



# Climate and Environmental Change in the Mediterranean Basin – Current Situation and Risks for the Future

First Mediterranean Assessment Report (MAR1)

## Appendix A

### Appendix to Chapter 1 Introduction

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## Annex A:

### A.1 MedECC Partners

In December 2017 the Secretariat of the Union for the Mediterranean (UfM) signed an agreement with the Plan Bleu Regional Activity Centre (UNEP/MAP) to jointly support MedECC. The MedECC Secretariat is supported and funded by UfM, through a grant provided by the Swedish International Development Cooperation Agency (SIDA), hosted by Plan Bleu in Marseille, France.

MedECC is also supported by: the French Agency for Ecological Transition (ADEME), Mediterranean Integrated Studies at Regional And Local Scales (MISTRALS), the Principality of Monaco, the Advisory Council for the Sustainable Development of Catalonia of the Government of Catalonia (CADS, Spain), Métropole Aix-Marseille Provence (France), Laboratory of Excellence OT-Med, Aix-Marseille University (France), the French National Research Institute for Sustainable Development (IRD), Association for Innovation and Research in Climate (AIR Climat, France) et ACTERRA Consulting (France).

**The Union for the Mediterranean (UfM)** is an intergovernmental institution created in 2008 which brings together all 28 countries of the European Union and 15 countries of the southern and eastern Mediterranean. UfM's mission is to enhance regional cooperation, dialogue and the implementation of projects and initiatives with tangible impact on citizens, addressing three strategic objectives: stability, human development and integration. The UfM Climate Change Expert Group (UfM CCEG) was established at the first UfM Ministerial Meeting on Environment and Climate Change in May 2014 in Athens, Greece. The UfM Ministerial Declaration of Athens expressed the need for a regional vulnerability assessment regarding climate change impacts in the Mediterranean. The role of the UfM CCEG is to advance discussions on climate change priority actions and accelerate the identification and development of concrete projects and initiatives. UfM CCEG has approved a Work Program (2017-2022) in which a specific activity "To promote a regional science-based consensus on climate impacts in the UfM region especially on the Mediterranean Basin" was included. The work undertaken by MedECC responds to this activity and is therefore supported by UfM under its Ministerial mandate.

Administered by the **United Nations Environment Programme (UNEP)** for more than four decades as the first Convention of its Regional Seas Programme and as a regional Multilateral Environmental Agreement, the **Mediterranean Action Plan (MAP)** was approved in 1975 by the Mediterranean States and the European Union (EU) and was amended in 1995 after the Rio Summit to better reflect the integrated approach and indivisible nature of sustainable development. The Convention for the Protection of the Marine Environment and the Coastal Region of the Mediterranean (Barcelona Convention) was adopted in its original form in 1976 and amended in 1995 as a response to the MAP's revision. Today the UNEP/MAP – Barcelona Convention system represents the unique legally binding regime dedicated to the protection, depollution and preservation of the Mediterranean Sea and coast, and to sustainable development of its coastal area. The Barcelona Convention's 22 Contracting Parties adopted the Mediterranean Strategy for Sustainable Development (MSSD) in February 2016 at their 19<sup>th</sup> Meeting held in Greece, Athens, as a strategic guiding document for all stakeholders and partners to translate the 2030 Agenda for Sustainable Development (2030 Agenda) at regional, sub-regional and national levels. The MSSD provides an integrative policy framework for securing a sustainable future for the Mediterranean region consistent with the Sustainable Development Goals (SDGs). The creation of MedECC responds to needs and intentions expressed by the MSSD, in particular under the Flagship Initiative of its Objective 3 "Addressing climate change as a priority issue for the Mediterranean", which reads as follows: "Establish a regional science-policy interface mechanism, including the social and behavioral sciences, endorsed by all the Contracting Parties to the Barcelona Convention, with a view to preparing consolidated regional scientific assessments and guidance on climate change trends, impacts and adaptation and mitigation options".

**Plan Bleu** is one the UNEP/MAP Regional Activity Centers, located in Sophia-Antipolis and Marseille (France). Its program of work is approved every two years by the Contracting Parties to the Barcelona Convention. The main objective of Plan Bleu is to raise awareness of Mediterranean stakeholders and

decision makers regarding environment and sustainable development issues in the region, through the following activities: a) Observing interactions between environment and development to support decision makers; b) Shaping possible futures for sustainable development (prospective studies, scenario building); c) Monitoring the implementation of the Mediterranean Strategy for Sustainable Development; d) Integrating climate change as a priority; e) Supporting the transition towards a green and blue economy; f) Offering a socio-economic perspective for the appropriate management of Mediterranean resources.

