



## **Strategic Framework**

for conservation and management  
of the cultural and natural heritage  
of Mount Athos

## **Preliminary Report**

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Karyes, 2013

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**Acronyms**

EAK	National Anti-seismic Regulation
EC	European Community
EEC	European Economic Community (prior to 1993)
EU	European Union
GIS	Geographic Information System
IT	Information Technology
KEDAK	Centre for Conservation of Mount Athos Heritage
KENAK	Regulation for energy efficiency of buildings
SES	Special Environmental Study
UNESCO	United Nations Educational, Scientific and Cultural Organisation
WHC	World Heritage Convention; World Heritage Centre; World Heritage Committee

## 0. Introduction

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### 0.1 Historic evolution, cultural and spiritual significance of Mount Athos

On Mount Athos, which is well protected by land while having access to the sea, there were probably hermits living from as early as the 7<sup>th</sup> century and by 883 they must have been organised into some sort of community for in that year Emperor Basil I, the Macedonian, issued a chrysobull granting the peninsula its first privileges. The founder of organised Athonite monasticism is St Athanasios the Athonite, a monk from Trebizond who went to Athos in 957 and with the support of Emperor Nikephoros Phokas founded the Great Lavra in 963. The organisation of monastic life on Mount Athos was captured in 972 in the *Tragos*, the first *Typikon* (Rule) of the Holy Mountain, which established a regime for the coexistence of the anachoritic and coenobitic systems. More monasteries were then founded with support from Byzantine emperors, imperial courtiers and rulers of Orthodox states (Russia, Serbia and Wallachia). The 11<sup>th</sup> century was a time of great prosperity for the Athonite monasteries. In the 12<sup>th</sup> century the rate of foundation of new monasteries declined, but in the ensuing centuries yet more large monasteries were built. In the 13<sup>th</sup> century the Holy Mountain was captured by the Latins of the Fourth Crusade (1205) and occupied by them for a short time. Between 1307 and 1309 it was ravaged by the Catalans. From 1334 to 1381 it was under Serbian occupation. The first period of Ottoman rule lasted from 1383 to 1402 and the second began in 1424. During the Ottoman period, the Athonite monasteries continued their spiritual route despite the difficulties, alternating between spells of economic prosperity and recession. In the 17<sup>th</sup> century and even more in the 18<sup>th</sup>, the Holy Mountain developed into a vigorous centre of learning for the Greeks living under the Ottoman yoke. After the liberation from the Ottomans in 1830 there was a renewed surge of building activity lasting until early in the 20<sup>th</sup> century.

The **Athonite monasteries**, impressive both for their massive bulk and for the variety of their architectural morphology, are built according to the norms of Byzantine architecture, with evidence of Constantinopolitan influence: the fortress-like cell blocks, with their defensive towers, are laid out round the perimeter to form a central courtyard with the katholikon in the middle. The monastery buildings we see today were constructed in more than one successive phases, often because the previous ones were destroyed by some great disaster; they often include a refectory, chapels, a phiale (a canopied stoup containing holy water) and numerous auxiliary buildings. A wide range of architectural types is represented; and it was here, in the katholikon of Great Lavra, that the 'Athonite type' of church came into being: it is a domed cross-in-square with lateral choirs and was widely used not only on the Holy Mountain but throughout the Balkans from the middle Byzantine to the Post-Byzantine period.

Impressive **wallpaintings**, which reflect various trends of Palaiologan and post-Byzantine painting, still survive in the Athonite monasteries. The end of the 13<sup>th</sup> century and the beginning of the 14<sup>th</sup> century is the golden era of wallpaintings in Mount Athos especially with the great painter Manouel Panselenos from Thessaloniki. The works produced during this period have an innovative character with strong realistic characteristics in the rendering of the faces and other elements of the composition. In later centuries Mount Athos remained a centre that attracted artists who produced a lot of paintings such as the Cretan painter Theophanes Strelitzas or Bathas, his pupil Tzortzis and Frangos Catelanos.

Also, a great number of **portable icons** are found in the monasteries of Mount Athos. The oldest known icon, dated to the end of the 11<sup>th</sup> century, is the one of Lavra depicting the five saint martyrs of Sevasteia. Most of these icons are dated to the Palaiologan period and are remarkable artworks produced most probably in important centres of the Byzantine Empire such as Thessaloniki and Constantinople. Moreover, Cretan artists played a significant role during the 16<sup>th</sup> century, having produced sets of wallpaintings, portable icons as well as woodcut temples.

**Invaluable treasures**, a lot of relics, manuscripts, miniatures and embroidery works are also kept in the Athonite monasteries. Samples of Byzantine and post-byzantine miniatures that survived throughout the centuries are extremely impressive. Most of them are donations of emperors or other members of the ruling families of Byzantium. These artworks made of various materials such as ivory, steatite, semiprecious stones, precious metals, wood etc., are characterised by extraordinary technical perfection and are aesthetically exquisite, following the artistic streams of contemporary large-scale art. The gold woven luxurious fabrics as well as the manuscripts and incunables that still survive in the Athonite monasteries are also worth mentioning.

This holy land developed while also maintaining an uninterrupted historical continuity that allowed the creation of **solid traditions** on many levels, both in the procedure of common ritual worship and the rhythm of the monastic life. The leading monasteries with their dependencies distinguished themselves for their dedication to the orthodox traditions, and they became spiritual symbols of doctrinal accuracy and orthodoxy. Besides, the monasteries of Mount Athos throughout the centuries have become spiritual treasuries of the orthodox traditions and also of worship types of the Church of Christ, as they observe the *Typikon* of the Church of Constantinople. Finally, Mount Athos constitutes a point of spiritual reference for all orthodox Christians, thanks to the monastic brotherhoods from Russia, Serbia, Bulgaria and Romania, which settled on this land through time, constituting today an integral part of the Athonite tradition. For all these reasons it is extremely important to preserve this unwavering spiritual tradition which makes the Athos peninsula a bearer of the collective historical memory of the orthodox world.

## 0.2 Framework of the Study

The need for a wide-scoped study for the whole of the Mount Athos Peninsula has been pointed out several times in the past, as much by the resident monastic community as by friends of Mount Athos, both collaborators and visitors, including prominent figures with known sensibilities. This idea has been seriously discussed in Mount Athos during the past twenty years, yet it took some time before it was mature enough to proceed.

When the UNESCO monitoring committee visited Athos at the end of January 2006, its members<sup>1</sup> warmly supported the necessity for such a systematic study to be elaborated, to contain not only actions and regulations for protecting the natural and cultural heritage but also measures against hazards from wildfires, earthquakes and the consequences of climate change. The proposal was adopted by UNESCO's World Heritage Committee, and it was included in its decision for the specific Site<sup>2</sup>.

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<sup>1</sup> Monitoring mission, with participation of representatives from the World Heritage Centre, IUCN and ICOMOS.

<sup>2</sup> Decision No. 32 COM & B.43.

The Holy Community found the proposal positive and decided to proceed with the elaboration of the Preliminary Report at hand in order to set the objectives, define the specifications and prepare the formulation of the major study<sup>3</sup>, under the temporary title '*Strategic Framework for Conservation and Management of the Cultural and Natural Heritage of Mount Athos*' (referred to hereinafter as 'Study').

This Study will, *inter alia*, take into account the conclusions of the Special Environmental Study (SES) for the protection of Mount Athos elaborated in the foregoing years under supervision of the Holy Community<sup>4</sup>.

It should be noted that the conclusions of this systematic Study will not only contribute to the wise management of the Athonite Peninsula but may possibly prove useful for the broader Greek, Balkan and Mediterranean area, especially in sectors of innovation such as the integrated approach and the consequences of climate change.

It should finally be noted that this Study is attuned to the initiatives of the Ecumenical Patriarchate for the protection of the natural environment.

### **0.3 Mount Athos protection regime**

The Mt Athos area is subject to the following regulations of protection:

- a. The crucial factor for the formation, conservation and protection of the distinct character of Mount Athos is its special privileged status of self-governance, as provided by Article 105 of the Hellenic Constitution, by the Constitutional Charter of Mount Athos<sup>5</sup>, as well as by the European Communities Greek Accession Act of 1979 and the respective texts attached to it.
- b. The Constitutional Charter of Mount Athos also provides for a particular system of conservation and protection of the monuments, under the care of the Holy Monasteries, which are vehicles of implementation and final beneficiaries of the works. A particular regime also governs the heirlooms of Mount Athos, as provided in the Regulatory Decree 'On protection, maintenance and classification of the holy heirlooms, libraries and archives of Mount Athos' (Govt. Gazette Issue 321B/8.5.1996).
- c. A special legal framework for works of conservation of Mount Athos heritage is foreseen in article 9 of Law 1198/1981 regarding the Centre for Conservation of Mount Athos Heritage (KEDAK). The special protection status of Mount Athos is also provided for in article 73 of Law 3028/2002 'For the Protection of Antiquities and the Cultural Heritage in general', as well as relevant decisions of the Ministry of Culture.
- d. Mount Athos has been designated as World Heritage Site for Nature and Culture, according to the respective UNESCO Convention<sup>6</sup>.
- e. It is included in its entirety in the European network of protected areas Natura 2000 (Directive EEC/92/43)<sup>7</sup>.

