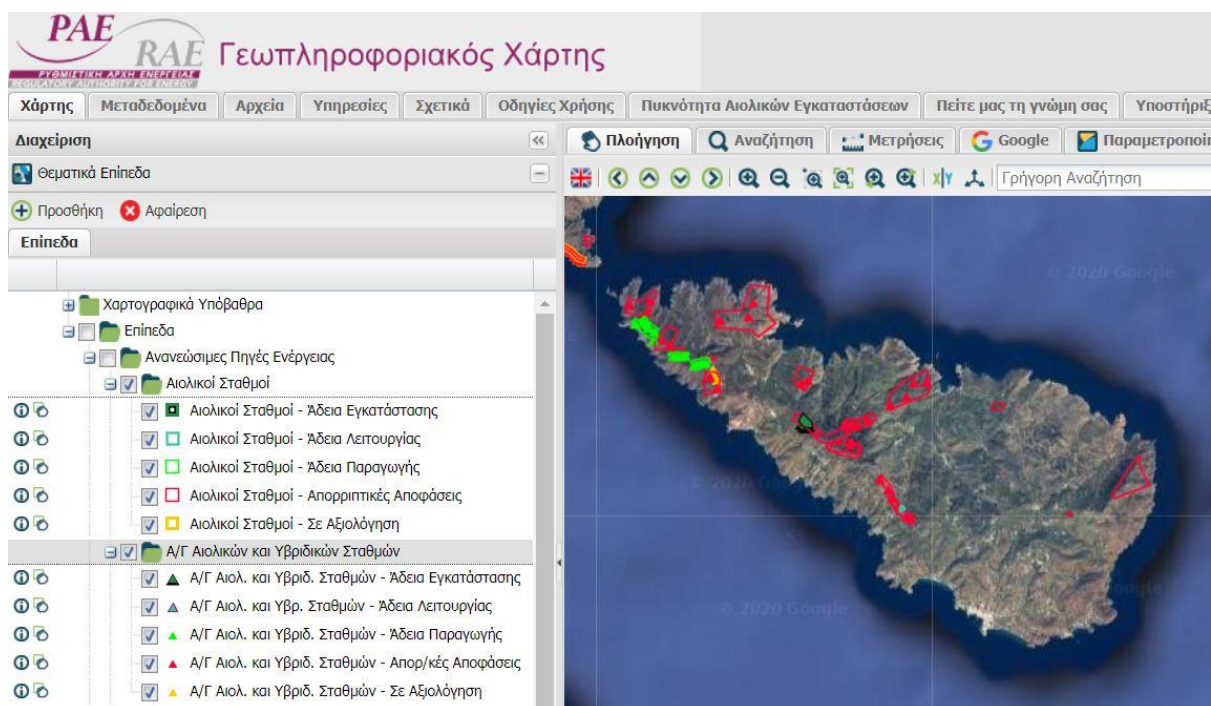
Amorgos is known for its wild and beautiful nature, with an abundance of herbs and a network of 16 signposted trails, also called “The Blue Paths” because any trail one takes has impressive views over the Aegean Sea. These go through three ancient sites as well as through the island’s impressive traditional settlements. The morning dew, a fundamental resource for watering plants, might be impacted by the installation of wind turbines.