MedECC has taken an active role as co-lead of the Climate Change chapter in the recent State of the Environment and Development Report (SoED 2019) coordinated by Plan Bleu.

The French **Research Institute for Sustainable Development** (IRD – *Institut de Recherche pour le Développement*) is a key French player on the international development agenda working primarily in partnership with Mediterranean and inter-tropical countries. It is based on the principle that scientific progress is necessary to further sustainable and human development, and uses an original model: equitable scientific partnership with developing countries to co-design solutions adapted to the challenges faced by humans and the planet, including pandemics, climate change, humanitarian and political crises, etc. It has been able to make an important contribution to MedECC thanks to its network and presence in fifty or so countries encouraging science and innovation as key drivers in their development.

The **Advisory Council for Sustainable Development of Catalonia** of the Government of Catalonia (CADS) is the advisory body on sustainability of the Catalan Government, whose main aim is to be an effective and successful interface between scientists, policy-makers and stakeholders. The council is an active member of the European Environment and Sustainable Development Advisory Councils (EEAC), a network of advisory bodies established by national or regional governments or parliaments. Since 2005, CADS has overseen the elaboration of the periodic Report on Climate Change in Catalonia. The 3<sup>rd</sup> edition was published in September 2016 and involved 150 experts and more than 40 reviewers. A 4<sup>th</sup> edition is under preparation.

The **Ministry of Foreign Affairs and Cooperation of the Principality of Monaco** manages public policy in the following areas: immunity, diplomatic channels and consular affairs, European affairs, international and multilateral affairs and international environment.

The **French Agency for Ecological Transition (ADEME)** is active in the implementation of public policy in the areas of the environment, energy and sustainable development. ADEME provides expertise and advisory services to businesses, local authorities and communities, government bodies and the public at large, to enable them to establish and consolidate their environmental action. As part of this work the agency helps finance projects, from research to implementation, in its areas of action.

The **Association for Innovation and Research in Climate (AIR Climat)** aims to contribute to awareness-raising on climate change issues and to help, through research and innovation, to implement new solutions in the field of carbon economy, lifestyles and their evolution. AIR Climat brings together climate change scientists and technicians. The association leads the Regional Group of Experts on Climate in the “South Region” of France (Région Sud – Provence-Alpes-Cote d’Azur), GREC-SUD, which aims to centralize, transcribe and share scientific knowledge on climate and climate change in the region. The priority objective of the group is to inform decision makers (elected representatives, local authorities) of the territory, so that scientific results are considered in public policies. Eight thematic booklets on climate change in the region have been published so far.

**ACTERRA** is a consultancy firm dedicated to environmental policy and climate change. ACTERRA has expertise in designing and implementing adaptation measures at different scales: strategic approaches and institutions at international and national level, regional and interregional initiatives, research and consulting for local authorities, operational actions at local level, etc., in particular in southern Mediterranean countries.

**Labex OT-Med** (*Objectif Terre – Bassin Méditerranéen*) is a “Laboratoire d’excellence” (LABEX) selected by the French “Investissements d’Avenir” program that brings together 10 research laboratories and 1 research federation specialized in different fields: a) environmental sciences, law, economy and social sciences; b) global change and natural hazards in the Mediterranean Basin.

MedECC has also obtained support from the **MISTRALS** program (Mediterranean Integrated Studies at Regional And Local Scales). The main objective of this program is to bring together French researchers and to reinforce international collaboration between Mediterranean countries. MISTRALS is led by CNRS, with strong partnerships with several other French research institutions. The MedECC network of experts allows the dissemination of scientific results to stakeholders, policy-makers and managers to help them address societal, environmental and economic challenges for the sustainable development of Mediterranean countries. MISTRALS addresses the following scientific questions, all of them included in the scientific objectives of MedECC: a) Links between past climate variability and evolution of Mediterranean civilizations and societies; b) Hydrological cycle in the Mediterranean and extreme rainfall events; c) Evolution of marine biogeochemistry under climate change and anthropogenic pressure; impacts on marine ecosystems; d) Change in atmospheric composition and air quality under climate change and anthropogenic pressure and impacts on health; e) Monitoring continental and marine biodiversity and their sensitivity to climate change and anthropogenic pressure; f) Changes in continental surfaces, from urban to countryside regions under climate change and anthropogenic pressure. Action b, in particular, is the objective of the research program HYMEX (Hydrological and Mediterranean Experiment) that has a strong relationship with MedECC, with some members of both corresponding steering committees and authors of this MAR1 report in common.