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<sup>3</sup> Decision of the Holy Community of Mount Athos at session 61/15.12.2009.

<sup>4</sup> Business Architects Consultancy, Special Environmental Study for the Protected Area of the Mount Athos Peninsula, Thessaloniki, October 2006.

<sup>5</sup> Ratified by Legislative Decree 10/16.9.1926.

<sup>6</sup> World Heritage Convention; Mt Athos was incorporated in 1998 under No. 454.

<sup>7</sup> Given the Code GR 1270003 and the name 'Athos Peninsula'.

- f. It furthermore supports protected and endangered species of fauna and flora included in the relevant bibliography and Community directives.

It should be noted here that Mount Athos differs from most protected areas for the following reasons:

- It has a living and continuous tradition of more than a thousand years.
- It is permanently inhabited, in almost all its parts, by a monastic community, comprised today of 1700 monks and about 300 laymen.
- It enjoys a status of advanced self-government in the framework of the Greek sovereign territory, as each Monastery is responsible for its territory and collective administration is exercised by the Holy Community and its agencies.

These particularities have to be taken into account seriously during the elaboration of the Study and the formulation of proposals, which should also contain recommendations for the specialisation of general restrictions set by UNESCO's World Heritage Convention and Directive EEC/92/43 (Natura 2000) to meet the special needs of the resident population of the monastic community.

#### **0.4 Management of Mount Athos**

Due to its monastic and sacred character and its long history, Mount Athos is subject to a particular regime which affects its management and thus has to be seriously considered in drawing up the Study.

##### 0.4.1 Constitutional framework

The Hellenic Constitution provides for the self-governance of Mt Athos '*in accordance with its ancient status of privilege*' (Article 105). The same Article acknowledges that the Holy Community and the Holy Monasteries exercise public administration of Mount Athos, the Ecumenical Patriarchate has the ecclesiastical jurisdiction and spiritual supervision, while the Greek State has supervision of the observance of the special regimes and is competent for public order and security, through the Governor, who is appointed by the Ministry of Foreign Affairs.

##### 0.4.2 The administrative framework

Article 105 of the Constitution and the Constitutional Charter of Mount Athos determine the institutional framework of organisation and operation of Mount Athos, protect its regime and prohibit any alteration of the administrative system, of the number of monasteries and of their hierarchical order. The administration of Mt Athos is exercised by the twenty Holy Monasteries through their representatives, who constitute the Holy Community. The territory of Mount Athos may not be expropriated and belongs exclusively to the twenty Sovereign Holy Monasteries which also have total rights of ownership, possession and occupation of their monuments and heirlooms. All other institutions, clusters ('sketes') and retreats ('hesychasteria') are dependencies of the twenty Holy Monasteries.

The Holy Community consists of twenty representatives of the Holy Monasteries, one from each; it is seated in Karyes and is a continuous body. The Holy Community exercises supervision of adherence to and smooth operation of the Constitutional Charter, approves its budget and is the supreme administrative body of Mount Athos whose decisions for certain administrative matters are respected by and obligatory for the Holy Monasteries.

The executive authority for the decisions of the Holy Community is exercised by the Holy Supervision ('Epistasia') which also holds responsibility for management of the common fund (based on the budget approved by the Holy Community), handling correspondence, maintenance of the roads and lighting in Karyes, price control of foodstuffs, supervision of decent behaviour, etc. The Holy Supervision consists of representatives of the Holy Monasteries who execute their duties over a five-year term, with an annual rotation based on the division of the Holy Monasteries in five groups of four monasteries each.

Mount Athos has an organised judicial body in which there are law courts of the first instance (Assemblies of Elders) as well as appellate courts (Holy Community). The supreme legislative and judicial body is the extraordinary twenty-member Holy Assembly consisting of Abbots and superiors from the twenty Holy Monasteries, convening *ipso jure* and formally invited by the Holy Community twice a year<sup>8</sup>.

The forests and natural environment of Mount Athos are managed, cultivated and protected directly by the Holy Monasteries, being exempted from the general forestry legislation, whilst a separate Forestry Service (Ephory) has been constituted and operates in Karyes<sup>9</sup>. Furthermore, hunting is absolutely prohibited on Mount Athos<sup>10</sup>. Recently the Holy Assembly (CLXIX/20.8.2011) voted for and forwarded for ratification a revised Regulatory Decree '*For Scientific Exploitation and Safeguard of the Forests of the Athonite Peninsula and Protection of Sites and Habitats*'.

In regard to the conservation of monuments and heirlooms and carrying out of works in the Athonite State, the Centre for Conservation of Mount Athos Heritage (KEDAK) has been established; KEDAK holds the competencies of the Ministries of Environment, Planning and Public Works, Culture, and Agricultural Development as to the approval and monitoring of the respective studies (Article 9 of Law 1198/1991). KEDAK's Administrative Council consists of a mixed delegation of monks and state representatives – including politicians, academics and scientists. In any case, the Holy Monasteries are usually responsible for implementation and the final beneficiaries of works.

The above clearly demonstrate the particular character of Mount Athos across the whole spectrum of administrative functions and technical services; this particularity should definitely be taken into consideration in regard to issues of management of the territory of the Athonite Peninsula, but also concerning matters of representation of Mount Athos in international fora and conferences. In any case, the indispensable synergy between the aspirations of the monastic community and the Greek State must be ensured, setting the appropriate framework of commendable cooperation for the sustainable management of Mount Athos.

The particular instance of the Holy Esphigmenou Monastery must also be noted here, as it constitutes an unprecedented deviation from the cohesive administrative system of Mount Athos. One of the twenty Sovereign Holy Monasteries is occupied by persons who are subject to a plethora of final convictions of spiritual, administrative and judicial nature; the Monastery is inaccessible to its lawful administration and lacks control or protection of its precious heirlooms and environmental wealth. The Holy Community

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<sup>8</sup> Thus officially titled Twice-A-Year Holy Assembly ('Diseniafsios Iera Synaksis')

<sup>9</sup> Based on Regulatory Decree F.7611.1/11/AS 983 of the Holy Assembly (Govt. Gazette issue 893B/30.10.1995).

<sup>10</sup> Based on Regulatory Decree F.7611.1/24/AS 984 of the Holy Assembly (Govt. Gazette issue 903B/24.09.1996).

urgently requests restoration of the Monastery's lawful operation in a discreet and effective way.

#### 0.4.3 Activities of the Holy Community and the Monasteries

Integrated management and protection of the cultural and natural environment of Mount Athos constitutes a major objective and constant concern of the Holy Community for at least the past fifteen years. In this respect, decisions and initiatives have been taken for the continuation, protection and promotion of the monastic tradition as producing modern culture; studies and works have been carried out for the protection, conservation, restoration and enhancement of monuments, heirlooms and remains of the thousand-year-old way of life and prayer on the Mount; measures and actions for the protection of the natural environment and the judicious preservation of the anthropogenic environment have also been promoted.

Specifically, the Holy Community elaborated in the mid-1990s the 'Athos Programme', an integrated programme defining current needs and actions required for the protection and development of all Holy Monasteries over the next twenty years. The programme is carried out in a common endeavour by all the Holy Monasteries, the Holy Community, acting as coordinator, and the State; a series of indispensable technical infrastructures have also been established, such as the Technical Services of the Holy Monasteries and of the Holy Community and the Mechanism of Technical Support and Preventive Control of the Holy Community, operating in parallel with the corresponding State services and agencies. The first period of 2000-2006 (which has been completed with the funding of the first phase of the Programme by the Third Community Support Framework in the amount of nearly eighty million Euros) focused on works of immediate urgency, mostly for restoration. Works were carried out under supervision of the Monasteries' Technical Services supported by the Mechanism of Technical Support of the Holy Community; they were monitored by the KEDAK and controlled by the Special Management Service of the Region of Central Macedonia.

