



Strategic Framework

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

Study specifications

[draft for consultation and completion, August 2013]

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¹ Draft of the specifications prepared by architect - planners Thymio Papayannis and George Demetropoulos.

PART I: GENERAL INTRODUCTION

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1. Basic information

1.1 Context:

The Specifications included in the document below concern the preparation and approval of the integrated, multi-disciplinary study leading to the 'Strategic Framework for conservation and management of the cultural and natural heritage of Mt Athos'.

1.2 Definitions:

The following terms are used throughout the specifications and in the preparation of the study.

- Consultant: Multidisciplinary team of experts responsible for the preparation of the study, its presentation to the Supervision and appropriate fora, and incorporating their comments.
- MCS: Ministry of Culture and Sports (represented by the Directorate of Byzantine and Post-Byzantine Antiquities).
- Management: The integrated actions and measures required for achieving the goal of conserving and using wisely the cultural and natural heritage of a specific area.
- Outstanding Universal Values (OUV): Characteristics of a site recognised by UNESCO that justify its inclusion in the global list of World Heritage Sites.
- Preliminary Report: Document that includes the basic data and requirements for the preparation of the Study (see below); reviewed and approved by the Holy Community and the MCS.
- Study: The 'Strategic Framework for conservation and management of the cultural and natural heritage of Mt Athos'.
- Supervision: Joint committee representing the Holy Community of Mt Athos and the Ministry of Culture and Sports.
- World Heritage Site / Property: Area recognised by the World Heritage Convention of UNESCO for its OUV pertaining to natural or cultural or mixed aspects.

1.3 Scientific framework:

The preparation of the Study must take into account –beyond the appropriate national legislation– the following technical and scientific guidance:

- The Preliminary Report of the Study, as approved by the Holy Community and the Ministry of Culture and Sports (see Appendix I).
- European Commission guidance on the management and conservation of Natura 2000 areas, and in particular the Directives on Birds and Habitats².
- World Heritage Centre guidelines for the conservation of World Heritage Sites³, as well as those issued by IUCN⁴, ICOMOS⁵ and ICCROM⁶.

² Directive 2009/147/EC of the European Parliament and of the Council of 30 November 2009 on the conservation of wild birds (codified version of Directive 79/409/EEC as amended); Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora.

³ Available at: <http://whc.unesco.org/en/guidelines/>.

⁴ Available at: http://www.iucn.org/about/work/programmes/wcpa_worldheritage/resources/publications/ (see in particular: <http://data.iucn.org/dbtw-wpd/edocs/2008-077.pdf>; and <http://data.iucn.org/dbtw-wpd/edocs/2012-041.pdf>).

⁵ For an extended bibliographic list, see: http://www.icomos.org/centre_documentation/bib/Management_plans_bibliography.pdf.

- The results of the Kiev Symposium on World Heritage Sites managed by religious communities, organised by UNESCO in early November 2010.
- The proceedings of the three workshops (Montserrat, Ouranoupolis, Inari) organised by the Delos Initiative on sacred natural sites in technologically developed countries⁷.
- The findings and recommendations of the Special Environmental Study of Mount Athos, prepared and approved in 2006⁸.

1.4 Structure of the Specifications:

The Study Specifications have the following structure:

- Part I: General introduction
- Part II: Contents of the Study
 - o A. Analysis and assessment
 - o B. Proposals and recommendations
 - o C. Strategic Environmental Assessment
 - o D. Implementation framework / Action plan
- Part III: Required disciplines and experts of the Consultant's study team
- Part IV: Administrative and contractual aspects
- Appendix I: Preliminary Report (available as a separate booklet)

2. Basic principles

The Study must satisfy fully the basic principles agreed between the Holy Community of Mt Athos and the Ministry of Culture and Sports and endorsed by the World Heritage Centre of UNESCO during the workshop held in Thessaloniki on 29-30 August 2013. These principles have been included in the Preliminary Report that is attached to the Specifications as Appendix I.

Thus, the following principles and objectives have been adopted by all parties 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).

⁶ See in particular: http://www.iccrom.org/pdf/ICCROM_ICSO3_ReligiousHeritage_en.pdf.

⁷ Available at: <http://www.med-ina.org/delos/>.

⁸ Business Architects Consultants (2006), Special Environmental Study for Mount Athos (*in Greek*).

- 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. Organisation 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.

Acronyms

EAK	National Anti-seismic Regulation
EC	European Community
EEC	European Economic Community (prior to 1993)
ELSTAT	National Statistics Agency of Greece (formerly ESYE)
EU	European Union
ICCROM	International Centre for the Study of the Preservation and Restoration of Cultural Property
ICOMOS	International Council on Monuments and Sites
IT	Information Technology
IUCN	International Union for Conservation of Nature
KEDAK	Centre for Conservation of Mount Athos Heritage
KENAK	Regulation for energy efficiency of buildings
MCS	Ministry of Culture and Sports
OUV	Outstanding Universal Value, WHC
SEA	Strategic Environmental Assessment
SES	Special Environmental Study
UNESCO	United Nations Educational, Scientific and Cultural Organisation
WH	World Heritage
WHC	World Heritage Convention; World Heritage Centre; World Heritage Committee
WHS	World Heritage Site
WiMAX	Worldwide interoperability for Microwave Access

PART II: CONTENTS OF THE STUDY

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The contents of the Study, to be covered fully by the documents to be submitted by the Consultant, are specified as follows:

- Table of contents of the Study
- Annotated content requirements

Table of contents of the Study

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Annotated content requirements

A. Analysis and assessment

General guidance for Part A:

The spatial analysis should avoid detailed / excessive descriptions in every field under consideration, but rather provide a concrete assessment of key issues, by making best use of existing data sources. On the contrary, the analysis should be thorough in the case of issues of particular importance to the area, such as:

- (a) natural hazards (risk assessment and management);
- (b) heritage conservation and landscape protection (guidelines for restorations and any other type of works);
- (c) biodiversity protection and forest management (vegetation, species of fauna and flora, marine environment);
- (d) cadastral / land ownership issues;
- (e) external relations and management competencies;
- (f) capacity building.

