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MEDITERRANEAN ACTION PLAN

Fourth Meeting of National Correspondents of the Strategic
Action Programme for the Conservation of Biological
Diversity in the Mediterranean Region (SAP BIO)

Rabat, Morocco, 1 July 2013

Report on the evaluation and future orientations of the Strategic Action Programme for the Conservation of Biological Diversity in the Mediterranean Region (SAP BIO)

Delegates are kindly requested to bring their documents to the meeting

The original version (English) of this document has been prepared for the Regional Activity Centre for Specially Protected Areas (RAC/SPA) by:

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1. INTRODUCTION

The main milestones in environmental knowledge are related to changes in paradigm in Mediterranean biodiversity conservation in the last 60 years. The first change in paradigm occurred in the 60's and early 70's when the scientific community and an incipient conservation movement started being organized and raised the issue of the need to preserve nature. This process leads to the approval of the first global and regional conservation conventions and strategies: Ramsar in 1971, World Heritage in 1972, CITES in 1973, MARPOL 1973 and modified in 1978, MaB Programme in 1974, Barcelona in 1976, Bonn and EU Birds Directive in 1979, the World Conservation Strategy in 1980, Protocol concerning Specially Protected Areas in 1982.

During the 80's the conservation community moved forward and the concept of sustainable use if natural resources was introduced in the debate. In the early 90's a number of major international conventions and agreements were approved: CBD and UNFCC in 1992, Desertification in 1994, Revision of the Barcelona Convention and of the SPA/DB Protocol in 1995, Kyoto Protocol 1997.

These changes in paradigm can be consequence of changes in research trends and in priorities. Scientific research is normally driven by public policies that define the thematic priorities and research subjects.

The Global Environment Facility (GEF) council approved on April 2000 a project to elaborate the Strategic Action Plan for the Conservation of the Biological Diversity in the Mediterranean Region (SAP BIO). The SAP BIO was prepared by the Regional Activity Centre for Specially Protected Areas (RAC/SPA) and was adopted as Programme by the Contracting Parties to the Barcelona Convention in 2003, being the RAC/SPA designated as the Lead Implementation Agency.

The Programme is the result of a bottom-up interactive participative approach started in 2001, based on consultations with the countries to diagnose the state of marine and coastal biodiversity and to identify national priorities. An evaluation at national and regional levels of the marine and coastal biodiversity took place based on existing inventories and databases, having regard of all the projects and international agreements related to the subject. In 2008-2009 the SAP BIO was updated in order to include Climate Change issues. The addendum to the SAP BIO, focused on the expected impacts of Climate Change to biodiversity, was adopted by the Contracting Parties in November 2009.

The finalized SAP BIO includes principles, approaches, measures, targets, timetables and priorities for actions to conserve marine and coastal biodiversity in the Mediterranean region. The SAP BIO analyzes issues and identifies actions at national and regional level, including 63 National Action Plans (NAPs) and 30 Regional Priority Actions (RPAs). The NAPs were prepared following the respective guidelines provided by RAC/SPA and specified key actions, the timetable for their implementation and their cost.

At their Seventeenth Ordinary Meeting (Paris, February 2012), the Contracting Parties invited the RAC/SPA to assess the progress made in implementing the SAP BIO, ten years after its adoption, and to define the main priority axes for an updated SAP BIO. In particular, the CBD Strategic Plan for Biodiversity 2011-2020 and the ecosystem approach were indicated as main references to be considered in the SAP BIO updating process.

With reference to the CBD Strategic Plan for Biodiversity 2011-2020, after the 10th COP (Nagoya, Japan October 2010) SAP BIO, as a long-term operation, SAP BIO needs to be

eventually adapted to catch up the new set of priorities and targets (the Aichi Biodiversity Targets) adopted by the CBD to the horizon 2020.

With regard to the ecosystem approach, the Mediterranean Action Plan (MAP) is implementing since 2008 a roadmap on an ecosystem approach integration that has so far delivered 11 ecological objectives for the Mediterranean and 67 indicators on marine quality state. Based on the agreed ecosystem approach and respective targets, there is a need to adjust the existing regional policy on biodiversity conservation in the Mediterranean so as to take the above into account and mainstream the ecosystem approach into the relevant national policies as appropriate.

A working document (UNEP(DEPI)/MED WG 381/3. SAP BIO implementation: The first decade and way forward) describing how SAP BIO has been implemented since it was adopted in 2003, and proposals for future SAP BIO orientations has been elaborated by RAC/SPA for consideration by the Fourth Meeting of National Correspondents of the SAP BIO

The present Information Document synthesizes the results of the RAC/SPA action for assessing the progress made in SAP BIO implementation since its adoption. It is addressed at supporting the above mentioned Working Document, emphasizing the adopted methodology and providing the results of the evaluation of the progress made in these 10 years.

The status of implementation of SAPBIO was assessed using three types of datasets related to marine and coastal biodiversity conservation in the Mediterranean: i) relevant scientific production, ii) scientific and technical documents produced by RAC/SPA, and iii) official national reports to the relevant major international conventions produced by the parties.

Objectives of the analyses, details of the adopted methodological approach for collecting and analyzing data, the results of the analyses, their interpretation, and conclusions reached are provided in the different sections of the present document. The document includes graphics and figures supporting the results.

2. OBJECTIVES

The objectives of this Information Document are to:

1. Assess the implementation of the SAP BIO in the ten years since its adoption in 2003.

2. Provide background information to define the strategic objectives and priority actions for an updated SAP BIO and a new implementation period 2013-2020 and beyond, in line with the CBD Strategic Plan for Biodiversity 2011-2020, and in coherence with the Ecosystem Approach.

3. Support the Working Document UNEP(DEPI)/MED WG 381/3. SAP BIO implementation: The first decade and way forward

3. METHODOLOGY

3.1 Information Analysis

Two different methodologies have been used in the study that serves as a basis for this Information:

a) Statistical analysis.

a.1) Descriptive analysis. SAP BIO countries implementation have been analysed from the SAP BIO forms. Radar charts of the countries allow a visual way to give a general impression SAPBIO implementation. A matrix (country-actions) has been built from the information of the SAP BIO forms; the following values have been considered : specific action done = 1; partly done = 0.5; and not done = 0. A table with the total of the specific actions values have been made.

a.2) Multivariate analysis. a matrix of 21 countries (columns) and 260 specific actions (rows) was elaborated with the SAP BIO forms (Figure 1). The multivariate analysis of this matrix compares the level of SAP BIO implementation of each country relative to all countries. Two methods of multivariate analysis have been used:

a.2.1) Cluster analysis (horizontal hierarchical tree)

a.2.2) Multidimensional scaling.

SAP BIO FORM		Slovenia	B&H	Italy	Algeria	Greece	Montenegro
	1A1	0,50	0,00	1,00	0,50	1,00	1,00
	1A2	0,50	0,00	1,00	0,50	1,00	1,00
	1A3	0,00	0,00	1,00	0,00	0,50	0,50
	1A4	0,50	0,00	1,00	0,00	0,50	0,50
	1B1	0,50	0,00	0,50	0,50	0,00	0,00
	1B2	0,50	0,00	0,50	0,00	0,00	0,00
	1C1	0,00	0,00	1,00	0,00	0,00	1,00
	1C2	0,50	0,00	1,00	0,50	0,50	0,00
	1D1	0,00	0,00	1,00	0,50	0,00	0,00
	1D2	0,50	0,00	0,50	0,50	0,50	0,00
	2A1	0,50	0,00	0,50	0,50	0,50	0,00
	2A2	0,50	0,00	0,50	0,00	0,50	1,00
	2A3	0,00	0,00	0,50	0,00	0,50	0,50
	2B1	0,50	0,00	0,50	0,50	1,00	0,00
	2B2	0,00	0,00	0,50	0,50	0,00	0,00
	2B3	0,00	0,00	0,50	0,50	1,00	0,00
	3A1	0,00	0,00	1,00	0,00	0,00	0,00
	3A2	0,00	0,00	0,50	0,00	0,00	0,00
	3A3	0,00	0,00	0,50	0,00	0,00	0,00
	3A4	0,00	0,00	0,00	0,00	0,00	0,00
	3B1	0,00	0,00	0,50	0,00	0,00	0,00

MEDITERRANEAN COASTAL AND MARINE BIODIVERSITY

Figure 1.- Screenshot of the matrix elaborated to related countries and specific actions

b) Knowledge discovery databases (KDD) analysis:

b.1) Text mining by information visualization. The RAC SPA documentary management corpus have been analysed using keywords cloud.

b.2) Co-word analysis: Co-word analysis is a powerful tool to discover knowledge in bibliographic databases. The co-occurrence of words in the documents forms knowledge networks. These networks can be studied by methods KDD (knowledge discovery in

databases) in order to obtain new knowledge, not explicit in documents. The development of expert systems has facilitated the analysis and visualization of the words networks.