For the current programmatic period of 2007-2013 the second phase of the 'Athos Programme'<sup>11</sup> includes an integrated action plan with a series of activities, apart from restoration. Priority is given to the use of renewable energy sources (sun, wind, water), construction of infrastructures for environmental protection and fire protection, protection and enhancement of the natural environment, its historic elements and its ecosystems, restoration and enhancement of the built environment of Karyes and Daphne as well as interventions for the protection and enhancement of the heirloom treasures and the development of the Athonite 'digital ark' (data bank).

Amongst the efforts and actions for protection of its built and natural environment, Mount Athos was integrated in the Natura 2000 network, always under reservation of its special regime. The first effective step of this endeavour was the elaboration of the Special Environmental Study (SES) of Mount Athos (see section 0.1), which was procured, funded and supervised by the Holy Community. The central objective of the SES was to determine the appropriate management measures to ensure the conservation of Mount Athos with all its constituent biotic and non-biotic factors, by means of promoting a model of local economic and social development that is compatible with the conservation of the environment. The framework for implementation of these measures is established by the abovementioned new Regulatory Decree '*For Scientific Exploitation and Safeguard of the Forests of the Athonite Peninsula and Protection of Sites and Habitats*'.

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<sup>11</sup> Which, however, lacks financial support for the time being.

Furthermore, in the context of integration of Mount Athos in the Natura 2000 network, and particularly in the framework of LIFE Programme, the Holy Community submitted a proposal for the restoration of the oak and holm oak forests (Project Code 03/NAT/GR/000093), a project successfully implemented with the collaboration of specialised scientists and the Hellenic Biotopes - Wetlands Centre (EKBY). More recently the Holy Community submitted a new proposal for the *'Application of best practices for management of Castanea Sativa 9260 forests of Mt Athos'* in the framework of LIFE+ 2007 Programme, which is currently pending (the most recent response has unfortunately been negative).

## **0.5 Contributors to the Preliminary Report**

The Preliminary Report at hand was elaborated under guidance of the Committee for Institutional Issues of the Holy Community, which consists of Archimandrite Iossif (Joseph), Abbot of the Holy Monastery of Xeropotamos, Archimandrite Elisaïos, Abbot of the Holy Monastery of Simonos Petra and Elder Hieromonk Photios of the Holy Monastery Gregoriou, supported by the Special Secretary of the Holy Community, Hieromonk Ioannis of the Holy Skete of Agia Anne. The latter also had duties of direct follow-up, coordination and contribution to particular issues, whilst the entire endeavour is coordinated by architect - planner and environmentalist Thymio Papayannis<sup>12</sup>.

The study team of this Report is comprised by the following professionals:

- Velis, Georgios, Honorary Vice President of Areios Pagos (Supreme Court of Appeal)
- Gounaris, Nikolaos, Forestry consultant of the Holy Community
- Keselopoulos, Anestis, Professor at the Aristotle University of Thessaloniki, School of Theology
- Kontos, Constantinos, Forestry consultant of the Holy Community
- Dafis, Spyridon, Professor Emeritus at the Aristotle University of Thessaloniki
- Papayannis, Thymio, Architect - planner, coordinator of the Study
- Robotis, Nikolaos, Legal advisor
- Sidiropoulos, Georgios, Architect - planner - geographer, Assistant Professor at the University of Aegean
- Tsiripidis, Ioannis, Lecturer at the Aristotle University of Thessaloniki, Biology Department
- Philippou, Ioannis, Forester, professor at the Aristotle University of Thessaloniki
- Psarras, Nikolaos, Chemical engineer, specialist in energy issues
- Zekkos, Constantinos, Civil and transportation engineer - environmentalist

All members of the study team have worked on a voluntary basis.

Mrs. Evgenia Geroussi, Ersi Brouskari and Vassiliki Dimitropoulou from the Ministry of Culture and Sports have provided valuable inputs concerning cultural heritage protection.

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<sup>12</sup> Appointed by the Holy Community, as were the rest of the Study Group, at the H C morning session of 3 March 2010.

## **1. Management of the natural and cultural heritage: Principles and objectives**

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It is indispensable that a multi-faceted and crucial study should be based on a clear set of principles and objectives; these should be drafted and then submitted to an open dialogue among all involved parties for a degree of consensus to be reached. The following principles and objectives are proposed for the integrated study of Mount Athos:

- a. Protection of the institutions of administration and operation of Mount Athos according to its ancient privileged regime and reinforcement of the active participation of its institutional agencies in establishing new regulations and decision-making in the framework of national and EU legislation. Similarly, active participation of Mount Athos' resident population in the area's management procedures.
- b. Restoration and enhancement of the area's architectural wealth in tandem with careful interventions for the scientifically documented conservation and restoration of the building infrastructures' viability.
- c. Conservation, safeguarding and enhancement of Mount Athos' cultural treasures as well as of the simple remnants of its thousand-year habitation and prayer.
- d. Protection of the landscape and preservation of the structure and composition of forests and other ecosystems, as well as increase of the biodiversity of the Mount (a Special Environmental Study has already been elaborated as mentioned before).
- e. Safeguarding the terrestrial and marine boundaries and air space. Their violation may threaten the order of monastic practice, geographic 'insulation' and abandonment of secular life, an indispensable condition for the continuation of monastic life in the Athonite Peninsula.
- f. Organization of technical infrastructures for adequate coverage of the needs of monks, visitors and workers, always within the framework of monastic asceticism, which is a determining aspect of the Mount's spiritual tradition, as well as for effectively dealing with the risks and consequences of natural disasters.
- g. Managing the arrival and accommodation of pilgrims according to the century-long traditions and principles of the monastic State, taking into account current circumstances (the Holy Community has total control of the matter, by operating its own pilgrim offices and managing maritime transportation).
- h. Applying the principles of sustainability and appropriate forest management techniques to achieve perpetual fulfilment of the monastic communities' needs (traditional wood-cutting and sustainable systematic cultivation methods already exist).
- i. Ecological water, energy, waste (solid and liquid) and territorial management.
- j. Effective coordination of all involved and interested parties, on the basis of commonly agreed principles and targets, aiming to reach the widest possible consensus, resolve in timely fashion any potential problems and disagreements and avoid excessive delays in the finalisation of the Study.

## 2. Management and intervention fields

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### 2.1 Analysis of the existing situation

The Study must begin with a critical analysis and evaluation of the present state, bearing in mind the coexistence of nature and spirituality/culture of Mount Athos since the end of the first millennium and the requirements of the Monastic Brotherhoods, as well as the dynamics of foreseeable developments. Particular attention should be paid to the following:

#### 2.1.1 Positive aspects

The Study should build on the following positive aspects (not in hierarchical order):

- Monastic brotherhoods' high degree of sensitisation in regard to the ecological issues of Mount Athos.
- Established common perception for collective management of ecological issues and appropriate mechanisms already in place under guidance of the Holy Community.
- Voluntary support of relevant initiatives by the Greek –as well as the international– scientific community.
- Existence of international know-how and experience for integrated management of sensitive areas of World Heritage.
- Positive stance by a large part of the Greek society and international appreciation for Mount Athos.
- Low degree of deterioration of the local environmental and cultural parameters.

#### 2.1.2 Issues and risks

On the other hand, Mount Athos faces significant issues and risks; *inter alia*:

- Effects of globalisation which are incompatible with the particularities and traditions of Mount Athos.
- Difficulties of the Greek State due to crisis incidents in assuming independent policies for Mount Athos.
- Necessity for an entirely special approach to the Mount in periods of sweeping change, such as the current conjuncture of crisis, by the incontrovertible confirmation and legal regulation of the Mount's customs and tax privileges, as provided for by the national Constitution, the Constitutional Charter of Mt Athos, Legislative Decree 10/16.9.1926, the Joint Statement of the European Union, etc. The opposite would constitute today the greatest threat to Mount Athos, posing dangers of decline and gradual degradation of the Holy Monasteries and subsequently risking cancellation and interruption of the spiritual, cultural and charitable work they exercise –that is, the very essence of the Athonite existence and tradition.
- Difficulties of dissemination and comprehension of fundamental monastic principles and traditions that have shaped and continue shaping the distinct identity and character (anthropogenic and natural) of the Athonite Peninsula.
- Effects of the flood of pilgrims on Athonite daily life.
- Necessity to incorporate modern technology in Mount Athos traditions, while mitigating its adverse effects.
- Risks for conservation of biodiversity and habitats by the intensification of human activities (road traffic, construction works, forest exploitation).
- Necessity to prevent alteration of forest ecosystems and degradation of biodiversity; need to improve forest management, both concerning chestnut trees and perennial broad-leaved trees.

- Need to promote awareness in regard to the implementation of the principles of sustainability.
- Deficiencies in human and financial resources.
- Necessity for timely foresight for effective handling of natural and man-made disasters (wildfires, earthquakes, effects of climate change).
- Increased needs for buildings, infrastructures and installations maintenance.