Every chapter / section of Part A should conclude by summarising the relevant key issues and challenges, highlighting what needs to be changed / improved / restored / enhanced, and suggesting appropriate measures and required actions. These conclusions will feed into the respective chapters / sections of Part B, to help draft the general and specific guidelines per management field (in Step B.1), indicate alternative options (in Step B.2) and formulate the final proposal (in Step B.3).

0. Framework of the Study - Key issues - Principles and objectives

0.1 Background

Brief history of the endeavour at hand.

0.2 Challenges - Key issues

Describe the key issues making use of previous discussions and past studies; present the scope of the study (see also general guidance above).

0.3 Overarching institutional framework

Brief assessment of the challenges and obligations stemming from the relevant national and international (EU) legislation (focusing on environmental issues).

0.4 International experience

Analyse international know-how and experience; comparatively assess best-practice examples for integrated management of sensitive areas of World Heritage (including religious sites) from similar cases throughout the world.

Incorporate UNESCO / IUCN / ICOMOS / ICCROM guidelines.

0.5 Principles and objectives

Elaborate and finalise the list of principles and objectives, building on the Preliminary Report (see Appendix I), on national and EU legislation (as in 0.3 above) and international experience (as in 0.4 above).

Guidance: Incorporate elements of spirituality and tradition in all aspects of the assessment and proposals, at least where relevant (i.e. in reference to handcrafting, music, gastronomy).

0.6 Methodological and organisational issues

Describe the stages of the study, elaborating on the required supporting and/or parallel studies (incl. fieldwork) and the succession / interrelation of the different processes. Provide an associated detailed logical framework and time schedule.

Describe the organisational issues, building on the Preliminary Report proposals (Study team, Monitoring committee, process of review and approval, consultation process).

Explain how the study complies with the requirements of national and international legislation.

Explain how the proposed methodology and organisation responds to the key challenges (as identified in 0.2 above).

1. Administrative and management framework

1.1 Administrative structure and management competencies

Building on the Preliminary Report and other documents.

1.2 External relations and dependencies

Examine the relations and dependencies of Mt Athos with national authorities (focus on issues of collaboration and highlight deficiencies), with other Orthodox countries and with Athonite dependencies elsewhere in Greece and abroad.

Guidance: This section should focus on assessing challenges and deficiencies in relation to administrative management, financing, coordination, etc., particularly in relation to land management and environmental protection. It should also elaborate in terms of the organisational issues affecting the present Study, as well as the effective overall management of the territory in the future.

2. The wider study area

General guidance: This chapter should focus only on key issues and direct or indirect threats to Mt Athos in relation to its external environment. It will build on the revised Regional Spatial Plan of Central Macedonia and making reference to the wider area of Chalkidiki / Central Macedonia.

Map (scale 1:250,000) depicting: land uses in broad categories, major infrastructures, settlements, poles of productive activities, and a graphic representation of major external threats.

2.1 Socio-economic aspects

Brief description of the socio-economic character of the wider area and its trends. Focus on activities with potential impact on Mt Athos (see fishing in particular).

2.2 Natural environment and land uses

Brief description of the natural environment of the wider area and its condition / trends / pressures. Briefly assess existing (actual) land uses (using CORINE data and WWF studies) in conjunction with official zoning plans.

2.3 Planned developments and large-scale works

Focus on issues which are estimated to affect Mt Athos (see in particular the terrestrial, underground, marine and submarine impacts from the planned gold mining activity in Chalkidiki).

3. Socio-economic environment

3.1 Population and demographic data

Analyse population trends (based on ESYE/ELSTAT census 1991-2001-2011).

Distinguish and compare resident (monastic) and seasonal (laymen / workers) population; examine temporal and seasonal variations.

Analyse the spatial distribution / densities / concentrations.

'Map' Athonite dependencies (within and outside Greek borders).

Guidance: This section should synthesise on the data examined, so as to estimate peak populations and associated infrastructure needs (to feed into chapter 7); it should also examine if there are any specific needs according to the population origins.

Map (A3, graphic scale) depicting: the evolution of population by monastery between 1991-2011

3.2 Employment and economic activities

Overall and sectoral analysis (including sub-sectors) of employment and production (GDP, Gross Added Value) (1991-2001-2011).

Guidance: This section should focus on the economic, social, spiritual, traditional aspects of production; analysis of the spatial organisation of activities and assessment of their negative spatial / environmental impacts (and required remedial actions) to be made in chapter 4.

This section should also highlight the strong cultural dimension of various economic activities. Emphasis should be given on traditional 'professions', traditional practices and techniques with high biodiversity value and/or which may create synergies with other activities and have an extrovert potential (see quality farming products, hand-crafting ornaments and tools, icons, ecclesiastic music/psalms, cuisine etc.).