Strategic scientific analysis consist of extracting the most important or relevant clusters of the documentary research corpus. The clusters can be classified in four categories: research fronts; structural or generalists; adjacent or complementary; or nascent or in disappearing, according to its position in the strategic diagram.

Techné Coword, a new version of Copalred ®, is a knowledge system based on the co-word analysis, which has its antecedent in Leximappe ® . Leximappe ® has proven useful in the strategic analysis of networks of scientific and technical knowledge. In the keyword field it is possible to analyse the new relations of co-occurrence: "key words".

 In the strategic analyses of scientific networks, the aim is to identify the most notable relationships between all the elements constituting the network. in other words, to ascertain the important, essential, and fundamental relations established in the network and not those that are sporadic, weak, or circumstantial. In this way, on a scale of 0 to 1, the closer the equivalence index approaches 1, the stronger the relationship between the two terms. In this sense, the value of the relation between two keywords is indicative of the degree of generality/specificity of the research theme. The co-occurrences detected in the keywords field are placed into a symmetric matrix (adjacency matrix), then normalized with the equivalence or association index in order to obtain values range between 0 and 1. This index is independent of the sample size. The matrix of co-occurrences or matrix of adjacency is a symmetric matrix that shows at the cut-off points between rows and columns the co-occurrences of the values that head each row and each column.

3.2 Information Visualization

Information visualization using tags cloud, diagrams, graphs, and maps facilitates the internalization of knowledge.

a) The textual representations:

Keywords cloud. The textual representations by a cloud of keywords as a means to display the RAC SPA management. The result is an explicit image, visual metaphor of their management profile. It is a meaningful picture, full of content, which can be distinguished by its larger size, the most important management topics. The cloud of descriptors was made from the articles indexed in the RAC SPA documentary management corpus. The set of documents consists of 188 management UNEP reports produced by RAC/SPA, published from 2003 to 2012 included. It has been processed together with ProCite, management software references, and Techné Coword, knowledge system, and has developed a text file with the keywords of the documents. Finally, the text file generated a keywords cloud.

b) The graphic representations:

1. Radar chart. A radar chart is a graphical method of displaying multivariate data in the form of a two-dimensional chart of three or more quantitative variables represented on axes starting from the same point. The relative position and angle of the axes is typically uninformative, just a displaying artefact. A radar chart is a method of analyzing country statistics.

2. Horizontal tree diagram. A tree diagram is a representation of a tree structure, a way of representing the hierarchical nature of a structure in a graphical form.

3. Multidimensional Scaling (MDS) maps. MDS maps aid the discovery of affinities between objects (countries) or cases (specific actions). They are the result of Multidimensional Scaling (MDS) to which the proximity matrix of the study set is subjected. In the MDS maps, the study elements are situated with respect to two dimensions, so that the proximity between the points (countries) is indicative of their similarity regarding their level of implementation of all the SAPBIO specific actions. The orientation of the axes is arbitrary and can be rotated if desired to achieve a better interpretation. Even so, it often occurs that the two dimensions do not have one clear interpretation, in which case the advice is to make a cluster analysis (hierarchical tree) and make comparisons in order to find similarities between the two.

4. Networks graphs. Made by drawing various algorithms. The elements are situated in a 2D space. The graphs of the co-words networks are widely used in the graphic representations of document corpus. The networks formed by words and links can be visualized differently according to the different types of drawing algorithms chosen for their construction.

5. Strategic diagram. The strategic diagrams are the graphic representational product of the analysis of Strategic Scientific Watch. The strategic diagrams situate the study elements (in the present case, research sub-networks) according to the parameters of centrality and density of each.

3.3 Information Sources

Three information sources have been used: scientific production extracted from databases of international visibility; scientific and technical management documents produced by RAC/SPA; and information factsheets on SAP BIO implementation, fulfilled for each country.

3.3.1 Relevant scientific production

The scientific relevant production has been analyzed using Knowledge Engineering methods. Scientific relevant production is understood as the number of scientific articles published that are related to marine and coastal biodiversity conservation in the Mediterranean.

Bibliographic Database Information

The databases employed are Geobase, ProQuest Aquatic Science Collection (formed by several databases), Scopus and Web of Science. Geobase and ProQuest Aquatic Science Collection are the databases specialized in environment research and Scopus and Web of Science are de main scientific databases.

Geobase

Geobase forms part of the OvidSP plataform

Thematic coverage:

Geobase is a multidisciplinary database that provides bibliographic information about Earth Sciences, Ecology, Geomechanics, Human Geography and Oceonography. This database comprised more than 2,000 international journals and more than 2,4 millions of records.

ProQuest Aquatic Science Collection

Aquatic Science Collection is a set of bibliographic databases of Proquest platform. Is formed by:

- Aqualine Information
- Aquatic Science & Fisheries Abstracts (ASFA) 1: Biological Sciences & Living Resourcesinformation
- Aquatic Science & Fisheries Abstracts (ASFA) 2: Ocean Technology, Policy & Non-Living Resourcesinformation
- Aquatic Science & Fisheries Abstracts (ASFA) 3: Aquatic Pollution & Environmental Qualityinformation
- Aquatic Science & Fisheries Abstracts (ASFA) Aquaculture Abstractsinformation
- Aquatic Science & Fisheries Abstracts (ASFA) Marine Biotechnology Abstractsinformation
- Oceanic Abstracts Information
- ProQuest Aquatic Science Journals Information
- ProQuest Deep Indexing: Aquatic Sciences Information
- Water Resources Abstracts Information

Thematic coverage:

Aquaculture, Aquatic Organisms, Aquatic Contamination, Brackish Water Environments, Conservation, Environmental Quality, Fishery, Fresh Water Environments, Limnology, Marine Biotechnology, Marine Environments, Meteorology, Oceanography, Policy and Norms, Management of Widelife.

Scopus

Scopus is the biggest bibliographic database of world, with 20,500 publications from more than 5,000 international editors and covers more than 28 millions of documents (80% of international publications peer reviews and weekly updated)

Thematic coverage:

The disciplines that Scopus covers are the following:
- Chemistry, Physic, Mathematics and Engineering
- Life Sciences and Medicine
- Social Sciences, Psychology and Economics

Web of Science

Web of Science is a Thomson Reuters's platform and that is formed by following multidisciplinary databases:

- Science Citation Index Expanded (SCI-EXPANDED) -1900-present
- Social Sciences Citation Index (SSCI) -1900-present
- Arts & Humanities Citation Index (A&HCI) -1975-present
- Conference Proceedings Citation Index- Science (CPCI-S) -1990-present
- Conference Proceedings Citation Index- Social Science & Humanities (CPCI-SSH) -1990-present

- Book Citation Index– Science (BKCI-S) -2005-present
- Book Citation Index– Social Sciences & Humanities (BKCI-SSH) -2005-present

Recovered documents from bibliographic databases

The search is performed in title, abstract and key word fields with following Boolean search expression:

(((biodiversit* OR "biological diversit*" OR *speci* OR communit* OR *assemblag*) AND (marin* OR coastal* OR "coastal lagoon*" OR "coastal wetland*" OR "coastal shrub*" OR " coastal forest*")) AND (*mediterran* OR alboran* OR "mar menor" OR "mar chica" OR adriatic* OR balearic* OR sardinia* OR ligurian* OR tyrrhenian* OR ionian* OR aegean* OR libyan* OR cilicia* OR "sardinia channel" OR "sicilian channel"))

In the Table 1 the number of recovered documents from each used database is showed. We have removed the duplicate documents that appeared in two or more used databases and the definitive total documents is 24,649.