A similar relationship is maintained with **MEDCLIVAR** (Mediterranean Climate Variability and Predictability), which is a scientific network endorsed by the international CLIVAR Office, to promote better communication among different scientific disciplines and develop a multidisciplinary vision of the evolution of the Mediterranean climate through studies that integrate atmospheric, marine, and terrestrial climate components at time scales ranging from paleo-reconstructions to future climate scenarios.

## A.2 Research activities in the Mediterranean region

A number of past and ongoing research programs and projects have objectives relating to the MedECC assessment process. The following compilation lists some of them, without attempting to be complete.

- The Mediterranean Experiment (MEDEX) is focused on cyclones in the Mediterranean, their impact and forecasting (Jansa et al. 2014).
- The Hydrological Mediterranean Experiment (HyMEX) aims to elucidate the hydrological cycle in the Mediterranean, with emphasis on extreme weather events, inter-annual to decadal variability of the coupled Mediterranean system, and associated trends in the context of global change (Drobinski et al. 2014).
- The Med-CORDEX initiative attempts to downscale global climate scenarios in the Mediterranean (Ruti et al. 2016).

Other large collaborative scientific projects and networks do exist and are actively engaged in enhancing the necessary scientific knowledge base, often through a multidisciplinary and integrated approach (i.e. CIRCE-Climate Change and Impact Research: the Mediterranean Environment). The MedCLIVAR network is a case in point. Results of the investigations have been published in three books (Bolle 2003; Lionello et al. 2006; Lionello 2012) and numerous scientific articles. While often conceived as scientific platforms for better communication and cooperation among scientists, these projects, networks and initiatives and their results are usually not easily accessible to decision- and policy-makers.

The recent assessment reports of the Intergovernmental Panel on Climate Change (IPCC) and the Intergovernmental Science Policy Platform on Biodiversity and Ecosystem Services (IPBES) provide useful knowledge but they have not provided an integrated view on the Mediterranean Basin. These

assessments cover only parts of the region in disconnected chapters or only some of the relevant topics (e.g. climate variability). In close cooperation with MedECC, the forthcoming Sixth Assessment Report of the IPCC will contain, for the first time, a “Cross-Chapter Paper” dedicated to the Mediterranean Basin.

### **A.3 Institutional context of MedECC**

The origin of the MedECC initiative can be traced back to a meeting of the MedCOP 21 in Marseille, France, on 4-5 June 2015. In the context of the “Agenda of Positive Solutions”, the idea of a network of Mediterranean Experts on Climate and environmental Change (MedECC) was first put forward and very positively received during this meeting. MedECC was envisioned as a Mediterranean derivative of both IPCC and IPBES. Just one month later, on July 9, 2015, MedECC was more officially established in the context of a side event at the international scientific conference “Our Common Future under Climate Change” (CFCC) in Paris under the auspices of the International Council of Scientific Unions (ICSU), Future Earth, the United Nations Educational Scientific and Cultural Organization (UNESCO) and a number of French research institutions. CFCC was the key scientific event to prepare for the UNFCCC COP-21 held in Paris on November 30 – December 12, 2015. The Mediterranean side event at CFCC brought together about 40 scientists and representatives of the initial supporting institutions, including Plan Bleu (United Nations Environment Programme/Mediterranean Action Plan Regional Activity Centre), Labex OT-Med, MISTRALS, UfM, the World Bank Center for Mediterranean Integration (CMI), Regional Group of Experts on Climate in the South Provence-Alpes-Cote d'Azur (GREC-SUD), French National Research Institute for Sustainable Development (IRD) and Advisory Council for the Sustainable Development of Catalonia of the Government of Catalonia (CADS) as well as decision- and policy-makers.

Since 2015, MedECC has developed its network of voluntary contributions, aiming to contribute to a science-policy interface for Mediterranean sustainable development. Major steps in this context have included:

- Regular contributions to the meetings of the Union for the Mediterranean Climate Change Expert Group (UfM CCEG) since its meeting in Barcelona, Spain, on October 1 and 2 2015.
- Side events organized by MedECC during the 21<sup>st</sup> and 22<sup>nd</sup> Sessions of the Conference of the Parties to the United Nations Framework Convention on Climate Change (COP 21 and COP 22 – UNFCCC) respectively in Paris, France, in December 2015, and in Marrakesh, Morocco, in November 2016.
- A substantive contribution to the implementation of the Mediterranean Strategy for Sustainable Development (MSSD) 2016-2025, approved during the 19<sup>th</sup> Meeting of the Contracting Parties to the Convention for the Protection of the Marine Environment and the Coastal Region of the Mediterranean (Barcelona Convention) in Athens, Greece, in February 2016 (see Annex).
- Following the adoption of the 2017-2022 work program of the UfM CCEG, it was decided to rely primarily on MedECC to provide an assessment of the impacts of climate and environmental change in the Mediterranean Basin. Given the cross-sectorial scope of MedECC and its emphasis on environmental issues, it was decided that any possible UfM contribution to MedECC activities will be inclusive and involve Environment and Climate Change representatives of the UfM Member States, and will be pursued in coordination with all relevant UfM structures.
- The signature of an agreement in December 2017 between the Secretariat of the UfM and Plan Bleu Regional Activity Centre (UNEP/MAP) to jointly support MedECC, with the establishment of a MedECC Secretariat – financed in 2018-2020 by UfM through a grant from the Swedish International Development Cooperation Agency (SIDA) and hosted by Plan Bleu in Marseille, France, since May 2018.

## A.4 The path towards the first assessment (MAR1)

### A.4.1 Main steps in report preparation

The Secretariat of the UfM hosted the first meeting of the MedECC ad hoc SC on April 7 and 8 2016 in Barcelona, Spain. The purpose of this meeting, to which a few key scientists and representatives of the main user institutions were invited, was to debate the group's governance system and the foundations of the First Mediterranean Assessment Report (MAR1). This meeting was followed by a workshop in Aix-en-Provence, France, in October 2016, where participants from 16 countries, 50 scientists and 18 representatives of end-user organizations, met to develop the general structure and outline of MAR1. From May 2017 to March 2018, thematic workshops were organized in order to discuss the topics to be included in MAR1. More specifically the thematic workshops comprised: (i) a workshop on “Water, food, energy” (May 2017, Rabat, Morocco), (ii) a workshop on “Development, health and human security” (June 2017, Palermo, Italy), (iii) a workshop on “Ecosystems and ecosystem services” (July 2017, Marseille, France), (iv) a workshop on human impacts on Mediterranean marine ecosystems and the economy (October 2017, Monaco) and (v) a workshop on drivers of climate and environmental change (March 2018, Aix-en-Provence, France).

A call for self-nominations of Coordinating Lead Authors (CLAs) and Lead Authors (LAs) for MAR1 was widely distributed on May 31, 2018, with a deadline extended to June 22, 2018. This call was circulated widely in various scientific networks. MedECC invited self-nominations from experts from the full range of scientific, technical and socio-economic views and backgrounds linked with the Mediterranean. MedECC received 161 self-nominations from 24 countries (39% female and 61% male).

MedECC CLAs were appointed by the MedECC SC, giving priority to recognized scientific capacity and ensuring, to the highest degree possible, diversity in terms of scientific discipline, country of origin and gender. During a second phase LAs were appointed by CLAs in collaboration with the MedECC SC, using the same criteria. Contributing Authors (CAs) were selected by the CLAs, with the approval of the MedECC Coordinators. The drafting of MedECC MAR1 can thus be considered a highly participatory process.

All appointed authors are widely recognized experts who represent a broad range of subject areas and opinions in order to achieve scientific excellence. CLAs and LAs interact frequently with MedECC Assessment Coordinators, the MedECC Secretariat and the MedECC SC. In 2020, the final editing of the report and the Summary for Policy-makers was undertaken by an ad hoc Editorial Committee consisting of MedECC coordinators and several CLAs and/or SC members.

In October 2018, a few scientists representing the MedECC network published the first synthesis of multiple changes in the environment that impact the livelihoods of people in the entire Mediterranean Basin (Cramer et al. 2018).

In December 2018, scientists representing the MedECC network, in collaboration with decision makers, published a preliminary assessment of risks associated with climate and environmental changes in the Mediterranean region (MedECC booklet) (MedECC 2018).

An event organized on 10 October 2019 by the UfM Secretariat as part of the IV UfM Regional Forum was a good occasion for presenting this MedECC booklet with updated information and draft key messages. The event was a very good opportunity for bringing the report to the attention of the representatives of major stakeholders, all sectors of society, and especially policy-makers from across the region, ahead of its finalization and communication to the ministers in charge of environment and climate change at the upcoming UfM Ministerial meeting dedicated to these issues. It had a huge impact in the media across the region, and helped raising awareness.

### A.4.2 Tasks and responsibilities

Role attribution in report drafting and definitions are generally based on IPCC procedures, with modifications due to more limited resources than IPCC.