Map (A3, graphic scale) depicting: the evolution of employment by monastery and gross added value by sector between 1991-2011

3.2.1 General employment and economic data

Analyse and focus on major activities / sources of income of the area. Distinguish employment patterns between monks and laymen.

3.2.2 Primary sector

Apart from the overall employment record and economic performance data of the sector and sub-sectors, the analysis should particularly focus in:

a. Farming

Analyse trends in cultivations and products; distinguish between cultivations for local consumption and market-oriented products; describe particularities of the productive system and highlight traditional practices and techniques that need to be encouraged and further supported; assess the challenges and requirements (infrastructures, marketing mechanisms, etc.) for supporting market-oriented production (i.e. wine and oil production, herbs and medicinal plants); highlight potential synergies with other sectors (manufacturing, tourism).

b. Forestry

Analyse trends, distinguishing between timber and fuel wood. Analyse the economic impact of the activity (for local use and export). Examine the organisation and operation of existing forest exploitations, identifying problems and remedial actions (i.e. examine the organisation and required modernisation of wood-processing installations; promote the rational utilisation of forest produce). Describe and assess the possibility to establish a system of certification, aiming to support sustainable forest management and to increase financial benefits from forestry.

Note: Forest management issues (negative environmental impacts, traditional practices, successful remediation projects carried out in the past, future challenges etc.) to be examined in chapter 4.

3.2.3 Secondary sector

Apart from the overall employment record and economic performance data of the sector and sub-sectors, the analysis should particularly focus in:

- Traditional handcrafting 'professions' (such as iconography, incense production, candle chandler, wood-carving, silver craftsmanship, vestment tailoring, miniatures crafting, etc.): Analyse their trends and assess their potential in relation to tourism and marketing promotion, taking into account their spiritual implications.
- Manufacturing: Record existing processing facilities and artisan workshops; link with primary sector production; highlight current deficiencies, future possibilities and challenges.
- Construction and quarrying: Analyse construction needs / extraction volumes; assess the interrelation of the two activities, also by distinguishing between material for local use and export; identify potential illegal practices; describe traditional construction techniques.

3.2.4 Tertiary sector

Apart from the overall employment record and economic performance data of the sector and sub-sectors, the analysis should particularly examine:

- Administrative services and health facilities: Assess current deficiencies.

- Hotels and restaurants: Record existing facilities; provide visitor estimates focusing on peak periods and associated problems (to feed into chapter 7).
- Other: Commercial / souvenir / handcraft shops; food markets; book stores, etc.

4. Land use management and spatial organisation of productive activities

General guidance: This chapter should analyse the current spatial organisation of activities, emphasising on the assessment of their negative spatial / environmental impacts, and highlighting the required remedial actions. The analysis and assessment should be as much targeted around the key problems, and should highlight any existing or foreseeable land use conflicts (even from the operation of individual facilities), so as to facilitate the process of drafting the proposal and evaluating the scenarios. Where relevant, the analysis should refer to and highlight any implications / problems / conflicts in relation to the other chapters of the analysis (i.e. development of necessary technical infrastructures and their anticipated impacts on the landscape, etc.).

Chapters 4 and 7 to be accompanied by the basic A0 map of Part A (1:100,000 scale), combining elements of analysis and assessment. Tentative map contents:

1. Analysis

Natural relief (contours and altitude zones), water bodies and resources (rivers, torrents, springs, wetlands), detailed land uses, protection zones (officially designated or proposed by the 2006 SES), property borders of monasteries, all monastic complexes and dependencies, sites of productive activities (quarries and inertia disposal sites, processing facilities and workshops, administrative / tertiary sector poles), transport and technical infrastructures including any planned and previously proposed facilities (primary road network, other forest roads and walking paths; ports; waste disposal sites; reservoirs and pumping stations; fire fighting installations; energy infrastructures; communication installations, etc.).

2. Assessment

Environmentally and/or landscape degraded areas (including burnt and/or degraded/overexploited forests; degraded quarrying sites; polluted areas), abandoned cultivations, missing and/or inadequate transport infrastructures, etc).

4.1 General land uses

Record systematically the evolution of land uses during the past 20 years, using CORINE 1990-2000-2006 data in conjunction with the 2012 WWF study.

Guidance: Elaborate on the 2006 SES (which only provides a very brief overview) and focus on analysing qualitative indications of land use changes (such as the identified increase of *maquis* at the expense of broad-leaved forests). Provide comparisons between monasteries.

Map (A3, graphic scale) depicting: the evolution of land uses in general categories (using input from CORINE data [2000-2006] and a recent WWF study [1987-2007])

4.2 Ownership status and land management

Conduct, if agreed upon with all 20 monasteries, an overall systematic recording of property borders. Map all built structures (monasteries, sketes, etc.) (see also chapter 6).

Guidance: Build on the findings of previous studies (which include the studies of forest estates, the less accurate 1968 record of P. Mylonas, and several research projects for the 'broader area of Karyes', with its dense traditional cadastral regime). Verify and enhance these records using orthophotomaps and carrying out surveys on site (including interviews with monks).

4.3 Forests and forest management

Record the evolution of forest structure and cover over the past 20 years, using CORINE and WWF land cover data (the 2006 SES also provides a very detailed analysis of the different vegetation zones).