Table 1.- Documents number according to the used databases

Database	Documents
Geobase	8,326
ProQuest Aquatic Science Collection	17,022
Scopus	6,445
Web of Science	9,091
Total documents with duplicates	40,884
Total documents without duplicates (until May 2013)	24,649
Total documents without duplicates (until December 2012)	23,270

3.3.2. Scientific and technical documents produced by RAC/SPA

The same methodology has been used to analyze the scientific and technical documents produced by RAC/SPA. A total of 188 official technical documents and other publications by RAC/SPA have been analyzed. Many of these documents are available on the RAC/SPA website http://www.rac-spa.org/.

3.3.3. Official national reports produced by countries, mainly for their binding reporting to international conventions and agreements

An analysis of existing information has been undertaken for each country, regarding the implementation of the specific actions proposed within the framework of SAP BIO, as well as National Action Plans wherever possible. A team of international experts from different countries has gathered and analyzed the information available in the National Reports provided by countries to RAC/SPA and made accessible through the Reporting Info System for the Barcelona Convention and its Protocols (http://bcrs.info-rac.org). Also the official National Reports submitted by countries to the main relevant international conventions have been analyzed, namely the Convention on Biological Diversity, the Convention of Migratory Species (Bonn) and the Ramsar Convention on Wetlands. These reports have been obtained from the websites of each Convention. Other relevant reports or information sources identified by the experts have also been used.

Data for each country have been collected, screened and analyzed, and then transferred to standard national questionnaires that were initially completed by the experts and then sent to the countries' focal points for comments, amendments or validation. The standard questionnaire was developed by the expert team and includes all the categories, activities, objectives and specific actions related to the SAP BIO (also comprising the ones generated by the 2009 SAP BIO update on climate change issues). For each specific action the following items were recorded accordingly: i) has been done, ii) is partially done or iii) is not done; in the latter case, it was also indicated whether it is planned and it is a future priority. For the first two categories the questionnaire allowed to record the effectiveness of each specification, and for the third category, it allowed to specify why it has not been done.

4. RESULTS

4.1. Analysis of the relevant scientific production

The quantitative analysis of the scientific production on marine and coastal biodiversity conservation in the Mediterranean allows assessing the potential relation between the trends of scientific production and the main milestones of the Barcelona Convention and the Protocol concerning Specially Protected Areas and Biological Diversity (SAP/BD). These main milestones are presented in Table 2

Table 2.- Milestones of the Barcelona Convention and the SAP/BD Protocol

Year	Milestone
1976	Signature of the Barcelona Convention
1982	Adoption of the Protocol Concerning Mediterranean Specially Protected Areas
1995	Revision of the Barcelona Convention and of the SPA/DB Protocol
2003	Adoption of the SAP BIO
End 2012	End of the study

Table 3 shows the scientific production according to the periods between milestones.

Table 3.- Number of scientific articles published in each period between milestones of the Barcelona Convention and the SAP/BD Protocol

Milestone	Period	Num. years	Num. scientific articles	Accumulated num. scientific articles
	Until 1976		109	109
1976	1976-1981	6	150	259
1982	1982-1994	13	1087	1346
1995	1995-2002	7	4613	5959
2003	2003-2012	10	17311	23270
	TOTAL	36	23270	23270

As shown in Figure 2, Scientific production on Mediterranean marine biodiversity follows strong increase close to an exponential growing. The milestones are marked in the graph.
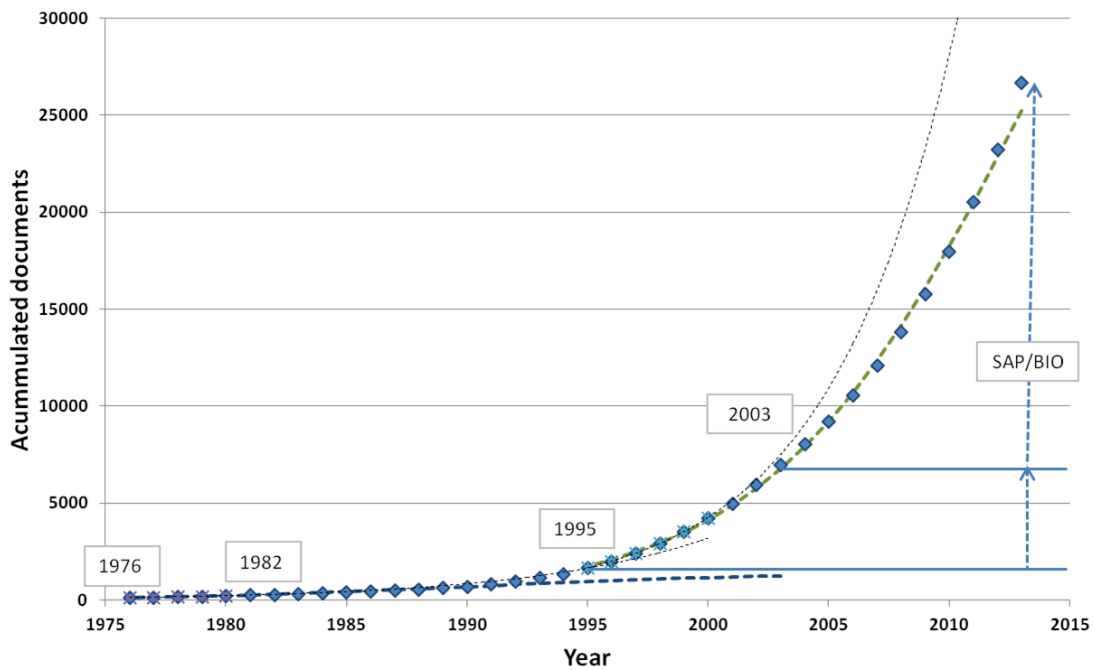
Figure 2.-Evolution of accumulated scientific production on the Mediterranean marine biodiversity