### 2.1.3 Human resources

Mount Athos population data vary through time and season; their geographic distribution is quite important as it may provide comparisons, distributions, densities and concentrations, constituting a fundamental management tool, while being an instrument for documentation.

The population record should contain the ‘mapping’ of the Athonite dependencies (within and outside Greek borders) that constitute the inviolable and organic continuation of the sovereign Athonite monasteries and interpret the history of the Peninsula.

### 2.1.4 Economic activities

Economic activities in the Athonite Peninsula have to be carefully analysed due to their particular nature. Hand-crafting ‘professions’ (such as iconography, incense production, candle chandler, wood-carving, silver craftsmanship, vestment tailoring, miniatures crafting, etc.) as well as traditional forest management, local Athonite construction techniques and more, do not only have an economic aspect, they also have strong cultural dimensions. Securing the continuation of traditional occupations and preserving the quality and authenticity of products constitute an indispensable intervention.

## **2.2 Land use and management**

The Management Study must also analyse land uses, aiming to define the appropriate regulations so as to avoid conflicting uses and deterioration of valuable features of the Athonite territory, as there are indications of land use changes<sup>13</sup>. Precise recording of current land uses is therefore necessary in the framework of the Study.

The Athonite Peninsula has particular definition of property borders, which is principally customary and administrative –while occasionally it is systematically mapped and implemented on the ground, mainly on the initiative of each Monastery. Consequently, an overall systematic recording remains to be carried out, perhaps as a centralised initiative, to which this Study could contribute decisively.

The first contemporary recording conducted by P. Mylonas<sup>14</sup> was of a procedural nature, as it depicts the borders of the Monasteries according to the natural characteristics of the terrain, considerably deviating from the actual boundaries.

The subsequent studies of the forest estates indirectly required mapping of the boundaries of individual monasteries (wherever and whenever possible) but without reaching a formal and complete overall record. Especially in the case of the ‘broader area of

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<sup>13</sup> Mainly the increase of *maquis* at the expense of broad-leaved forests.

<sup>14</sup> Mylonas, P. (1968), Study for the development of cultural and architectural elements of Mt Athos, Ministry of Coordination, Athens.

Karyes', with a dense traditional cadastral regime, its mapping and recording are the result of piecemeal research projects, leaving a lot of work yet to be done.

If desired and approved by the sovereign Holy Monasteries, systematic recording of geographic boundaries, despite whatever difficulties it may present, may constitute a useful element of spatial management and be included in the Study's proposals.

### 2.2.1 Natural environment

As a result of its particularly mountainous geomorphology, and the very low degree of anthropogenic impact, the Mt Athos Peninsula is characterised by the predominance of forests and wooded areas<sup>15</sup>, thus forming a web of zones of forest vegetation, diversified according to altitude, geographic location, relief and climatic conditions. There are no grazing grounds since stockbreeding is traditionally not practised and herds' entrance is prohibited, although there are types of alpine vegetation / pastures at the peak of the Mount. Water surfaces are very rare and are usually dammed. There is a multitude of landscapes of outstanding natural beauty and forests of significant ecological and productive value that have remained unscathed for centuries.

Consequently, the Athonite Peninsula has rich biodiversity, comprising of a significant number of species of flora protected by the Greek legislation and international conventions. According to Babalonas & Assoc. (1998) 1453 species and subspecies of Pteridophyta and Spermatophyta have been found on the Mount. A substantial percentage of these species and subspecies are endemic to the Athos Peninsula, Greece, the Balkans, as well as a broader area; on the Athos Peninsula specifically, 14 regional, 43 Greek and 70 Balkan endemic species have been identified. According to Tan & Iatrou (2001) Mount Athos constitutes one of the diversity hotspots of regional endemic species in Northern Greece. Moreover, a plethora of habitat types of Community Interest (Appendix 1 of Directive EEC/92/43) are found in Athos, including *Quercus frainetto* (Hungarian or Italian oak) and *Quercus ilex* (Holm oak)<sup>16</sup>, while the Black Pine (*Pinus nigra pallasiana*) appears sporadically in stands and thickets. In general, the species of flora in the area do not seem to be particularly threatened, as many of them grow in inaccessible spots on the Mount.

In the process of mapping the types of habitats of the Natura 2000 areas, Mount Athos had not been included in the areas to be mapped. It is absolutely necessary to map the types of habitats in Mt Athos, as this will assist in the rational and sustainable management of the Peninsula's forests, while it will complete the task of habitat mapping in Greece. Funding for this project could be sought by the Ministry of Environment, Energy and Climate Change.

On the other hand, the area's fauna is insufficiently studied, therefore its systematic research is a requirement of the Study. According to the data annexed to the Special Environmental Study of 2006 (deriving from older records and fieldwork):

- The avifauna of the Peninsula comprises of 173 species, 60% of which nest in the area, 29 belong to the endangered species of the 'Red Book' and 2 are considered endangered worldwide.
- Wild fauna (mammals) contains rare and endangered species (deer, boar, jackal, predators, marine mammals et al.), estimated at 41 species, 50% of which is included in the 'Red Book' of endangered species of Greek fauna.

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<sup>15</sup> Covering 93% of the total territory.

<sup>16</sup> The *Quercus ilex* forests of Mount Athos are at the optimum state of preservation for this type of ecosystem in Greece.

It should be noted that the 2006 SES provides a detailed record and management proposals for elements of the natural environment of Athos, thus constituting a valuable input for the integrated management of the area.

The 1997 census of vegetation, flora, fungi, fauna (including avifauna) published on the occasion of the Exhibition of Mount Athos Treasures in Thessaloniki in 1998 should also be taken into consideration.

Evaluation of the productive potential of forests may be part of the Study's scope, providing guidelines for protection and conservation within a framework of general and specific management measures.

### 2.2.2 Cultivations

Cultivated areas represent a minor percentage –approx. 4%– of the total territory of Mt Athos. Oleiculture and viniculture are the predominant cultivations. Vegetable gardens and fields are found around Monasteries and Sketes, used to produce foodstuffs. However, a significant percentage of cultivations has been abandoned, resulting in its gradual replacement by wild vegetation. Promoting environmentally friendly agricultural practices, by limiting pesticide use and water wastage, should form one of the Study's main objectives. The preservation and use of local varieties and their respective seeds is of particular importance too.

### 2.2.3 Buildings and surroundings

The built-up environment of Mount Athos comprises of the complexes of the twenty Holy Monasteries<sup>17</sup> and a large number of clusters ('sketes'), hermitages ('cells'), huts ('kalyves'), retreats ('hesychasteria') and residences ('kathismata'). The buildings have undergone significant modifications over time, due to the area's continuous human presence, with older buildings being replaced or new ones being added during different periods. As a result, the monasteries we see today are building complexes of huge morphological wealth, characterised by the coexistence of heterogeneous elements which nonetheless form a harmonious whole. Buildings occupy a very small portion of the territory and there are very few new constructions, since most works involve maintenance and renovation of the existing buildings of the Holy Monasteries<sup>18</sup>.

Adaptation to local conditions is the undoubted characteristic of the Mount's architecture; beyond their monumental value as architectural works of art, the complexes of the twenty Holy Monasteries and their dependencies are characterised by their harmonious integration in the broader natural, wooded or forested, landscape –the latter having remained almost unaltered over time as a result of the monastic way of life. In this respect, particular attention has to be paid in regard to the management of the natural environment (road construction, vehicle traffic, etc.) and the restoration of monuments, as well as in managing the growing number of visitors - pilgrims or even to the use of new technologies in general, so as not to affect the form and pace of life of the monastic community by contemporary social life. Therefore, respect for landscape scale and character, and for the architectural and morphological tradition of the Athonite Peninsula, along with the wise use of construction materials, should constitute the design principles for all new constructions, including technical infrastructures and power production installations. Already, the Mount Athos Constitutional Charter provides that any

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<sup>17</sup> See Appendix 1.

<sup>18</sup> Works of more than 150 million Euros have been carried out during the past two decades for conservation, restoration and maintenance of the Mount's architectural heritage and infrastructures.

new construction is subject to accord by the respective Holy Monastery and must be approved by the Holy Community which examines proposals in detail (inspection and monitoring of the preliminary design study), whilst the final design study is approved by KEDAK.

Particular emphasis is given to the re-use of existing buildings so as to avoid, if possible, new constructions, but also to the historical study and documentation for all interventions in older buildings.