Guidance:

1. Examine identified problems (such as the increase of *maquis* at the expense of broad-leaved forests and the mutation of perennial and deciduous broad-leaved forests from seedling to coppiced type of reproduction); assess their implications for water and soil management; identify methods and practices to gradually restore coppiced perennial broad-leaved forests and oak forests by seeding and to increase current cycle length of chestnuts; assess the impacts of previously implemented restoration projects; examine their potential applicability on a wider scale and point out any required adaptations.
2. Evaluate the productive potential of forests taking into account the current prevailing practices, but also local traditional forms of forest exploitation and the cultural values they contain.
3. Examine the condition of the agro-forestry landscape; identify conservation and enhancement measures.

4.4 Agricultural land - cultivations

Record the evolution of olive tree cultivations and vineyards over the past 20 years; similarly, for vegetable gardens and fields around Monasteries and Sketes. Examine the degree of abandoned cultivations. Produce a systematic record of local varieties and their respective seeds. Analyse soil pollution (pesticide use) and estimate water wastage (indicating remedial actions).

4.5 Productive facilities

Describe and map existing productive / processing facilities (artisan workshops, processing facilities for wood and farming products [e.g. sawmills, timber processing installations, olive presses, wine distilleries, etc.], stone-quarrying sites, sites for disposal of inert material).

Guidance: Assess negative environmental impacts from the operation of facilities (degraded areas and/or individual sites) and identify corrective measures. Focus on negative landscape impacts from quarrying and disposal of inert material, highlighting priorities for restoration.

5. Natural environment and biodiversity

5.1 Current state of conservation of habitats and species

Map the types of habitats and assess their current state of conservation and major threats, focusing on terrestrial and marine habitats of Community Interest (Appendix 1 of Directive EEC/92/43).

Similarly, record and assess the condition, evolution and threats to fauna and flora species, with particular focus on rare, endemic and endangered species.

Note: Habitat mapping and recording of the state of species of fauna and flora is a specialised task that involves significant on site survey. It will be launched as a separate process whose results will feed into the main Study.

Guidance: The 2006 SES is a valuable input, as it provides a detailed record and management proposals for elements of the natural environment; similarly useful is 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.

5.2 Legal and regulatory framework

Describe and assess the efficiency of the pertaining legal and regulatory framework of environmental protection; identify gaps and drawbacks and indicate improvements.

5.3 Management structures and staffing

Describe and assess the efficiency of the existing management structures; focus on the relations between State and local competent bodies (see KEDAK, Forest Service, Holy Community, Central and Regional agencies of the Ministry of Environment) and indicate required interventions. Record staff numbers per scientific discipline and identify recruiting needs.

5.4 Monitoring system

Describe and assess the efficiency of existing monitoring mechanisms; indicate required improvements.

Analyse the list of recorded indicators and assess the integrity / quality of measurements; identify significant data gaps and indicate any required improvements.

6. Cultural heritage

6.1 Architectural heritage - Buildings and their surroundings

Conduct a systematic recording of all constructions in Athos (monasteries and dependencies) so as to produce a database of architectural and morphologic elements (building styles and materials, scale and form, etc.). Assess the quality of significant restoration works carried out the past 20 years, highlighting any problems; similarly, concerning new developments and infrastructures.

Guidance: Build on the findings of significant studies previously carried out by distinguished architects (i.e. the architectural plottings of Professor P. Mylonas) and archaeologists and seek contribution by architectural schools.

6.2 Cultural landscapes

Conduct an integrated overall assessment of the Athonite Peninsula as a cultural landscape, synthesising the existing extensive knowledge of the area's immovable and movable cultural heritage with the assessment of the natural setting in which it is located.

6.3 Intangible cultural heritage

Provide an overview of the local immaterial heritage (spiritual character and prayer, music, medicinal plants, gastronomy, other traditions), assessing its diachronic relation to aspects of territorial management and nature conservation.

7. Technical infrastructures and networks

Note: See chapter 4 for the contents of the accompanying A0 map (1:100,000 scale).

7.1 Transportation

Guidance:

1. Record the volume of passenger and freight transport (both external and internal) and assess the current condition of transport infrastructures, so as to determine the existing level of service, identify key problems and on-going trends and forecast future needs.
2. Carry out systematic mapping of all forest roads, footpaths and bridges (making use of the existing database and classification elaborated by the Athonite authorities); assess their functionality (for both transportation and fire protection) and their environmental and landscape impacts, so as to highlight problems and deficiencies.
3. Review the existing regulations for access and transport (entrance of vehicles, opening forest roads, maritime and air access, etc.).

Map (A3, graphic scale) depicting: current primary roads and port infrastructures, emergency terrestrial access from Chalkidiki, maritime routes, and a graphic representation of transport volumes in selected road sections and ports (distinguishing between inward-outward / freight-passenger).

Specific requirements per sub-section:

7.1.1 Estimate of transport needs (passengers and freight)

Analyse current land uses and activities, in relation to recorded transport data and regulatory restrictions, so as to estimate future needs for passenger and freight transport.

7.1.2 Maritime transport

Examine the operational status and efficiency of maritime transport agencies; build on conclusions from previous extensive discussions and the experience from studies conducted by the Holy Community.

Assess the condition, capacity, efficiency and design of existing port infrastructures.

7.1.3 Terrestrial transport

Analyse current transport volumes (freight and passenger) to assess the adequacy of existing roads and identify problematic / missing links.

Examine the condition of existing roads which have been reported to be widely problematic and are prone to severe erosion by heavy rainfall.

Assess the condition of existing service vehicles.

7.1.4 Approach by air

Examine the necessity to develop air transport facilities (currently prohibited) for the needs of VIP and perhaps general visitors' access.