Figure 3 shows a change in the behaviour of scientific production, which is in line with a change in the scientific focusing in the Mediterranean marine research as we will see further below.
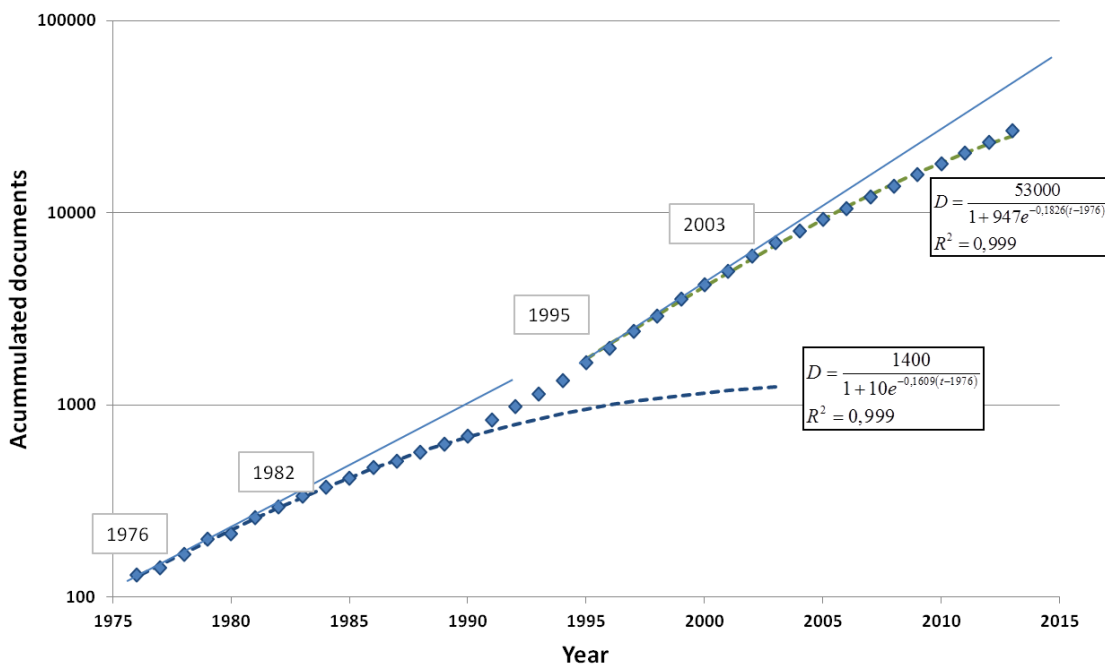

$$D = \frac{53000}{1+947e^{-0,1826(t-1976)}}$$
$$R^2 = 0,999$$

$$D = \frac{1400}{1+10e^{-0,1609(t-1976)}}$$
$$R^2 = 0,999$$

Figure 3.-Change in the accumulated scientific documents production occurred since the 90s

Through Text Mining (Coword Analysis) of the corpus of keywords from the scientific production the relevant topics were identified. This type of analysis applied in the periods between the milestones allows visualising the change produced in the number and features of relevant research topics.

This dynamic analysis shows that relevant topics on Mediterranean marine biodiversity were triggered after four key milestones related to marine policy implementation in the region. Figure 4. Also related topics from one period to another change in complexity and main focus of research, for example: the algae topic in 2005-2006 is strongly focused later on densities issues to evolve finally into works related to growth rate and shift to phanerogams meadows (Figure 5).
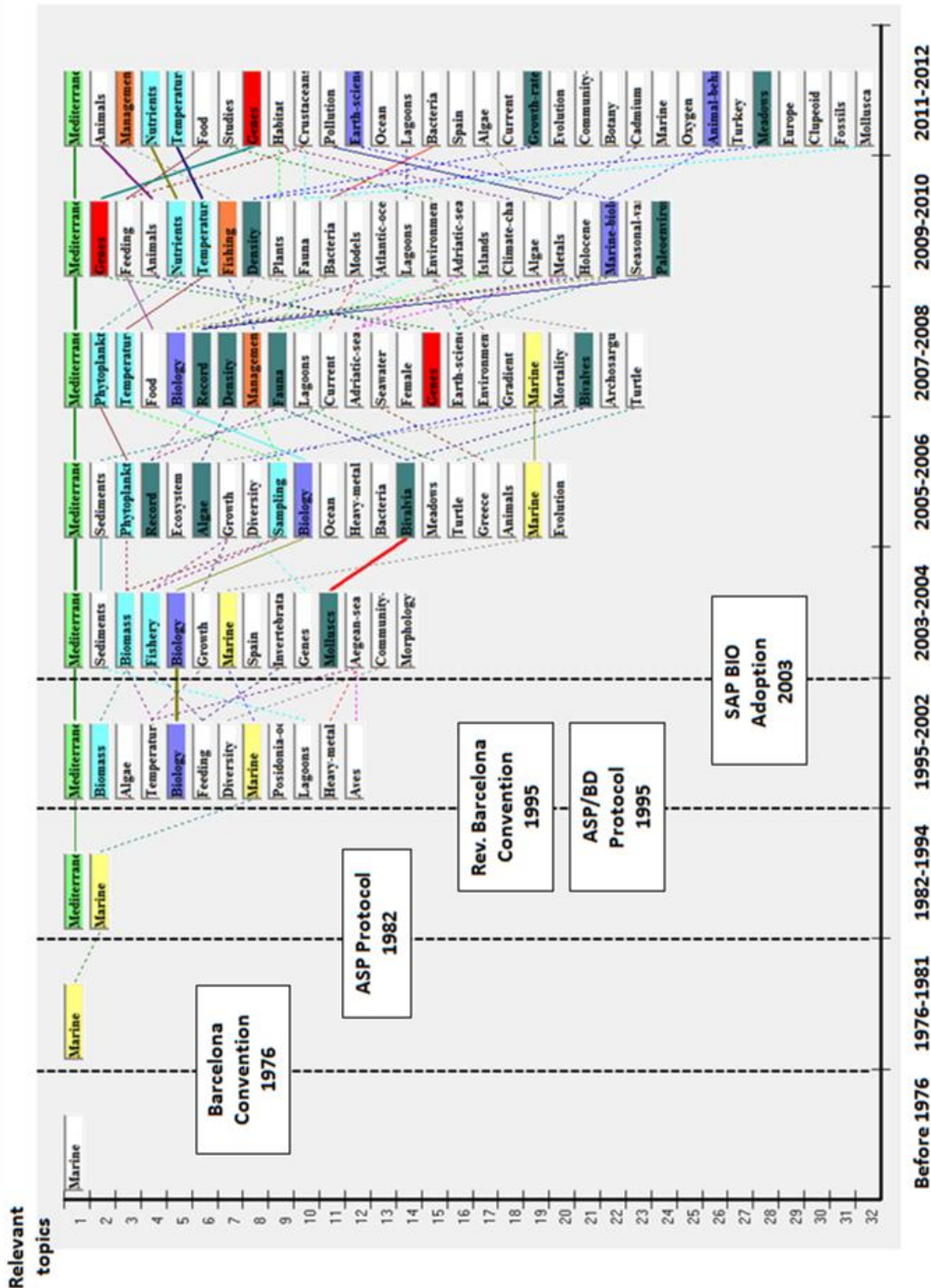