The possibility for systematic recording of all constructions in Athos using modern techniques should be examined in the framework of the Study, building on the findings of significant –albeit usually piecemeal– endeavours carried out in the past by distinguished architects<sup>19</sup> and archaeologists. Architectural schools could contribute decisively to this difficult task.

#### 2.2.4 Infrastructures (artisan workshops; reservoirs; power production installations; port services et al.)

Recording existing installations of technical infrastructures is an important element of analysis of the Study, since it directly affects the spatial distribution of inland transport in the Peninsula. This investigation will indicate needs for improving transport and other infrastructures, developing new facilities, as well as removing incompatible or non-functional installations.

#### 2.2.5 Other activities (quarries and processing facilities for wood and farming products)

The Study will attempt to record existing stone-quarrying sites and define areas for extraction of stones and rocks. In addition, it will describe, analyse and assess processing facilities (e.g. sawmills, olive presses, wine distilleries et al.).

### **2.3 Transport and communications system**

In terms of accessibility, the Athonite Peninsula is considered an island, so as to secure its quietist and spiritual nature. It can be approached only by sea, with morning departures from Ouranopolis serving the Peninsula's west side and from Ierissos for the eastern part. Most monasteries have a jetty-harbour to service visitor access and transport of goods. Special regulations restrict the maximum number of visitors at 120 people per day, thus daily transport to and from Athos is limited to 200-300 persons, including collaborators and workers at the monasteries. However, despite these measures, there are periods when the number of visitors significantly increases (religious feasts, Saints' Days, special pilgrimages).

For the needs of the Study it is necessary to record the volume of transport of people and –mainly– goods to and from Mt Athos as well as inside the Peninsula, so as to determine the current level of service. Integrated analysis and assessment of the existing condition of the transport system aims to identify crucial issues/problems and ongoing trends, in order to enable forecasting of future needs and support proposals for improving port and road infrastructures.

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<sup>19</sup> For example, architectural plottings of the Holy Monasteries carried out by Professor Pavlos Mylonas are filed in the archive of architectural heritage of the Benaki Museum in Athens.

Studying the traditional transport network may provide guidance and assistance for future transport planning. Furthermore, its maintenance and enhancement may serve to complement as well as to provide an alternative option to the modern network. To this end, existing records of footpaths and bridges will provide valuable input.

In any case, all proposals to resolve current problems and effectively respond to future transport needs (as these will be identified in the framework of the Study), must be designed to minimize impacts on the monastic life, the landscape and the environment of the Peninsula, while being integrated in the fire protection plan (see chapter 2.9.1).

Furthermore, it is necessary to take into account the special regulations for access and transport provided in the Regulatory Decrees (entrance of vehicles, opening forest roads, maritime and air access, etc).

### 2.3.1 Estimate of transport needs (passengers and freight)

Analysis of current land uses and activities, in relation to current data and existing Regulatory Decrees, will assist to determine future needs for passenger and freight transport and propose the necessary corrective / complementary interventions.

### 2.3.2 Maritime transport

The Holy Community has long been studying and evaluating the issue of maritime transport. The experience acquired so far may form the basis and main axis for evaluating the system of sea gates of the Athonite Peninsula, regarding the adequacy and maintenance needs of port infrastructures. Building on conclusions from previous extensive discussions on the matter, the operational status of transportation agencies serving Mount Athos will be examined regarding their efficiency and terms of operational viability. The objective is to ensure satisfactory conditions of service for the maritime transport –which constitutes the most appropriate transport sub-system to serve the requirements of the monastic community simultaneously safeguarding the natural environment and landscape– drawing on conclusions from the broad ongoing dialogue conducted within the Holy Community.

### 2.3.3 Terrestrial transport

Inland terrestrial transport applies only to intra-regional connections, since those to areas outside Athos (the ‘world’) are prohibited. Analysing current transport volumes (persons and goods) will facilitate assessment of the adequacy of existing road infrastructure, identification of problems and missing links.

Particularly problematic is the poor condition of road surface on nearly all parts of the network (mud in the winter and dust in the summer) as well as severe erosion due to heavy rainfall.

The final proposals for improvement and additions to the existing network will take into account the abovementioned design principles and objectives, as well as the requirements for protection against natural hazards (wildfires, earthquakes, landslides, floods, etc.) defined by the Study (see chapter 2.9.1). In any case, opening new roads should be avoided and making optimum use of the existing network should be targeted. A significant input to this end will be the database and classification of the forest road network already conducted by the Athonite State.

All appropriate solutions for the renovation / replacement of the vehicle fleet will also be examined.

#### 2.3.4 Approach by air

The particular character of Mount Athos and international visiting interest dictate the need to ensure sufficient access by air, especially concerning VIPs who frequently visit the area. Approach by air will have to be examined in the framework of the existing Regulatory Decree which prohibits aerial access and associated facilities, aiming to minimise required infrastructures while maximising ease of access.

#### 2.3.5 Communications

The latest forms of IT networks –digital and analogue (for consultation, publications, Internet promotion of the Monasteries and the Holy Supervision et al.) will have to be studied. There is scepticism concerning whether or not to examine the feasibility of (systematic or partial) digital communication of Mount Athos through the Web with international and State services and organizations, as well as with ordinary visiting citizens and pilgrims. Irrespective thereof, the functionality of Internet services planned to be developed by relevant companies needs to be evaluated.

### **2.4 Forest management**

The overall objective should be to promote sustainable forest management, improving management methods, examining the possibility of international accreditation and assessing costs and benefits, while taking into account biodiversity conservation as well as traditional forms of forest exploitation and the cultural values they contain.

The key problem is the mutation of all perennial and deciduous broad-leaved forests from seedling to coppiced type of reproduction, due to the latter's short cycle length. Efforts should be made to gradually restore coppiced perennial broad-leaved forests and oak forests by seeding and to increase current cycle length of chestnuts.

The following issues could be examined in the Study:

- Evolution of forest structure and cover.
- Evaluation and management and protection measures of the natural ecosystems and biodiversity.
- Conservation and enhancement of the agro-forestry landscape (according inter alia to the European Landscape Convention).
- Description, assessment and organisation of technical infrastructures to adequately cover the requirements of monks, visitors and workers while protecting the environment.
- Application of the principles of sustainability for all productive activities and especially in forestry.
- Organisation, operation and problems of existing forest exploitations, including examination of the possibility to establish a system of certification, aiming to support sustainable forest management and to increase financial benefits from forestry.
- Organisation and modernisation of wood-processing installations; rational and full utilization of forest produce.
- Analysis and management of the primary sector of production.
- Management and protection of water and soil resources.

## **2.5 Biodiversity conservation**

The Study should include a cohesive framework of proposals for the conservation of the Mount's significant biodiversity (rare, endangered and endemic species and ecosystems). The 2006 Special Environmental Study will constitute the principal input for the formulation of the relevant proposals. These should include proposals for monitoring the state of conservation of habitats in accordance to Directive EEC/92/43 so as to adjust management measures to the general objective of biodiversity conservation.

## **2.6 Cultural landscapes**

The harmonious co-existence of the built environment –the unique architecture of Mount Athos– with the impressive and diverse natural relief, the limited degree of human intervention and the particular spirituality of the place, render the Athonite Peninsula as one of the most distinctive and significant cultural landscapes of Greece and Europe. Protection of the Mount as cultural landscape, according to the directions of UNESCO and the European Landscape Convention (Florence Convention)<sup>20</sup>, including restoration proposals for deteriorated sites, will be a principal objective of the Study.

In this context it would be quite useful to synthesise the existing extensive knowledge of the cultural heritage of Mount Athos; i.e. immovable (architectural) and moveable (heirlooms) monuments, highlighting the need to promote an integrated plan for their restoration.

## **2.7 Technical infrastructure networks (water supply, wastewater treatment, waste management)**

Regular and adequate supply of the Monasteries in potable water of good quality, wastewater treatment based on modern methods of hygiene and environmental protection, as well as integrated waste management, are key issues that need to be addressed by the Study. As current needs have not yet been adequately recorded, it is necessary to defined them in precision and assess their future evolution so as to set the basis for proposing the required solutions in the framework of sustainability. Management plans and studies already carried out will be used as input and ways of implementation will be sought.

### ***2.7.1 Water supply***

Water supply is usually drawn from springs and wells. Local water is of good quality and all the Monasteries have abundant springs at a reasonable distance. The Study will determine the available water resources and make proposals for their optimum management.

Oral traditions and traditional methods of water pumping constitute key elements of the Athonite cultural heritage, and should thus be recorded in the framework of the Study.

### ***2.7.2 Wastewater treatment***

Wastewater treatment is of particular importance so as to prevent disposal in torrents and streams and minimise pollution of freshwater resources and, eventually, seawater.