7.2 Communications

Assess the functionality of existing and planned internet service networks (including pilot WiMAX installations) and investigate the possibility to further develop modern IT networks (for consultation, publications, internet information of the Monasteries and the Holy Supervision et al.) if agreed upon with the 20 monasteries.

7.3 Utilities (water supply, wastewater treatment, waste management)

Guidance:

1. Record current needs (requirements of monks, visitors and workers) and assess their future evolution; use input from management plans and studies already carried out and point out any necessary amendments in relation to updated estimations of needs.

2. Record the location and condition of existing installations (water reservoirs, springs and pumping stations, supply networks, waste disposal sites) in order to assess the need to improve or develop new installations, remove incompatible or non-functional ones, but also to determine potential needs for improved transport access.

Specific requirements per sub-section:

7.3.1 Water supply

Record the state, location, quantity and quality of available water resources (springs, wells).

Record oral traditions and traditional methods of water pumping and distribution, as they constitute key elements of the Athonite cultural heritage.

7.3.2 Wastewater treatment

Locate polluted sites.

Evaluate the proposals of the Holy Community for funding by the Operational Programme 'Environment and Sustainable Development'.

Examine the possibility to construct small treatment facilities in monasteries or sketes, focusing in methods of water recycling for irrigation and other uses.

7.3.3 Waste management

Examine the progress made concerning the development of facilities already incorporated in the regional management system of Central Macedonia (see incorporation for funding in the Operational Programme 'Environment and Sustainable Development').

7.4 Power production, distribution and consumption

General guidance:

Record existing power sources (conventional heating by fuel-powered generators and renewables) and set targets for required power supply.

Specific requirements per sub-section:

7.4.1 Production of electricity from renewable energy sources

Review the integrated study for photovoltaic systems installation already prepared by the Holy Community.

Assess the possibility to develop small-scale hydroelectric installations, building on the findings of the 2006 SES.

7.4.2 Saving energy - Improving efficiency of conventional energy sources

Record the existing energy sources per monastery and use (focusing on buildings' heating and cooling systems) and assess their efficiency, also in accordance with the KENAK.

Examine the feasibility to utilise geothermal energy in a number of buildings, so as to achieve complete autonomy from any conventional system in use today and minimise the demand for electricity and gas emissions.

8. Natural hazards management

Study objectives include improved management of natural hazards, particularly wild-fires 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.

8.1 Fire protection (forests and buildings)

8.1.1 Current state of forests and historical fire outbreaks data

Analyse the present condition of forests and historical data for fire outbreaks, to help draft fire fighting scenarios and strategies (in Part B).

8.1.2 Existing fire fighting system

Assess existing fire prevention measures, particularly in the surroundings of the Monasteries.

Record existing fire-fighting equipment (location and means).

Assess the efficiency (allocation and adequacy) of existing water reservoirs (also examining the possibility to construct micro-reservoirs for additional contribution to the protection of species and/or enrichment of underground water resources).

Map and assess existing fire protection zones.

Examine the current operation of the road network and indicate required expansions/improvements for fire fighting purposes; the 2010 Forestry Department project will provide key input.

8.1.3 Legal framework, management structure, staffing and training

Briefly describe existing competencies and assess their efficiency, in terms of coordination (particularly between local and external forces) and timely intervention.

Record staff numbers (firemen and specialised monks) and identify recruiting needs; similarly, identify training needs for firemen and monks (including the possibility to produce relevant mapping material).

8.1.4 Surveillance and communications system

Record existing systems, assess their functionality and indicate needs for improvement. Examine the possibility to install modern communications systems, compatible with those used by the Fire Brigade (e.g. TETRA system).

Carry out a cost-benefit analysis for installation of automatic surveillance systems (this is a specialised task, which will feed into drafting of the scenarios in Part B).

8.2 Seismic protection

Conduct seismic analysis of buildings, taking into consideration the general and specific parameters that characterise the Athos Peninsula, and in accordance to the National Anti-Seismic Regulation (EAK).

Identification of buildings, technical works and other constructions facing significant risk of collapse in case of earthquake.

Investigate possible risks of precipitations and landslides, whether from seismic activity or intense rainfall.

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

8.3 Adaptation to climate change

General guidance:

Climate change effects to Mt Athos' environmental components will have previously been presented in the respective chapters / sections, where relevant. The purpose of this section is to synthesise previous analyses in a coherent fashion, focusing on the key effects of climate change and highlighting common problems, principles and priorities for action.

8.3.1 Impacts on the water cycle

Estimate the magnitude of impacts on surface and underground waters (seasonableness and intensity of precipitations, rhythm of evapotranspiration, seasonal needs in water use for agriculture, etc.), suggesting advisable management practices.

8.3.2 Forest adaptation

Examine potential impacts on the risk of wildfires, suggesting appropriate solutions for adaptation.

Guidance (Indicative list of themes to be addressed):

1. Conduct risk analysis for potential proliferation of fungi or other pathogeneses that could lead to extensive desiccation of trees (examining case studies from similar areas of Greece and abroad), so as to suggest a monitoring system and mitigation measures.
2. Analyse possible impacts from cases of drought as well as of the intensity of the above fungus infections or desiccation of trees.

3. Estimate the possible increase of fire risk, and extension of the high risk period, to feed into drafting the relevant scenarios mentioned in section 8.1.1 above.
4. Examine the potential extension of extreme flooding risks.