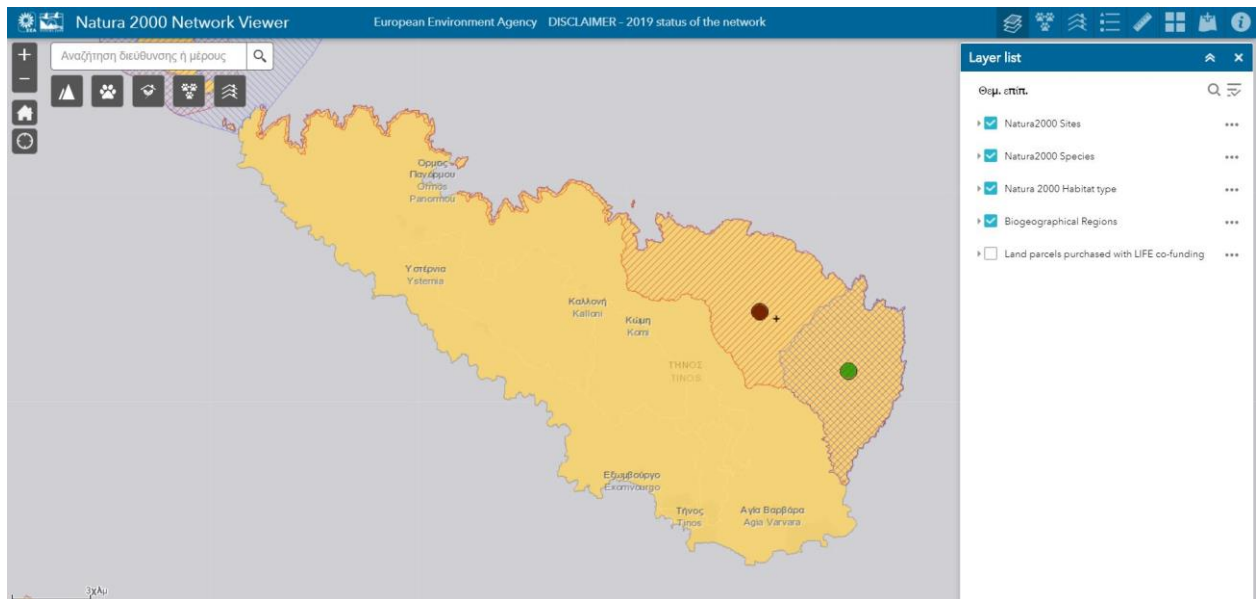
Tinos

Surface 194.464 Km²
Population: 8,636
Highest mountain: 750 m asl



Tinos – Chapel – Photo courtesy of Eugenie Coumantaros





Tinos is an island with numerous cultural assets, from the renowned Panagia Evangelistria of Ottomans only took Tinos from the Venetians in 1715, its pigeon towers, traditional arts and crafts such as marble carving and basket knitting to the renowned and very special man-made landscape of drystone walls and high quality agricultural production, rare on the Cyclades. Tinos has also a hiking trail network that exceeds 150 kilometers, leading to all the unexplored sites on the island: the impressive geological formations, the villages with their fine traditional architecture and unusually little sprawl beyond their boundaries, the famous marble quarries and the old footpaths themselves, along with the infinite kilometers of dry stone walls and terraces justify the belief that Tinos is “the hand-made island”. The trails go through spectacular Natura 2000 areas GR4220031 (Northeast Tinos) and GR4220019 (Myrsini – Livada cape).

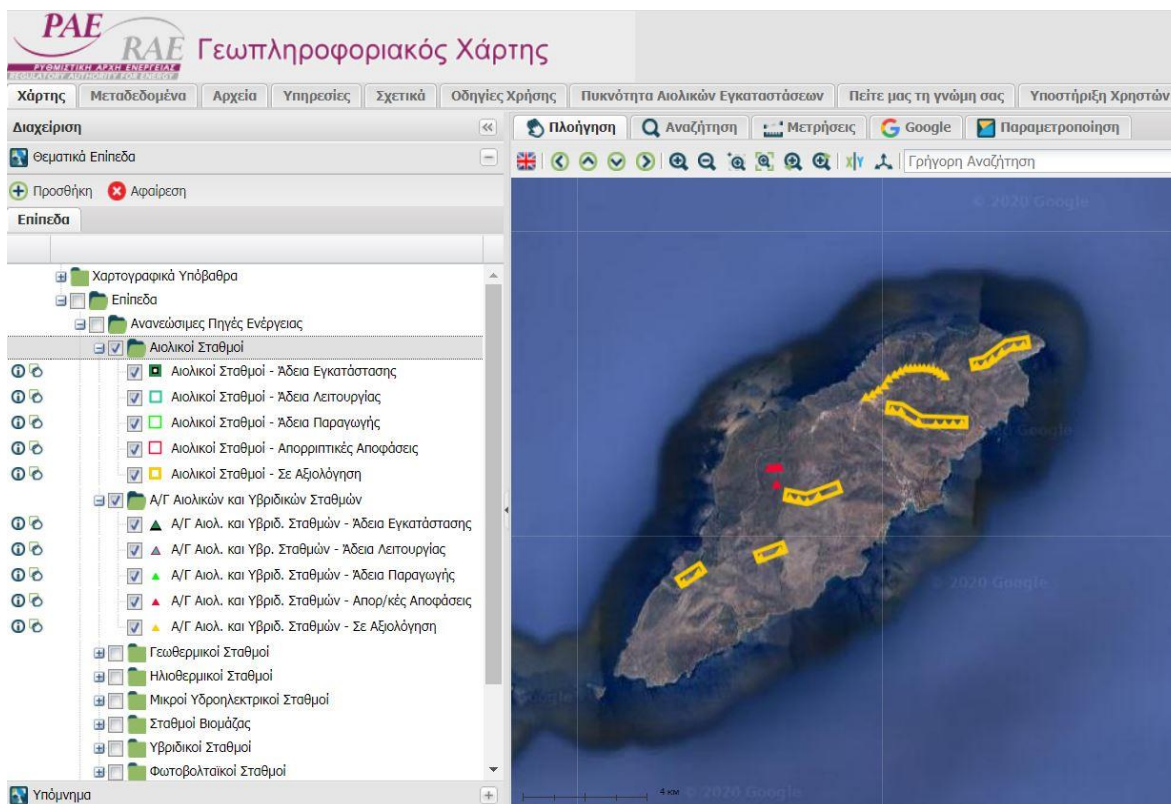
The impact of the wind farms into the Cycladic seascape, particularly from Syros and Mykonos, will be detrimental for the perception of the unique natural setting and relationship of the Cycladic islands with the Aegean sea.