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<sup>20</sup> See Law 3827/2010, Govt. Gazette issue 30A/25.02.2010.

Low quantities of liquid waste produced, in relation to the large size of the receiving surface, permits natural self-regulation of the local ecosystems, although in some cases there is a possible saturation of the capacity for self-cleaning, and the creation of modern systems will clearly have to be promoted. An extensive relevant discussion has already begun in regard to the proposals made by the Holy Community for funding by the Operational Programme 'Environment and Sustainable Development' of the Ministry of Environment, Energy and Climate Change.

The possibility to construct small treatment facilities in monasteries or sketes will also have to be examined, with emphasis to water recycling for irrigation and other uses.

### **2.7.3 Waste management**

Similar principles should apply for solid waste management. The Holy Community has already drafted the study for an integrated management system, which has been approved by KEDAK and incorporated in the regional management system of Central Macedonia. Following relevant call for proposals, the study has been assigned and approved, and the project awaits its incorporation for funding in the Operational Programme 'Environment and Sustainable Development'.

## **2.8 Power production and consumption**

Mount Athos is not connected to the main grid (operated by the Public Power Corporation), for reasons directly relating to its special regime and its quietist and spiritual character (i.e. avoiding opening of new roads).

Thus, Monasteries are largely deprived of electricity, both for lighting and operating domestic appliances as well as machinery (olive presses, furnaces, wood-processing machinery et al). Monasteries use fuel-powered electric generators, for lighting certain essential spaces and only for a few hours, or in special occasions (Saints' Days). A small portion of energy consumption is now covered by renewable energy sources.

A special section of the Study will be devoted to finding and implementing solutions for optimising power production systems in the Mount, with particular emphasis to protect the natural environment and landscape. The optimum solution is to achieve full coverage of consumption needs by renewable energy sources<sup>21</sup> and cease the operation of conventional systems currently in use.

Article 12 of Law 3851/2010 provides the necessary framework for renewable energy sources development on Mount Athos. An integrated study for photovoltaic installations development is already in place and will be promoted for implementation in the framework of the Study, taking into account the regulations of Law 3851/2010.

### **2.8.1 Production of electricity from renewable energy sources**

The required electric energy can be produced by local photovoltaic installations<sup>22</sup>. Application of such systems has great potential in Greece, due to high level of sunshine

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<sup>21</sup> Renewable energy sources are non-fossil energy sources, i.e. wind, solar and geothermal energy, waves and tidal energy, hydroelectric energy, and energy produced by biogases, as defined in Directive EC/2001/77.

<sup>22</sup> Photovoltaic systems transform solar radiation into electric energy. A photovoltaic system can be completely independent of the main grid.

on a year-round basis. The Holy Community has already prepared an integrated study for photovoltaic systems installation which awaits approval by the KEDAK.

Hydroelectric energy is another alternative for power production. Hydroelectric energy is produced by hydroelectric plants or small-scale hydroelectric installations. The major advantage of small-scale installations is the continuous flow of water, which renders redundant the construction of large water reservoirs and dams that would have a negative impact on the natural environment and landscape. According to the findings of 2006 Special Environmental Study, the available hydrodynamic permits such interventions for power production at a number of Monasteries, however the lack of funding remains the biggest obstacle for their implementation.

### 2.8.2 Saving energy - Improving efficiency of conventional energy sources

The key objective for the design of the Mount Athos air-conditioning system is to achieve complete independence from fossil fuel and conventional energy sources in general<sup>23</sup>. Particular attention should be given to ensure satisfactory living conditions in winter (heating) and conservation of the heirlooms (manuscripts, frescoes et al.) in summer (cooling system). Redesign of buildings' air-conditioning systems through their inclusion in a very high energy efficiency class, will contribute substantially to mitigating environmental pollution, reducing consumption of fossil fuels and, of course, of operational costs.

Concerning existing buildings, significant interventions and modifications can be made to improve efficiency of existing systems. In the few cases of newly erected constructions, new air-conditioning systems can be designed, exclusively dependent on renewable energy. Additionally, architectural design could be able to achieve passive heating and cooling (by means of e.g. correct placing of glass panels, proper insulation, shading, natural ventilation, etc.) minimising thermal losses in winter and cooling requirements in summer.

Use of geothermal energy in a number of buildings is also feasible<sup>24</sup>. This can ensure heating and cooling of the building's spaces as well as covering the requirements in hot water with reduced demands in electricity, achieving complete autonomy from any conventional system in use today. Geothermal energy will also contribute decisively in reducing pollution in agriculture, due to reduced demand for electricity and lower emissions of CO<sub>2</sub> (carbon dioxide) and NO<sub>x</sub> (nitrogen oxides).

## **2.9 Natural hazards management**

Study objectives include improved management of natural hazards, particularly wildfires and earthquakes, as well as the possible impacts of climate change that already appear to be accelerating. The participation of expert consultants may be required, due to limited expertise in regard to some of these threats.

### 2.9.1 Fire protection (forests and buildings)

The wildfire that consumed 22,000 sq m of forest vegetation and threatened Monasteries and sketes with total destruction in 1990, raised considerable concern to the need

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<sup>23</sup> It should be noted that this goal has been set for all buildings of the Greek territory, according to the new regulation for energy efficiency of buildings (KENAK).

<sup>24</sup> Geothermal is the energy stored in geological and rock formations in the Earth's crust. Surface geothermal systems, as the one proposed here, utilize solar power stored in the upper levels of the ground, aiming to cover heating, cooling and hot water needs of a building.

for fire protection of the Mount; it is now a priority to initiate an integrated fire protection plan, emphasizing on the coordination between the Fire Brigade and the Monasteries. This was emphatically confirmed by the great fire in August 2012 that swept the area towards the borders of Mt Athos. The plan has to cover the forests as well as the building complexes of the monasteries and their surrounding spaces.

On the other hand, the considerable number of forest roads opened after 1980 generally do not meet appropriate design principles. Obviously, the structure, operation and improvement/maintenance needs of the road network need to be re-examined, aiming to mitigate adverse environmental impacts and addressing the effective operation of the fire protection plan. The Study should particularly investigate missing links and unnecessary connections in the existing network.

It should be noted that the Forestry Department, assisted by its consultants, elaborated in 2010 a study to improve efficiency of firefighting protection and crisis management in Athos. During the first phase of this study (which concerned road signage), the total road network of Athos was recorded and classified into primary, secondary and tertiary, for the first time.

The Study will take into account findings from the abovementioned project, further examining the following:

- a. Analysis of the present condition of forests and of historical data for fire outbreaks, drafting fire fighting scenarios and strategies.
- b. Current operation and possible expansion/improvement of the road network based on the above scenarios, aiming to ensure unhampered access to key points of the network and facilitate access of fire trucks.
- c. Planning a network of fire protection zones for fire containment in appropriate places according to the geomorphology of the terrain and the predictions of the scenarios.
- d. Optimise allocation of the Monasteries' fire-fighting equipment so as to ensure effective surveillance of the territory and timely intervention when necessary.
- e. Allocation of the network of water reservoirs so as to ensure unhampered supply of fire-fighting means in case of fire; a sufficient number of reservoirs should be open-air to facilitate access of fire-fighting helicopters; construction of micro-reservoirs could also be examined, as it may additionally contribute to the protection of species and/or enrichment of underground water resources.
- f. Definition of fire prevention measures, particularly in the surroundings of the Monasteries, so as to maximise fire protection and minimise cases of confusion in interventions by the Fire Brigade.
- g. Provide basic training to the monks, so that they are able to contribute more effectively in the fire-fighting process.
- h. Training and familiarisation of firemen with the natural setting of the Mount and estimation of possible needs to produce the relative mapping material.
- i. Installation of modern communications systems, compatible with those used by the Fire Brigade (e.g. TETRA system).

Additionally, a cost-benefit analysis for installation of automatic surveillance systems should be further considered; although these systems often prove ineffective, the particular conditions of Mount Athos may render their use especially effective.

Relevant discussions held and studies carried out by the Forest Department of the Holy Community will, in any case, be taken into consideration.

### 2.9.2 Seismic protection

The study by Professor V. Papazahos, published in the proceedings of a conference for the environment of Mount Athos in 1998, contains valuable data on the subject. Additionally, data from an ongoing study concerning faults in the region of Mount Athos will be used, provided these are available.

The Athonite Peninsula is surrounded by seismic faults of diverse directions and depth, and has a history of intense seismic activity. A few typical earthquakes, such as the 7.2 R in 1931, with Ierissos as the epicentre caused serious structural damages in many buildings.