8.3.3 Impacts on biodiversity

Examine experiences in similar ecosystems, so as to conduct valid hypotheses and propose specifications for further investigation on the issue (in Part B); this assessment will feed into the study of biodiversity mentioned in chapter 5.

Guidance: Particular attention should be given to those species proven to be especially vulnerable to climate change, or are to be found at the southernmost limits of their territorial expansion. It is suggested to include a monitoring programme for modifications in flora.

8.3.4 Rising sea level

Estimate potential impacts from a future rise of the sea level to the operation of certain port facilities, by examining their structural characteristics and sensitivity to such changes.

B. Proposals and recommendations

General guidance for Part B:

Pursuant to the identification of key issues and challenges in every chapter / section of Part A, Part B should integrate all suggestions into a set of general and specific guidelines per management field and draft the overall strategy. This task is envisaged to be carried out in three steps:

Step B.1 will provide the general and specific guidelines for each management field, following the general structure of Part A. These proposals will address general policy issues (institutional / regulatory / legal framework and mechanisms, strategic actions), required interventions / works / projects, necessary additional studies to be carried out, etc.

The proposals of Step B.1, when finalised and agreed upon by the Supervision, will form the basis for drafting the final proposal of the Study. Therefore they have to be designed in order to express the minimum requirements per management field, effectively responding to the key issues identified in Part A, and complying with the Study principles. They should include qualitative and, where possible, quantitative objectives, which will feed into Part D (setting the basis for the monitoring programme), and they should indicate any alternative options for each issue, so as to facilitate the selection process of Step B.2 (Scenarios).

It is important that the description of all proposals is accompanied by an assessment of their potential impacts, particularly focusing on any reasonably foreseen negative effects against any of the other management fields –or the Study principles in general. This will indicate internal conflicts and help to assess trade-offs during the following Step B.2 (Scenarios). Similarly, rough cost estimations should also be provided, so as to facilitate (i) the process of selection in Step B.2, and (ii) the task of prioritising activities in Part D (Implementation framework / Action plan).

Step B.2 includes the development of alternative scenarios. The methodology for drafting the scenarios will be finalised during the Study, according to the views expressed by the Consultant and the Supervision.

The general guideline provided here is to follow the typical structure of *minimum* → *medium / realistic* → *maximum* intervention, against which all of the general and specific guidelines of Step B.1 will be scrutinised. It is envisaged that this process will effectively allow the assessment of the necessary trade-offs through broad dialogue, helping to formulate a synthetic approach –that is, the final proposal of Step B.3. Similarly, it will provide the necessary input to develop the Implementation framework / Action plan of Step D.

Step B.3 is the final proposal. It will build on the decisions reached during Step B.2, so as to elaborate the general and specific guidelines of Step B.1 into a set of concrete and internally consistent actions and interventions.

B.1 General guidelines per management field

1. Incorporation in the wider area of Chalkidiki / Central Macedonia / Greece / SE Europe

1.1 Administrative structure and management competencies

Suggest necessary improvements at the institutional level, to overcome current deficiencies, indicating alternative structures and mechanisms.

1.2 Spatial integration

Propose guidelines and strategic actions to strengthen the position of Mt Athos in the wider spatial system, at the regional, national and international / European level (i.e. relationship with wider development priorities, coordination of planned activities, common environmental protection goals and interventions, etc.).

Guidance: Focus on key issues identified in chapter 1 of Part A (i.e. revisit current management competencies; strengthen relations with State authorities and international organisations; regulate external developments in a way that mitigates negative impacts on the Mount's environmental and spiritual aspects).

2. Land use management and spatial organisation of productive activities

2.1 Land management principles and general land use planning

Reach consensus between the 20 monasteries on a set of common land management principles and general land use planning aspects (i.e. the use and restoration of forests; management of cultivated lands including abandoned cultivations; development of productive, administrative, service, technical and auxiliary facilities).

2.2 Forest management

Suggest the most appropriate methods and practices for forest restoration in relation to identified problems; propose any required adaptations to previously implemented projects and suggest how and where they could be replicated.

Propose general and specific measures for sustainable management of productive forests.

Suggest conservation and enhancement measures for the agro-forestry landscape.

Guidance: Indicate positive and negative impacts to biodiversity in respect to alternative forest management and exploitation measures.

2.3 Management of agricultural land and cultivated areas

Provide general and specific measures for sustainable management of cultivated areas, indicating remedial actions for the identified problems (i.e. decrease of pesticide use, mitigation of soil pollution, controlling water wastage and aquifer reduction).

Suggest methods to restore local varieties by reintroducing their seeds.

Indicate capacity building measures (transfer of know-how from specialists to the monks, wider implementation of local traditional practices with their incorporation into the agricultural development programmes).

Propose a management plan for the use of abandoned cultivations (areas for restoration and areas for land use change).

2.4 Organisation of productive facilities / Environmental protection and restoration of degraded sites

Provide general and specific guidelines for the restoration of existing facilities, indicating priorities (particularly concerning stone quarrying sites).

Suggest the designation of areas for extraction of stones and rocks and provide guidelines for the development of new sites, if required (based on different estimates of productive needs).

3. Protection of the natural environment and biodiversity

3.1 Satisfying World Heritage and Natura 2000 requirements

Present the scope and results of the conservation study carried out during Part A; explain how these address the requirements of Directives EEC/92/43 and 2009/147/EC, as well as the WH principles for nature conservation. Present the general framework (principles, overall strategy) for biodiversity conservation, pointing out any weaknesses and necessary future steps and actions.