Figure 4.- Increase in main relevant topics along time and temporal framing with Barcelona Convention milestones
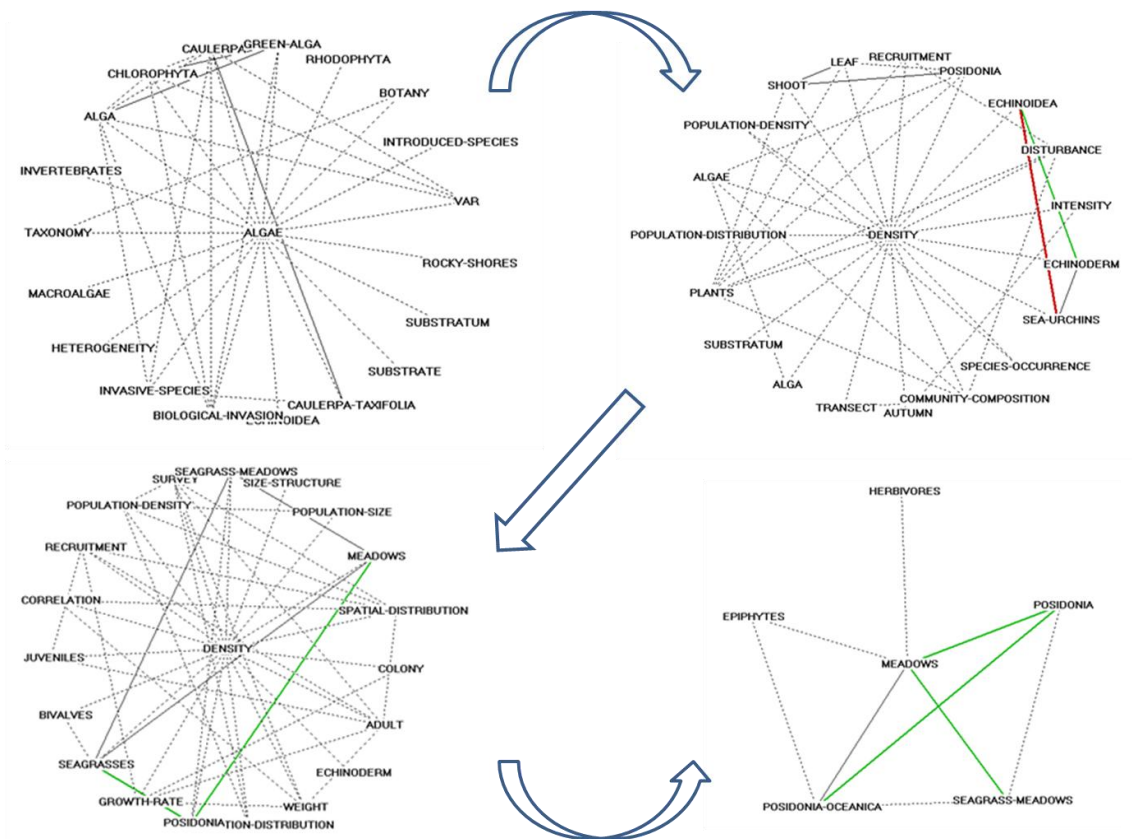
Figure 5.- Progression along time from research topics on algae into phanerogams meadows with details of topics to which the central issues were strongly related (Periods 2005-2006, 2007-2008, 2009-2010 and 2011-2012)

At ranking level, the research topics algae which started as a research front derives into very specific topic around meadows research (Figure 6).

The above explanation shows how the analysis works, and could be developed for all the displayed topics.

The analysis performed this way shows the increase in complexity and richness of the Mediterranean marine research along the analysed periods.

The environmental policy of the countries influences the evolution of scientific and technical matters. This fact has been demonstrated by the theories developed by the Innovation Sociology Centre of Paris during the 80s, among others.

The period run since the adoption of SAP BIO by the Parties to the Barcelona Convention has been benefitted by a strong boosting of research topics relevant to the conservation of the Mediterranean. Both the implementation of this environmental strategy and the Mediterranean research community might have mutually benefitted along the last decade.

2005-2006

2007-2008

2009-2010

2011-2012

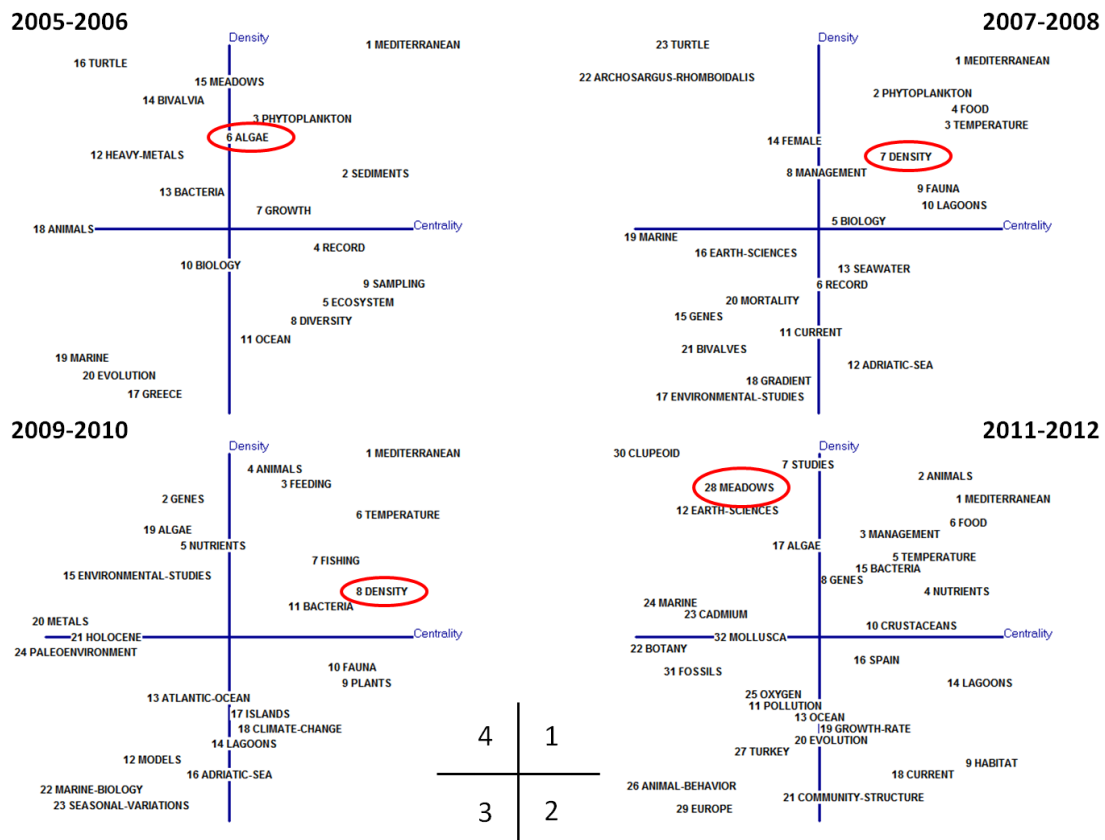|	
4	1
3	2

Figure 6.- Strategic diagrams showing evolving of algae research into meadows research along time (quadrant 1: research fronts; quadrant 2: transversal topics ; quadrant 3: emerging, declining or unconsolidated topics ; quadrant 4: very specific or complementary topics)

4.2. Analysis of the scientific and technical documents produced by RAC/SPA

Scientific and technical documents produced by RAC/SPA were collected and analysed in order to evaluate the management focus of the Centre along the period in which the SAP BIO was under execution.