The most vulnerable constructions are the supporting walls, technical road-works and the Monasteries' building parts, especially ones that have not yet been restored.

Seismic analysis of the buildings must take into consideration the general and specific parameters that characterize the Athonite Peninsula, in accordance to the National Anti-Seismic Regulation (EAK). It must be noted that the buildings of the monasteries are classified in the highest scale of seismic significance index<sup>25</sup>, due to their significant operational, aesthetic, symbolic, structural and financial value.

Furthermore, possible risks of precipitations and landslides, whether from seismic activity or intense rainfall, should be investigated and respective protection measures should be proposed.

### 2.9.3 Other threats from anthropogenic factors

The Study should highlight dangers by large-scale activities of potential environmental impact in the wider area that influences the natural environment of Mt Athos; that is, both inside the borders of the Athonite State, and in the adjacent territory which is also under special protection regime.

In this context, it is of vital importance to assess potential impacts –terrestrial, underground, marine and submarine– in and out of Mt Athos, from the planned gold mining activity in the wider area.

### 2.9.4 Adaptation to climate change

Soil and climatic conditions of Mt Athos as well as the traditional, rational and mild management by the monks, which prioritizes coverage of local needs, have contributed to the conservation of forests in a good state. The 'healthy' forest ecosystems of the area constitute the most significant guarantee against negative impacts of climate change.

#### *a. Impacts on the water cycle*

Climate change has a significant effect on the water cycle, altering its seasonableness and intensification of precipitations, altering the rhythm of evapotranspiration, increasing the seasonal needs in water use for agriculture, etc. The Study should estimate the magnitude of these potential impacts on both surface and subterranean waters, and suggest advisable management practices. These could, among other things, include construction of membrane reservoirs, implementation of infrastructures for enrichment of the aquifer, modification of certain agricultural practices, and so forth.

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<sup>25</sup> Category S4 with an index of  $g_1=1.30$ .

### *b. Forest adaptation*

Climate change creates an additional high risk of wildfires, further contributing to the already disturbed ecologic equilibrium. The Study should include an examination of those potential impacts, and suggest appropriate solutions for adaptation. The following are indicatively noted:

- Risk analysis of potential proliferation of fungi or other pathogeneses that could lead to extensive desiccation of trees:
  - o case studies from similar areas of Greece and abroad
  - o a monitoring system, and
  - o drafting an indicative list of possible approaches for dealing with them
- Analysis of possible impacts from cases of drought as well as of the intensity of the above fungus infections or desiccation of trees.
- Estimate of the possible increase of fire risk, and extension of the high risk period, and drafting relevant scenarios mentioned in section 2.9.1 above.
- Extension of extreme flooding risks.

### *c. Impacts on biodiversity*

The impacts of climate change on the species of fauna and flora of Greece have hardly been scrutinized, and what estimates have been made are based mainly on scientific hypotheses, and results of research conducted abroad. Combined with the study of the biodiversity mentioned earlier, the Study should examine experiences in similar ecosystems, conduct valid hypotheses, and propose specifications for further investigation on the issue. Particular attention should be given to those species proven to be especially vulnerable to climate change, or are to be found at the limits of their expansion south in the area under study. It would be wise to include a monitoring programme for modifications in flora.

### *d. Rising sea level*

The possible future rise of the sea level could affect the operation of certain ports. Ports will need to be examined as to their structural characteristics and sensitivity to such changes, and suitable measures should be proposed for their future management and protection.

## **2.10 Administrative management measures**

Mount Athos has a system of administration at a collective level (Holy Community; Holy Supervision; Holy Assembly; Assemblies of Elders), as provided by its Constitutional Charter. The Study should examine the collaboration of Mt Athos with the State Administration and the Mount's involvement in concerning issues, by setting up Committees, proposing programmatic agreements, etc. Setting initiatives within the Holy Community under supervision of specialised committees in various fields, is also something that will be examined by the Study, aiming to improve efficient management of the increasing issues.

### **2.10.1 Competencies**

As previously mentioned, the Holy Community has assigned the care for promotion of the Study to a special committee. Additional contributions which would further elaborate the content of the Study may also be sought.

### **2.10.2 Collaboration with State authorities**

Achievement of a harmonious collaboration with the competent State authorities is a key objective, both for drafting the integrated management plan and for implementing its plans and proposals, always in the framework of regulations which consolidate the Mount's special self-governance status.

### **2.10.3 Scientific and technical support**

The cooperation of scientific and research institutions in support of the initiatives of the Holy Community may be taken for granted. The feasibility to coordinate such contributions could be examined, concerning not only Mount Athos but the entire scope of Christian Orthodoxy.

The establishment of a Mount Athos GIS (Geographic Information System) for all stages of the management work may be examined, although there is some scepticism to the issue. Nonetheless, such a system would constitute a basis for spatial analysis, as well as a tool for mapping and visual representation of the existing situation and planned interventions.

### **2.10.4 Monitoring and implementation**

Following approval of the Study by the competent authorities, the Holy Community may examine proposals for monitoring the procedures of implementation as well as any necessary interventions for the application of the Study's regulations. The Holy Community can set a systematic mechanism to monitor the results of application of the Study's propositions as well as of its revision process.

The Study will include alternative suggestions for the appropriate mechanism, to be discussed within the Holy Community.

### **3. Organisational issues of the integrated management Study**

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The terms of assignment of the Study is largely dependent on the principal funding source and the procedures it will impose. However, irrespective of the assignment procedures, there is series of issues that have to be agreed upon in advance and approved by the Holy Community.

#### **3.1 Composition of the Study Team**

The Study Team will consist of the scientific team of elaboration and the supervising committee.

##### ***3.1.1 Scientific team (coordination, specialists, foreign consultants)***

The scientific team should at least be comprised of the following specialists:

- Team leader: a spatial planner with experience in management of complex and delicate areas.
- A qualified specialist in forest management, sustainability and certification of forest produce.
- A qualified specialist with experience in natural ecosystems management.
- A qualified specialist in environmental issues.
- An architect specialized in the restoration of historic buildings.
- A landscape architect.
- An archaeologist specialized in byzantine studies.
- A transport engineer.
- An engineer or environmentalist specialized in environmental management technologies.
- An M&E (Electrical-Mechanical) engineer specialized in energy issues and particularly in renewable sources.
- An economist with experience in cost-benefit analyses.
- A geographer specialized in historic geography.
- A qualified specialist in GIS mapping.
- A qualified specialist in issues of cultural heritage.
- A qualified specialist in issues of spiritual heritage.
- A fire-protection specialist.
- A legal advisor - constitutionalist.

Knowledge of the existing conditions of the Athonite Peninsula by each member of the team will be particularly evaluated. The team should consist of core members and specialized consultants, Greeks or foreigners, for specialised issues.

##### ***3.1.2 Supervision***

It is proposed that monitoring of the Study is initially undertaken by the Committee of the Holy Community, in partnership with the Special Secretary and the coordinator of the project, Mr. Thymio Papayannis.

If this succeeds, a mixed working group may subsequently be formed, with participants from all competent ministries; furthermore, the international interdisciplinary workshop that has been proposed may be organised.

## **3.2 Methodological guidelines**

Proposals for undertaking the Study should include detailed guidelines on the methodology to be followed in case of assignment. The three following crucial points should be included:

### **3.2.1 Integrated approach to the management of the Athos Peninsula**

Contrary to usual management studies, the present Study seeks an holistic and integrated approach, which will examine interrelations between sectoral issues to achieve positive synergies, so as to draw concrete proposals for the sectors as a whole.

### **3.2.2 Interdisciplinary collaboration for conservation of the spiritual, cultural and natural heritage of Mount Athos**

Given that the spiritual, cultural and natural heritage are interconnected, their conservation requires an interdisciplinary in depth and of essence collaboration among all those involved. Responsibility lies with the team leader, who has to ensure the correlation of facts and figures, pinpoint the correlations and drafting of integrated management proposals.

### **3.2.3 Programming and implementation of participatory procedures**

The Study should not be seen as a purely scientific exercise, but rather as a management process for a particularly fragile and valuable area. A determining element for its success is the active participation of all who can contribute, either by position or out of interest.

## **3.3 Consultation and participatory procedures**

As also mentioned in Chapter 1, the Study may be conducted with constant briefing and consultation between all interested and involved parties (monastic brotherhoods, Holy Community) and support by the competent authorities and consultants.

It would be advisable for each Monastery to appoint a representative to serve as a link with the study team and who would facilitate the flow of information and formulation of views.

## **3.4 Time scheduling**

Completion and approval of the Study by September 2014.