3.2 Biodiversity conservation and management structures

Suggest general and specific management measures for biodiversity conservation, in accordance to the above; present alternatives in relation to the priorities, specific measures, management structures, staffing, etc. (indicating rough cost estimations).

3.3 Performance monitoring (species inventories and indicators)

Make proposals for monitoring the state of conservation of habitats and species in accordance to the above; propose a list of indicators (core and supplementary), attaching baseline data and setting targets for different time periods.

Guidance: Place emphasis to indicate trade-offs between biodiversity conservation goals and development of other activities (particularly concerning forest management and exploitation).

4. Conservation and restoration of the cultural heritage

4.1 Conservation and restoration of the architectural heritage

Propose a set of common design principles (general and specific guidelines) for restorations, buildings re-use and new constructions.

Indicate priorities for restoration.

Guidance: Instigate broad dialogue with all involved parties (Monasteries and Holy Community, MCS, KEDAK, WH experts) to reach a commonly accepted proposal; examine the possibility to host an international workshop for the issue.

4.2 Protection, enhancement and management of the cultural landscapes

Provide a general description of the Mount's landscape character and analyse its key features and characteristics, indicating priorities for protection, restoration and en-

hancement; provide an overview of main landscape pressures and suggest necessary remedial and mitigating actions⁹.

Guidance: Use input from the 2006 SES, which contains extensive descriptions of Athos' landscape character types.

4.3 Promotion and enhancement of the intangible cultural heritage

Suggest ways to enhance and promote the local immaterial heritage (spiritual character and prayer, music, medicinal plants, gastronomy, other traditions); point out and explain its horizontal integration to the Study's proposals.

5. Organisation of technical infrastructures and networks

5.1 Transport networks and infrastructures

Guidance: Focus on the integration of transport development proposals (especially terrestrial) with other management fields (particularly with the fire protection plan, biodiversity conservation and landscape protection measures), indicating trade-offs.

5.1.1 Overall planning and connection of different transport modes

Provide general planning guidelines for the development and restoration of transport networks and facilities.

Present the overall transport plan of the Peninsula, pointing out any required amendments to the regulations for terrestrial and maritime access to the Mount.

5.1.2 Maritime transport

Prioritise the required interventions (functional and aesthetic improvement of port facilities) and determine any additional needs.

Suggest improvements in the operation of the maritime connecting routes.

5.1.3 Terrestrial transport

Set priorities for improvement of road infrastructures, proposing a (limited) number of required new infrastructures (also in relation to the fire protection plan of section 6.1).

Provide guidelines for road restoration and construction.

Propose solutions for the renovation / replacement of service vehicles.

5.1.4 Approach by air

Propose (if required and agreed upon by all involved parties) the necessary infrastructures; address impacts on spirituality and character, as well as to the environment and landscape.

5.2 Communication networks and infrastructures

Suggest alternatives for the development of modern IT networks, if agreed upon with the 20 monasteries.

⁹ The protection and management guidelines of the Study could be submitted to the Council of Europe for the biannual European Landscape Award prize.

5.3 Utility networks and infrastructures (water supply, wastewater treatment, waste management)

Guidance: Propose necessary amendments of existing plans in relation to updated estimations of needs and in compliance to all of the Study's principles.

5.3.1 Water supply

Make proposals for optimum and sustainable management of water resources; provide alternative solutions for improved water supply and irrigation; indicate ways to incorporate traditional methods of water pumping and distribution to the modern systems.

5.3.2 Wastewater treatment

Make any necessary amendments to the existing plans, particularly examining the possibility to construct small treatment facilities in monasteries or sketes, also focusing on methods of water recycling for irrigation and other uses.

Suggest immediate remedial actions for identified polluted sites.

5.3.3 Waste management

Review and amend, if necessary, existing waste management plans.

Suggest immediate restoration measures for degraded sites.

5.4 Power production, distribution and consumption

5.4.1 Overall planning

Provide guidelines for optimising existing sources and developing renewable energy with respect to the natural environment and landscape.

Set targets for required power supply per source and indicate alternative time-scales for completion (in relation to different cost estimates and environmental protection requirements).

5.4.2 Renewable energy development

Review, amend and forward the existing study for photovoltaic systems installation.

Propose alternatives for hydroelectric energy development (small-scale installations).

Describe negative impacts to the environment, landscape and spiritual character of the Mount, providing necessary mitigation measures.

5.4.3 Improved energy efficiency

Plan the redesign of buildings' A/C systems through their inclusion in a very high energy efficiency class, so as to achieve complete independence from fossil fuel and conventional energy sources in general (in accordance with the KENAK).

Provide architectural design principles for passive heating and cooling (e.g. by correct placing of glass panels, proper insulation, shading, natural ventilation, etc.) so as to minimise thermal losses in winter and cooling requirements in summer.

Suggest potential uses of geothermal energy, in a realistic long-term framework.

6. Natural hazards management

6.1 Fire protection plan

Draft fire fighting scenarios and strategies in accordance to historical data analysis.

Suggest expansions / improvements of the road network based on the above scenarios (in compliance with the road network development principles of chapter 5).

Plan a network of fire protection zones; provide alternatives according to the predictions of each scenario.

Propose improvements to the fire-fighting equipment and its allocation, to ensure effective surveillance and timely intervention.

Organise the network of water reservoirs (also in relation to the water management principles of chapter 5), proposing, if deemed necessary, the construction of micro-reservoirs.