As a result of the work a Keyword Cloud Figure was obtained through Text Mining techniques of the whole documentary production of RAC SPA since 2003 up to 2012 (188 documents). The figure depicts the management profile of the Centre (Figure 7). It may be concluded that the focus of its activity was, in addition to marine conservation broadly: action plans, meetings, guidelines, MPAs, SAP BIO implementation, impacts, coastal issues, marine turtles, SPAMI list, species; and so on from areas of stronger effort dedication to the ones with less involvement.
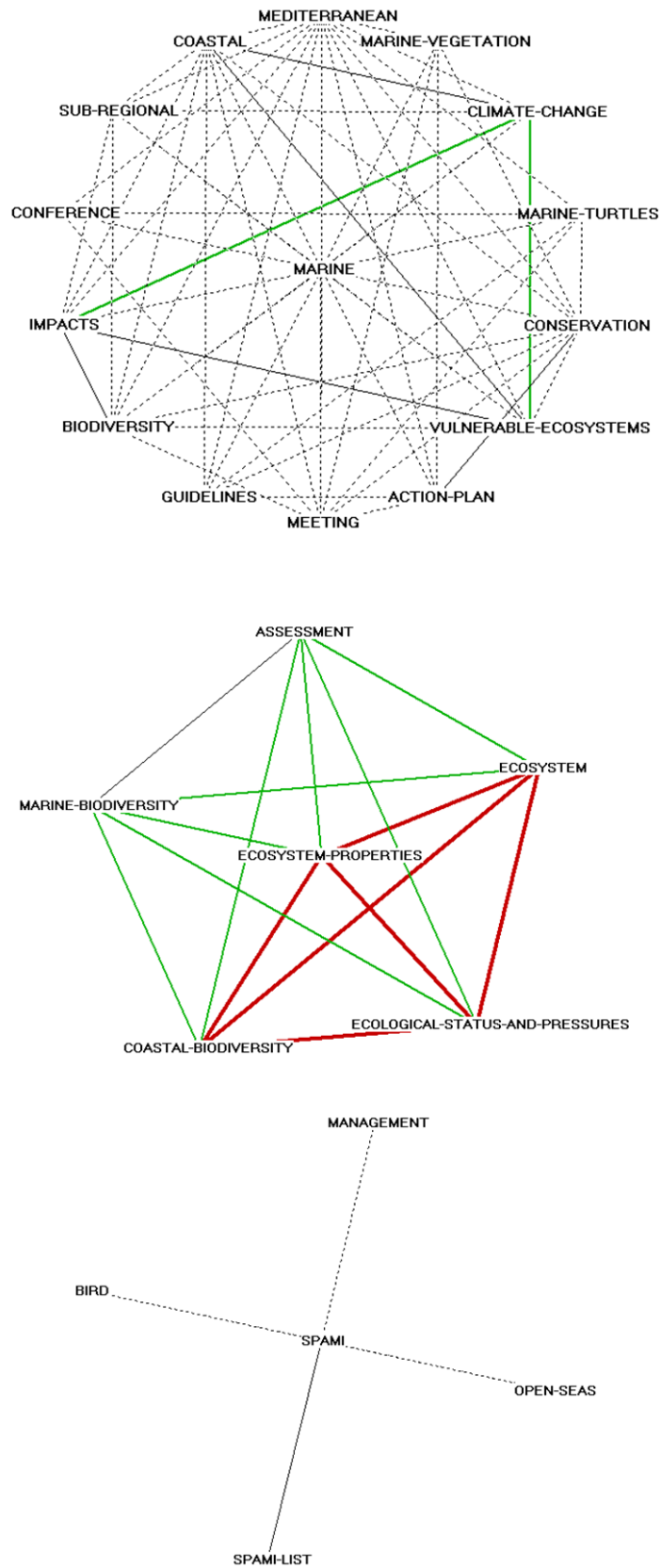
Figure 7.-Keyword Cloud of topic activity by RAC SPA Centre.

A further analysis was undertaken to detect interest subjects with regard to their relational aspects.

The main cluster around the marine topics relates the main aspects of the RAC SPA activities. A quiet equilibrated relational net has been achieved in the development of the Centre activities. Bolder lines show that a stronger relationship has been built with regard to climate change, impacts, and vulnerable ecosystems as well as coastal issues, which may suggest the important relational link developed among those factor.

The main cluster around ecosystem properties shows a strong emphasis in status and pressures, with components of marine and notably coastal biodiversity. That reveals important effort by the side of the Centre work on the ecological evaluation and diagnosis of the Mediterranean ecosystems.

The third cluster identified were the SPAMIs. There, management, focusing on SPAMI list, the boost of open seas inclusion in SPAMIs and the relevance of birds in the work undertaken in SPAMIs have been revealed. The weightlessness of the web developed suggest that the cluster is a recent growing one.

Figure 8.- Network graphs obtained as a result of KDD analysis from the whole documentary production of RAC SPA centre during the last decade.

4.3. Analysis of official national reports, mainly to international conventions and agreements

The results of the countries actions with regard to SAP BIO main activity axes has been displayed through radar charts. Each one of them shows the seven categories grouping the specific actions. Each axe has calibrated the effort undertaken by each country based in the data obtained from the data collection. This provides a quick intuitive visualisation of the degree of SAP BIO fulfilling, considering that full implementation would have rendered a fully coloured radar chart surface.

The following 21 radar charts (Figure 9, Figure 10, Figure 11 and Figure 12) show also the particular implementation profile undertaken by each country.
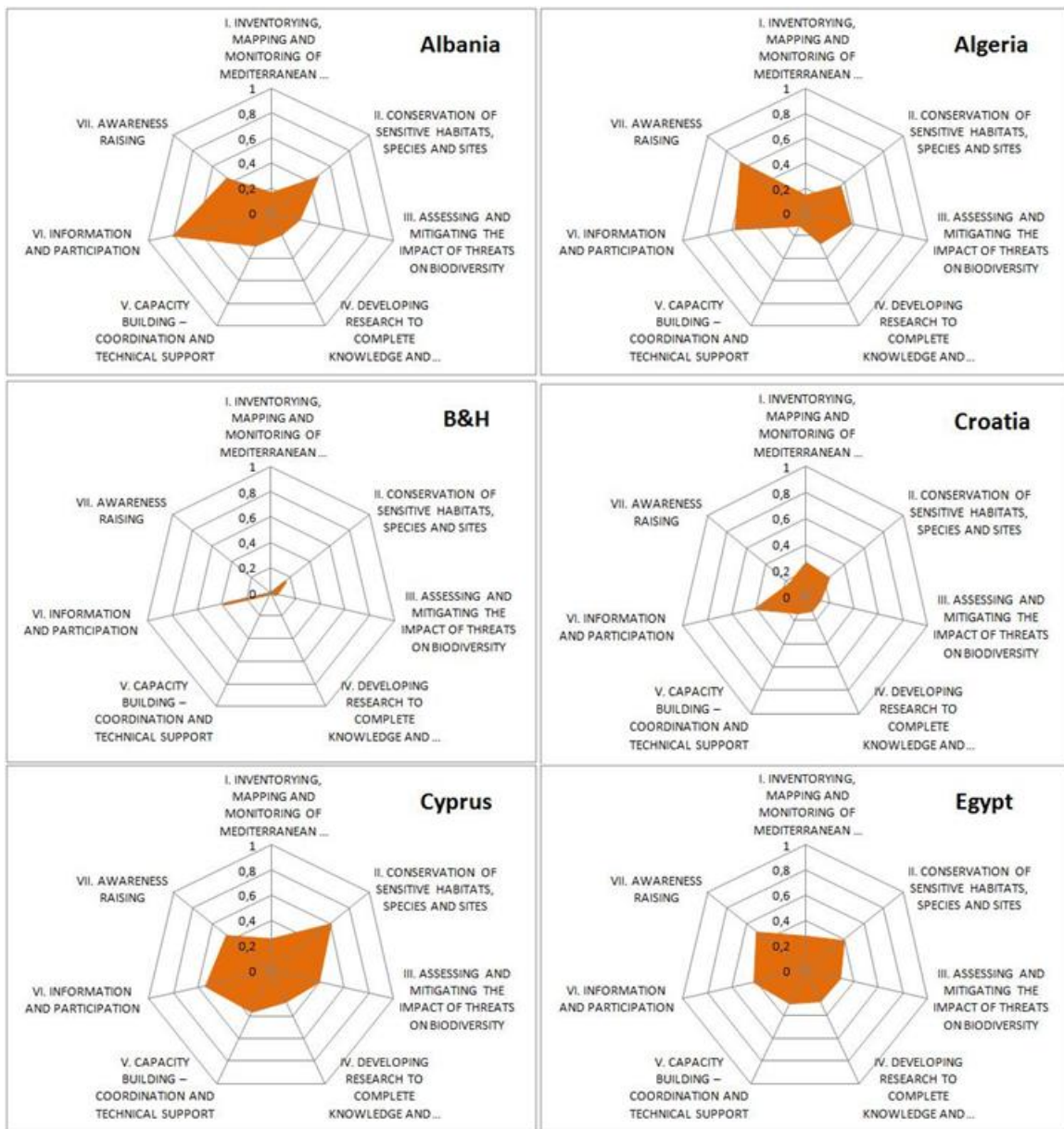
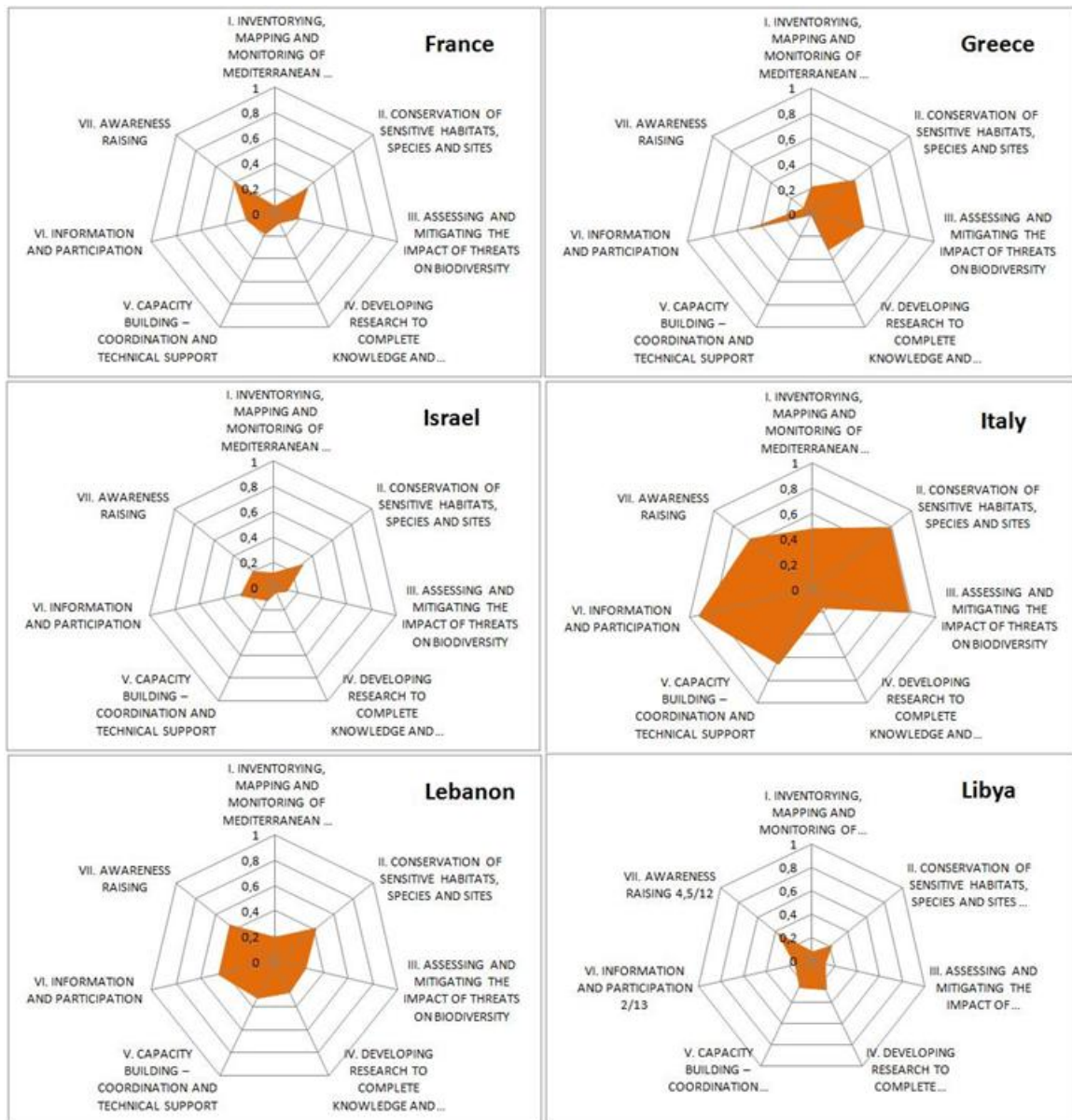**Figure 9.- Radar charts for SAP BIO implementation by countries**