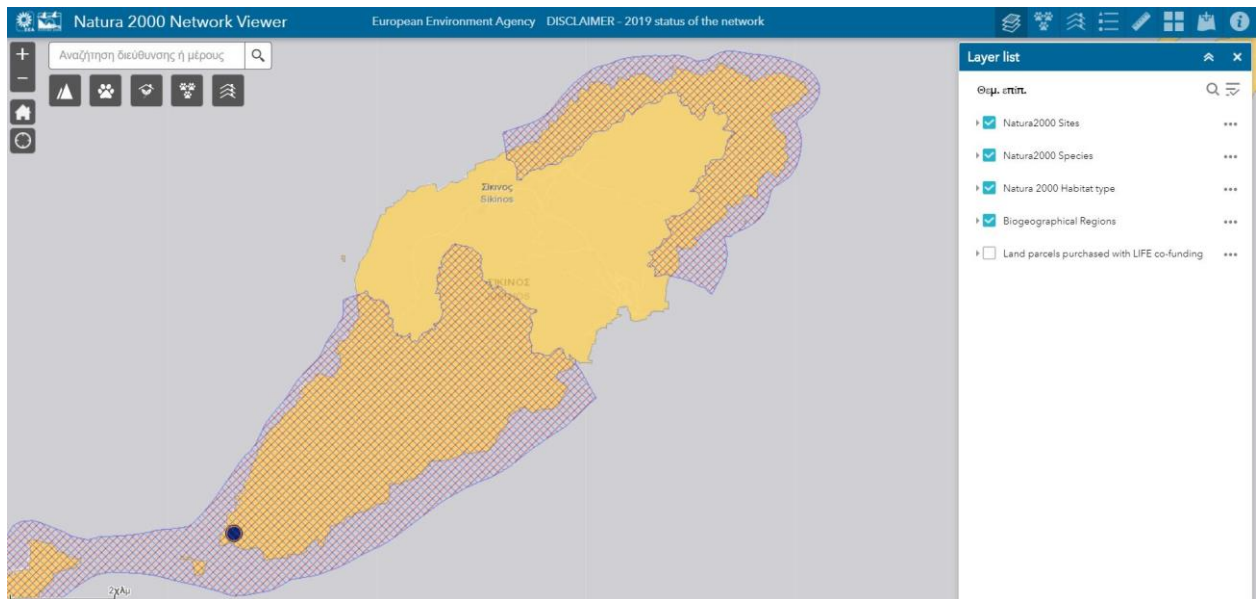
Sikinos

Surface 42.507Km²
Population: 260
Highest mountain: 552 m asl



Sikinos – Apiano Chorio – Photo courtesy of Michalis Antypas





The island has villages and archaeological sites of great beauty and importance, among which is the prominent monument of Episkopi where recent conservation work brought to light a tomb within the Roman mausoleum (European Heritage Award 2022). Episkopi's significance rests on the fact that it is one of the rare examples of an ancient building with continuous use since it was constructed in the third century and was turned into a church early in the Byzantine period. The multiple interventions and additions to the building provide a unique narrative of the island's history.