### **3.4.1 Stages of the Study**

#### ***a. Preliminary report and specifications***

The present preliminary report, comprising of the essential specifications for the Study was initially submitted at the end of 2010, followed by two years of refining and finalisation.

#### ***b. Approval of preliminary Study and securing funding***

Following expected acceptance of the preliminary Study by the Holy Community, actions to secure funding will commence immediately.

*c. Assignment of the integrated Study*

When the above actions are concluded, the process for assignment of the Study will commence immediately.

*d. Analysis of existing situation*

The Study Team will subsequently proceed to collection and cross-checking of facts and data, analysis of existing problems and estimate future trends and prospects. The definition of all important issues to be analysed in the Study is to be the principal aim of the task in hand.

*e. Study proposals*

The next phase will be the formulation of concrete proposals, regulations and measures for the solution of problems and integrated management of Mount Athos heritage.

*f. Consultation phases*

This significant process has two stages; the first stage after completion of the analysis and the second upon submission of the proposals.

*g. Incorporation of the results of consultation*

The outcome of the consultation process will be taken into consideration by the Study Team, which will then proceed to the necessary amendments of proposals. The final text of the Study will thus result, accompanied by the corresponding tables, maps and plans.

**3.4.2 Approval**

The time required for approval of the Study cannot be precisely determined.

*a. By the Holy Community*

The Holy Community is the decisive agency for all issues concerning this Study and will be called upon to give the final approval of the Study.

*b. By the KEDAK and by the Ministries of Culture and Sports, and of the Environment, Energy and Climate Change*

Consent by competent State agencies will also be required. However, simplification of formal procedures is of main concern, so as to avoid excessive loss of time.

*c. From UNESCO's World Heritage Committee*

Approbation by the WHC is advisable; to this end (following its approval) the Study will include a summary in English to be submitted to the World Heritage Committee.

### 3.4.3 Indicative timetable

	12/ 12	04/ 13	07/ 13	09/ 13	10/ 13	12/ 13	01/ 14	02- 12/14
Preliminary Report								
Approval and funding								
Assignment of the integrated Study								
Analysis of existing situation								
Study proposals								
Consultation phases								
Incorporation of the results of consultation								
Approval by the Holy Community								
Approval by the KEDAK and State authorities								
Approbation by WHC/UNESCO								

The procedures of consultation, approval and acceptance will have to be well programmed and in a sequential rather than linear way, so as to avoid excessive delays.

## 3.5 Financial details of the Study

### 3.5.1 Cost of the Study

A first estimate shows that the preparation of the Study will require about 70 man-months with the corresponding fees.

### 3.5.2 Funding sources

- a. EU funding
- b. State subsidies
- c. Private contributions
- d. UNESCO Agencies

Funding of the Study by Mt Athos own resources does not seem feasible. In view of the unfavourable economic situation of the State, it is evident that funding will have to be sought mainly from the private sector.

## 3.6 Promotion procedures

Following its approval, the Study may also include an action plan for implementation of the proposals and measures by the Holy Community. The action plan will prioritise interventions and include brief descriptions, implementation strategies, time scheduling and indicative budget details for each of them.

## Appendix 1: The twenty Holy Monasteries of Mount Athos

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Today there are twenty monasteries throughout the Athos peninsula to which other smaller monastic units, sketes, kellia and kathismata belong, creating a unique community. The twenty big monasteries of Mount Athos are:

1. **The Holy Monastery of Great Lavra:** it was founded by St. Athanasios the Athonite. The katholikon was built in 963 and decorated with frescoes by Theophanes in 1535, as was the refectory. The chapel of St. Nicholas, on the right of the katholikon, contains the only signed painting by Frangos Katelanos (1560).
2. **The Holy Monastery of Vatopedi:** it was built in the second half of the 10<sup>th</sup> century (ca. 972) by the monks Athanasios, Nikolaos and Antonios of Adriano-ple. Its katholikon contains the only wall mosaics on the Holy Mountain, while its frescoes (1312) are a major work of the Palaiologan renaissance. Some of the frescoes are attributed to the workshop of Manuel Panselinos.
3. **The Holy Monastery of Iviron:** it was built in the late 10<sup>th</sup> century by the monks Ioannes and Euthymios, from Georgia (Georgia was formerly called Iberia and its inhabitants Iberians, in Greek *Ivires*). The katholikon dates from the 10<sup>th</sup> century and its very noteworthy painted decoration (16<sup>th</sup> cent.) has been attributed to Frangos Katelanos.
4. **The Holy Monastery of Helandari:** it was founded in the 10<sup>th</sup> century. It was rebuilt in 1198 by the Serbian princes Stefan Nemanja and his son Rastko, as monks Symeon and Savvas. The frescoes in the katholikon (1318-1320), commissioned for the Monastery by the Serbian *kralj* (king) Stefan Uroš II Milutin, were painted by a fine artist, probably from Constantinople.
5. **The Holy Monastery of Dionysiou:** it was built in the 14<sup>th</sup> century by the monk St. Dionysios of Koryssos, near Kastoria. The frescoes in the katholikon were painted by Tzortzis in 1546.
6. **The Holy Monastery of Koutloumousiou:** it was founded before the 12<sup>th</sup> century. The katholikon was built in the 16<sup>th</sup> century and is decorated with frescoes dating from the middle of that century.
7. **The Holy Monastery of Pantokrator:** it was founded by two Byzantine dignitaries, Alexios and Ioannes, in the mid 14<sup>th</sup> century, and its katholikon is decorated with frescoes dating from the same century.
8. **The Holy Monastery of Xiropotamou:** it was founded in the late 10<sup>th</sup> century, probably by the monk Paul Xiropotaminos. The current katholikon was rebuilt in 1783.
9. **The Holy Monastery of Zographou:** it was founded in the 10<sup>th</sup> century by the brothers Moses, Aaron and John of Achrida (Ohrid). The current katholikon was built in 1801.
10. **The Holy Monastery of Dochiariou:** it was founded in the second half of the 10<sup>th</sup> century by Euthymios, a disciple of St. Athanasios the Athonite. The current katholikon was built in 1568 and decorated in the same year with frescoes, probably by Tzortzis.

11. **The Holy Monastery of Karakallou:** it was founded in the 11<sup>th</sup> century. The existing katholikon dates from the mid 16<sup>th</sup> century and was decorated with frescoes in the early 18<sup>th</sup> century.
12. **The Holy Monastery of Philotheou:** it was founded in the last quarter of the 10<sup>th</sup> century. The current katholikon was built before the middle of the 18<sup>th</sup> century and frescoed later.
13. **The Holy Monastery of Simonopetra:** the most audacious building on the Holy Mountain, is named after its founder, St. Simon the Hermit, who lived on Athos in the mid 13<sup>th</sup> century. The existing katholikon was built in the middle of the 16<sup>th</sup> century and renovated in the late 19<sup>th</sup> century.
14. **The Holy Monastery of Agios Pavlos:** it was founded in the second half of the 10<sup>th</sup> century by the monk Paul Xiropotaminos. The existing katholikon was built shortly before the middle of the 19<sup>th</sup> century.
15. **The Holy Monastery of Stavronikita:** it was built by Patriarch Jeremiah I in 1540 on the site of an earlier monastery dating from the 11<sup>th</sup> century. The frescoes in the katholikon and the refectory are by Theophanes (1546).
16. **The Holy Monastery of Xenophon:** it was founded in the 11<sup>th</sup> century. The old katholikon contains notable frescoes by the Cretan painter Antonios (1544). The new katholikon was built in the early 19<sup>th</sup> century.
17. **The Holy Monastery of Grigoriou:** it was founded in the 14<sup>th</sup> century. The current katholikon was built and decorated with frescoes after the middle of the 18<sup>th</sup> century.
18. **The Holy Monastery of Esphigmenou:** it was already in existence by the 10<sup>th</sup> century. The existing katholikon was built in 1810 on the site of an older church, and its frescoes were painted in 1811 and 1818.
19. **The Holy Monastery of Agios Panteleimon:** it was already in existence before the 13<sup>th</sup> century, when it was destroyed by fire. The existing katholikon was built in the early 19<sup>th</sup> century and is decorated with frescoes in the Russian style.
20. **The Holy Monastery of Konstamonitou:** it was founded in the 11<sup>th</sup> century. The present katholikon was built after the middle of the 19<sup>th</sup> century on the ruins of an older church.
21. Finally, Karyes is dominated by the **Church of the Protaton**, so called because it was the seat of Protos (First Minister) of Mount Athos. Built in the 10<sup>th</sup> century, it is decorated with exceptionally fine frescoes dated to the late 13<sup>th</sup> and early 14<sup>th</sup> centuries and attributed to Manuel Panselinos of Thessalonika.