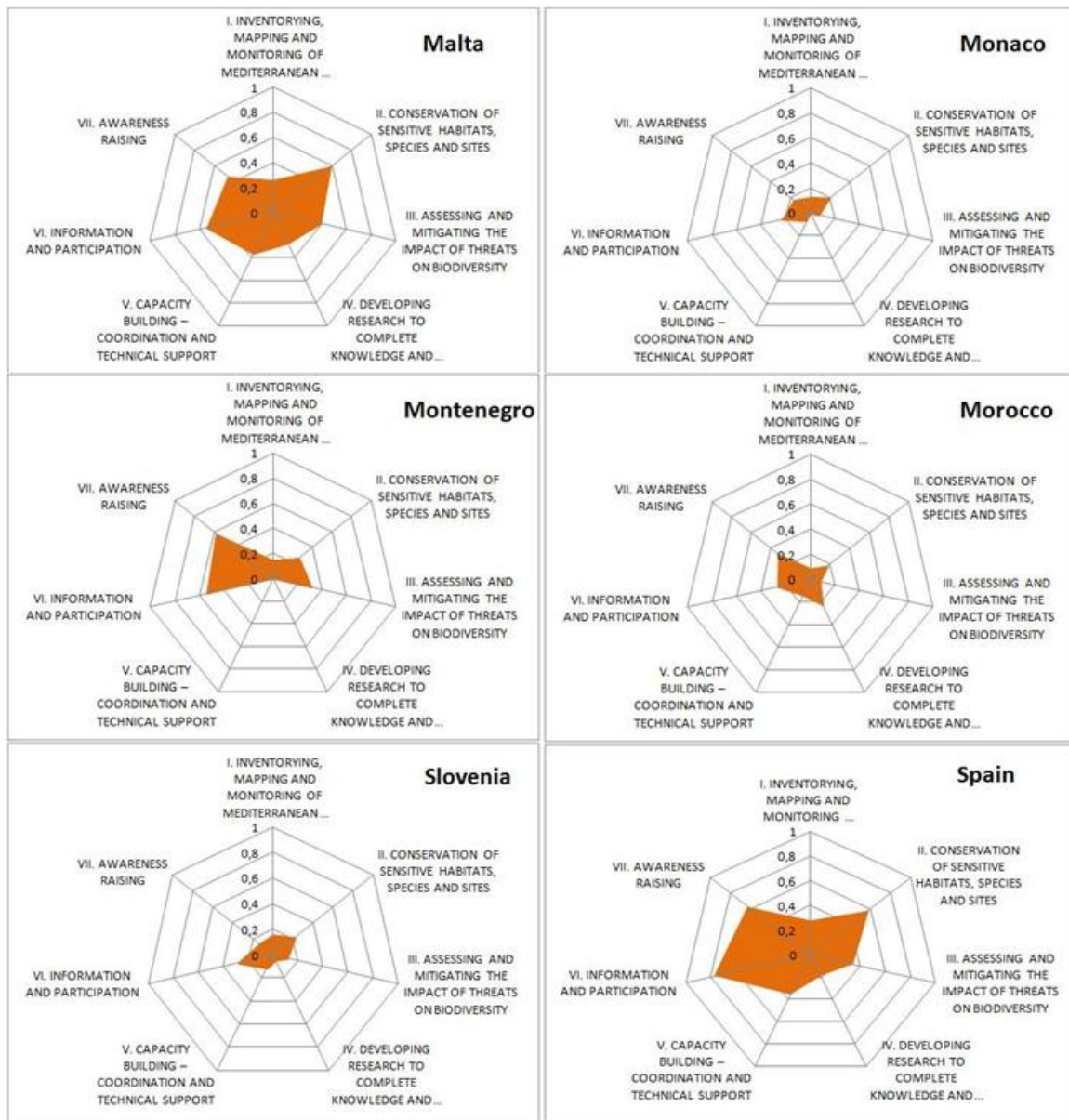**Figure 10.-Radar charts for SAP BIO implementation by countries**