List of participants of the online meetings with Amorgos and Tinos

Online meeting with Amorgos:

Local stakeholders:

- Mr Eleftherios Karaiskos, Mayor of Amorgos
- Mr Emmanouil Vassalos and Mrs Kalliopi Despotidi, members of the Municipality's Council
- Mr Stamatis Grispos, President of the Cultural and Environmental Society of Amorgos and member of the Municipality's Council
- Mr Georgios Nomikos and Mr Yorgos Nounesis from the local Committee for the Renewable Energy Sources

ELLET team:

- Mr Haris Doukas President of the Special Council for Energy and Environmental Tax Reform
- Mrs Eleni Maistrou, President of the Special Council for the Architectural Heritage
- Mr Miltiadis Lazoglou, Environmental Policy Coordinator of ELLET
- Mrs Vasiliki Pougkakioti, associate of the Special Council for Energy and Environmental Tax Reform
- Mr Elias Sakellaris, associate of Special Council for the Architectural Heritage

Advisors:

- Mr Constantin Christofidis on behalf of the European Investment Bank (EIB)
- Mr Paolo Vitti, on behalf of Europa Nostra

Online meeting with Tinos:

Local stakeholders:

- Mr Trifonas Kollias, Athens lawyer LL.M., Counselor and representative of the Mayor of Tinos
- Mr Petros Markouizos, Architect, President of the Municipality's Council

ELLET team:

- Mr Haris Doukas President of the Special Council for Energy and Environmental Tax Reform
- Mr Dimitris Leventis, Vice-President of the Special Council for the Architectural Heritage
- Mr Miltiadis Lazoglou, Environmental Policy Coordinator of ELLET

- Mrs Vasiliki Pougkakioti, partner of the Special Council for Energy and Environmental Tax Reform
- Mr Elias Sakellaris, partner of Special Council for the Architectural Heritage

Advisors:

- Mr Constantin Christofidis on behalf of the European Investment Bank (EIB)
- Mr Paolo Vitti, on behalf of Europa Nostra

AGENDA – Webinar 25.05.2022

Five Southern Aegean Islands: Listed among the “7 Most Endangered” sites by Europa Nostra

Greetings 16.00 – 16.30 CET

Lydia Carras, President of Management Committee Member, Ellet

Sneška Quaedvlieg-Mihailović, Secretary General Europa Nostra

Constantin Christophidis, representative of European Investment Bank

Paolo Vitti, representative of Europa Nostra

1st Part: The importance of safeguarding cultural and natural landscapes

16.30-16.40 *«Current situation and risks on the 5 Southern Aegean islands»*

Dimitris Leventis, Architect-Conservationist, Vice-president of the Council for the Architectural Heritage, ELLET.

16.40-16.50 *«International principles for preserving the natural and cultural landscapes»*

Eleni Maistrou, Professor emeritus of School of Architecture NTUA, President of the Council for Architectural Heritage, ELLET.

16.50-17.00 *«Safeguarding the cultural landscape: tackling the challenges»*

Vasiliki Vlami, Environmentalist-researcher, partner of LIFE-IP AdaptInGR programme.

18.00-18.10 Break

2nd Part: RES impact on cultural and natural landscapes

17.10-17.20 *«The unique biodiversity of the Aegean Islands»*

Panagiotis Pafilis, Professor of Life Diversity UoA, President of the Council for the Natural Environment, ELLET.

17.20-17.30 *«Tourism development and landscape»*

Aris Ikkos, Research Director of the Institute of SETE (INSETE).

17.30-17.40 *«Archeological sites, traditional habitats, monuments and natural landscape»*

Amalia Androulidaki, General Directorate for the Restoration, Museums and Technical Works of the Greek Ministry of Culture.

17.40-17.50 Break

3rd Part: Tools for achieving cultural & natural heritage conservation targets and green transition

17.50-18.00 *«Spatial planning and legislative framework: correlations and contradictions.»*

Miltiadis Lazoglou, Urban Planner, responsible for environmental policy, ELLET.

18.00-18.10 *«Sitting RES infrastructure: mapping exclusion areas and incompatibility zones»*

Efi Karathanasi, Urban Planner, founder of the company «Chorodinamiki kai Perivallon».

18.10-18.20 *«Participatory planning and energy communities.»*

Manos Vassilakis, Civil engineer, member of the Kythera Committee for issues of industrial wind farms.