Define fire prevention measures, particularly in the surroundings of the Monasteries, to ensure effective coordination between the Fire Brigade and monks in case of emergency.

Suggest a capacity building programme for monks (basic training) and firemen (familiarisation with the natural setting of the Mount), indicating needs for production of mapping material.

Provide alternative options for the installation of modern communication and surveillance systems (based on a cost-benefit analysis).

6.2 Seismic protection (including priorities for restoration)

Technical guidelines for anti-seismic reinforcement of buildings and technical works (also in accordance with the architectural design principles for carrying out restorations, presented in Section 4.1 above).

Set priorities for restoration of buildings, technical works and other constructions of significant risk of collapse in case of earthquake.

Suggest measures for protection against possible risks of precipitations and landslides, whether from seismic activity or intense rainfall.

6.3 Guidelines for mitigating climate change impacts

Suggest advisable management practices to mitigate climate change impacts on surface and subterranean waters.

Suggest appropriate solutions for forest adaptation to increased wildfires risk.

Suggest measures (including necessary further studies and monitoring of species modifications) to reduce species degradation and enhance resilience to climate change.

B.2 Options and scenarios

General guidance: Scenario building is suggested to follow the typical structure of **minimum → medium / realistic → maximum** intervention. The magnitude of intervention is expected to be expressed both in physical (development intensity) and financial (monetary) terms. The three general approaches will be generally assessed in relation to their environmental impacts, their effects on the spiritual character of Athos and their degree of realism, but they will also be used as 'anchors', against which all of the general and specific guidelines of Step B.1 will be scrutinised. It is envisaged that this process will allow for an objective and effective assessment of the necessary trade-offs between different proposals of varying environmental, spiritual, etc. impacts, ultimately helping to formulate a synthetic approach –that is, the final proposal of Step B.3. Furthermore, this process is equally expected to provide the necessary input to develop the Implementation framework / Action plan of Step D. Scenario building and selection is considered as a key part of the consultation process, therefore it should involve broad dialogue between all involved / interested parties, local, national and international.

1. Scenario I (minimum intervention)

2. Scenario II (medium intervention)

3. Scenario III (intensive intervention)

B.3 Final proposals

1. Presentation of prevalent scenario

Provide an overview / synthetic presentation of the options selected during Step B.2 (which will possibly incorporate elements from all three scenarios).

2. Sectoral components (per management field)

Provide the Study's final proposals, by properly amending the general and specific guidelines and measures of Step B.1 (following same structure as in Step B.1).

3. Integration aspects, sustainability and synergies

Critically assess aspects of integration between the various sectoral components and policies; focus on indicating conflicting activities and mitigation / integration measures.

C. Strategic Environmental Assessment

Preparation and approval of the SEA will follow the specifications of Min. Decision 107017/2006¹⁰. It is however strongly recommended to align the SEA content and structure in as much detail as possible to the scope and structure of the integrated Study (i.e. internal structure and methodology, scoping, analysis, scenario building, mitigation measures, monitoring system and indicators). The SEA task should thus be executed in close coordination and –as possible– in parallel with the main Study, so as to secure consistency and efficiency of time planning (i.e. the relevant sections of the Analysis should be developed in a common approach for the two studies; the SEA scenarios should elaborate on the Study scenarios; the SEA monitoring programme will feed into the respective Part D of the Study, etc.).

D. Implementation framework / Action plan

10.1 Implementation monitoring - Management competencies

Provide a detailed framework of management competencies in relation to necessary follow up actions (implementing the Study's proposals, tacit reviewing, monitoring progress in each field of intervention, following budget and contractual aspects, etc.).

10.2 Prioritisation and funding of proposed measures and actions

Provide a detailed Action Plan to implement the Study's proposals; indicate short term (5 years), medium term (10 years) and long term (15 years) priorities and propose the necessary funding sources.

¹⁰ Ministerial Decision 107017/2006 "Assessment of the effects of certain plans and programmes on the environment, in compliance with the provisions of Directive 2001/42/EC of the European Parliament and of the Council of 27 June 2001" (Government Gazette Issue 1225/B/5.9.2006).

10.3 Project execution management

Elaborate on sections 10.1 and 10.2, to describe specific project-related aspects (project management, role of technical services, quality assurance, etc.).

10.4 Monitoring system and feedback

Provide the finalised list of monitoring indicators, attaching baseline data and setting targets over different time periods; describe the necessary monitoring mechanisms and the required remedial actions / interventions in cases of emergency or of significant deviation to the desired targets.

Guidance: Use input from the SEA Study, as well as from section 3.3 of Step B.1.
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PART III: STUDY TEAM - REQUIRED DISCIPLINES AND EXPERTS

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The study team that will be selected to undertake the integrated Study must comprise of at least the following scientific disciplines and external experts:

- 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 specialised in the restoration of historic buildings.
- A landscape architect.
- An archaeologist specialised in byzantine studies.
- A transport engineer / planner.
- An engineer or environmentalist specialised in environmental management technologies.
- An M&E (Electrical-Mechanical) engineer specialised in energy issues and particularly in renewable sources.
- An economist with experience in cost-benefit analyses.
- A geographer specialised 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 study team will be particularly evaluated. The study team should consist of core members and specialised consultants, Greeks or foreigners, for specialised issues.

PART IV: ADMINISTRATIVE AND CONTRACTUAL ASPECTS

[to be decided - they will largely depend on the requirements of the Study donor]

APPENDIX I: PRELIMINARY REPORT

[Available in separate booklet]