Figure 11.- Radar charts for SAP BIO implementation by countries
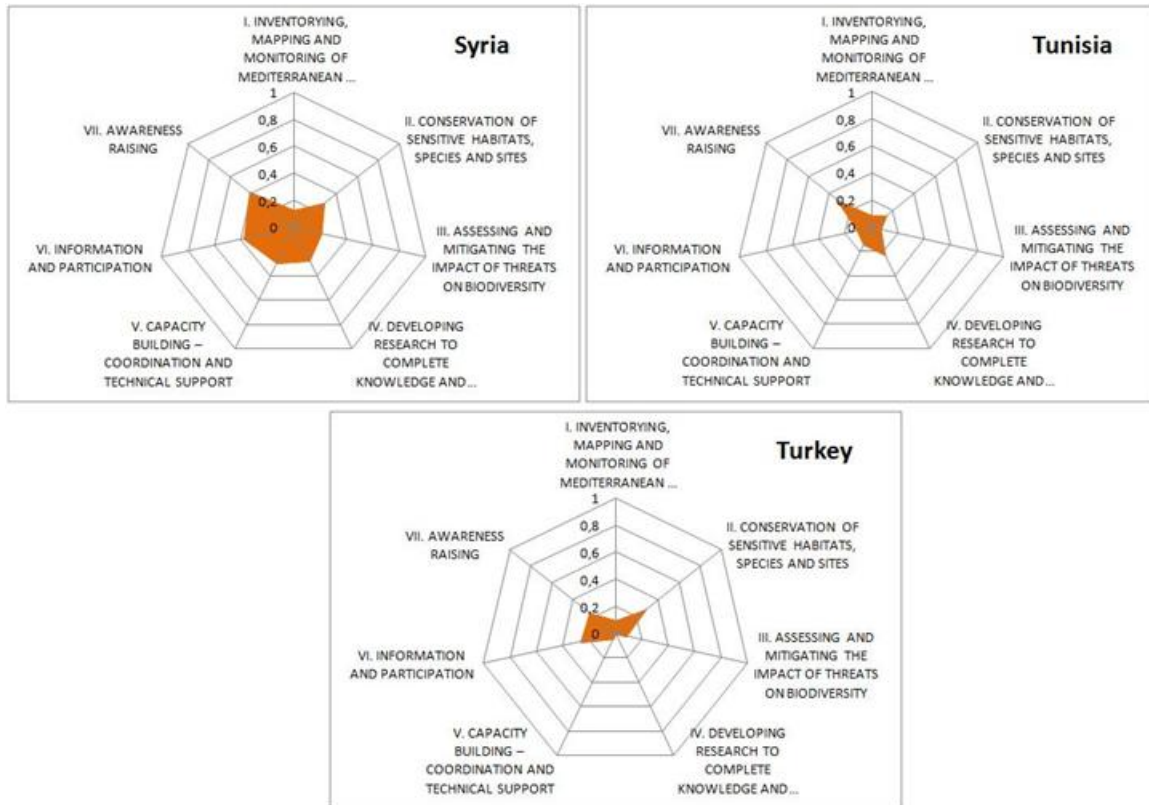
Figure 12.- Radar charts for SAP BIO implementation by countries

Further to the analysis of the individualised implementation activity by each country, the countries data have been jointly worked out through a multivariate analysis to group them with regard to similarities of implementation approaches. Such grouping is herein below visualised through a horizontal hierarchical tree diagram and a multidimensional scaling (MDS) diagram.

Countries having undertaken similar implementation approaches appear in commonly originated branches in the tree diagram and closer to each other in the MDS diagram. Observing them as well as the radar charts together, a more clear perception of the singular characteristics of each country with regard to the whole.

While the radar charts allow for a gross comparison of the total implementation achieved by each country, their individual effort relies to a great extent on their economic and technical means to invest in marine conservation. Aimed to calibrate this factor to make Parties effort more comparable, the per capita income (PCI) by country, as well as other values, could be taken into account.

In addition several countries have contributed with support to the implementation of SAP BIO activities in other ones and that has not been considered in calculations. Since the level of implementation might differ depending on the calculation approach done, the need for elaboration of indicators specific to the future evaluation of implementation achievements arises.
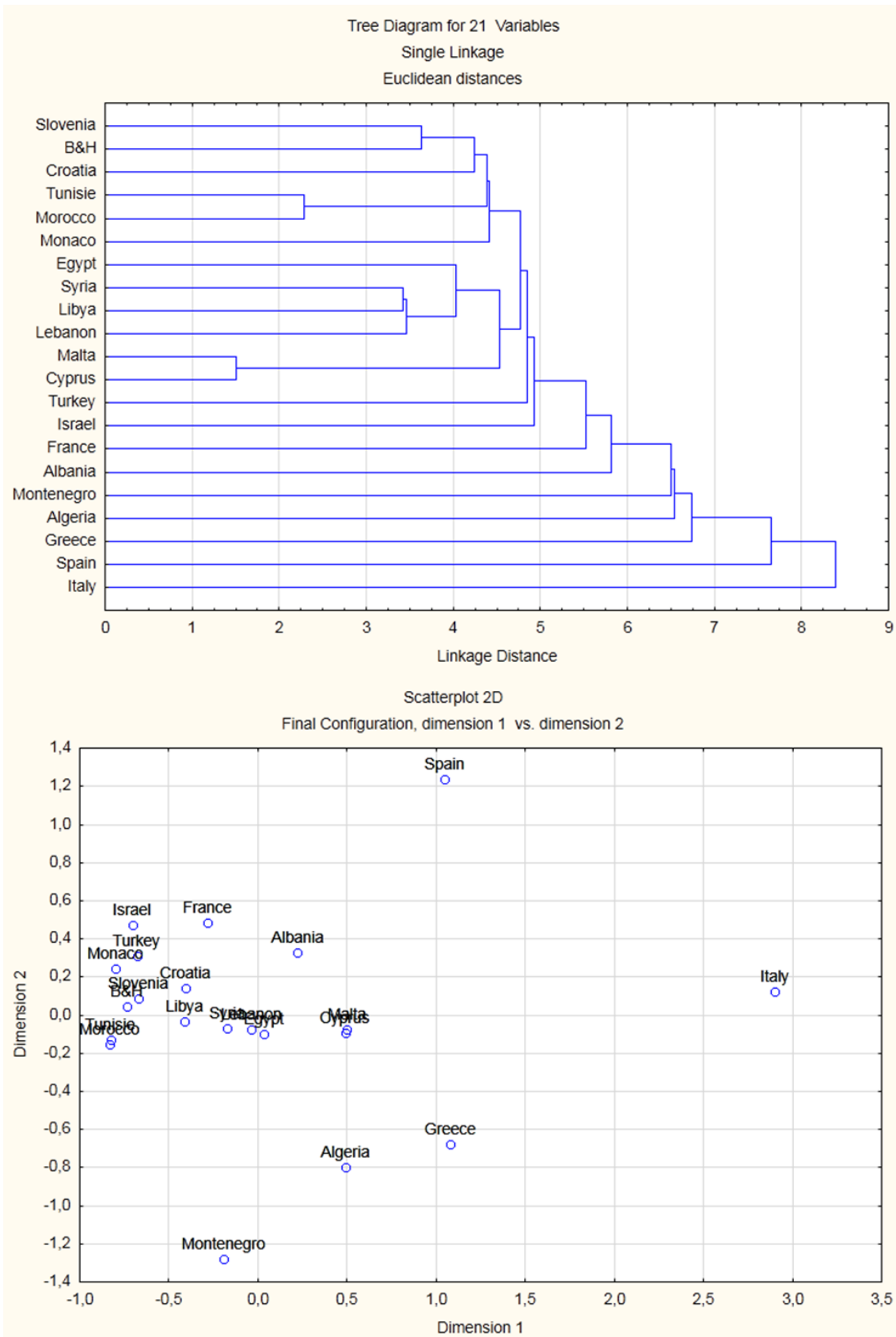
Figure 13.-Tree diagram and MDS diagram of SAP BIO implementation similarity by Barcelona Convention Parties