### *Assessment Coordinators*

The role of coordinating the assessment is shared between two scientists. An assessment coordinator's role is to assume responsibility for overseeing the preparation of an assessment report, as well as its Summary for Policy-makers (SPM) and generally ensuring that the report is completed to a high standard, that the chapters feed into each other and that their messages are not contradicting.

The coordinators are both senior experts in their field and have experience in coordinating the work of experts. Besides overseeing the development of the assessment, the coordinators also contributed text to chapters.

The coordinators of MAR1 were Joël Guiot (CEREGE, CNRS, France) and Wolfgang Cramer (IMBE, CNRS, France).

### *Coordinating Lead Authors (CLAs)*

CLAs take overall responsibility for coordinating major sections of an assessment report. CLAs have similar roles as LAs with the added responsibility of ensuring that major sections of the report are completed to a high standard, collated and delivered to the MedECC Secretariat in a timely manner. CLAs play a leading role in ensuring that any cross-cutting scientific or technical issues which may involve several sections of a report, are addressed in a complete and coherent manner and reflect the latest information available.

### *Lead Authors (LAs)*

LAs are responsible for the production of designated sections on the basis of the best scientific, technical and socio-economic information available. LAs typically work in small groups, which have responsibility for ensuring that the various components of their sections are brought together in time, are of uniformly high quality and conform to any overall standards of style set for the document as a whole. During the final stages of the report preparation, when the workload may be particularly heavy, LAs are dependent upon each other to read and edit material, and to promptly agree on any changes deemed necessary.

The essence of the LAs' task is the synthesis of material drawn from all available literature. LAs are also required to take account of expert and government review comments when revising text. LAs must have the ability to develop text that is scientifically, technically and socio-economically sound and that faithfully represents, as much as possible, contributions by a wide variety of experts. LAs are required to record in the report views which cannot be reconciled with a consensus view, but which are nonetheless scientifically or technically valid.

### *Contributing Authors (CAs)*

CAs are asked to prepare technical information in the form of text, graphs or data for integration by the LAs into the draft section. Input from a wide range of contributors is a key element in the success of the MedECC assessment report. Contributed material may be edited, merged and if necessary, amended, in the course of developing the overall draft text.

### *Expert Reviewers*

Expert Reviewers provide comments on the accuracy and completeness of the scientific, technical and socio-economic content and the overall balance of the drafts. Expert reviewers comment on the text according to their own knowledge and experience.

### *MedECC Secretariat*

The MedECC Secretariat assists with all matters related to the preparation of the MedECC MAR1, including communication, exchange of scientific information, management of documents and drafts, the review process and other matters. The MedECC Secretariat is also responsible for collaborating and

coordinating with the CLAs to ensure that the chapters are delivered in a timely manner and to a high standard. The Secretariat collaborates closely with MedECC Coordinators and has been funded by UfM thanks to SIDA and based in Plan Bleu premises in Marseille, France, since May 2018.

The MedECC Secretariat is currently composed of the MedECC Science Officer, Katarzyna Marini. MedECC will seek to expand this support structure.

#### *MedECC Steering Committee (SC)*

The MedECC SC decides on the functioning of MedECC and focuses on strengthening the science-policy dialogue, as well as the visibility and credibility of MedECC. The SC participated in the development and validation of the structure and outline of MAR1, reviewed the CLA and LA nominations and validated the final list of CLAs and LAs.

At the time of MAR1 the SC included:

- Magda Bou Dagher Kharrat (Saint Joseph University, Beirut, Lebanon)
- Ghani Chehbouni (IRD, Rabat, Morocco)
- Wolfgang Cramer (CNRS, IMBE, Aix-en-Provence, France)
- Marianela Fader (International Centre for Water Resources and Global Change (UNESCO), Federal Institute of Hydrology, Koblenz, Germany)
- Carlo Giupponi (Ca' Foscari University and Venice International University, Italy)
- Arnault Graves (Union for the Mediterranean, Barcelona, Spain)
- Samir Grimes (National High School of Marine Sciences and Coastal Management, Algiers, Algeria)
- Joël Guiot (CNRS, CEREGE, Aix-en-Provence, France)
- Manfred A. Lange (The Cyprus Institute, Nicosia, Cyprus)
- Elen Lemaitre-Curri (Plan Bleu, Marseille, France), until July 2020 ; François Guerquin (Plan Bleu, Marseille, France), after July 2020
- Julien Le Tellier (UNEP/MAP – Barcelona Convention Secretariat, Athens, Greece)
- Piero Lionello (University of Salento, Lecce, Italy)
- Maria Carmen Llasat (University of Barcelona, Spain)
- Cyril Moulin (National Institute for Earth Sciences and Astronomy (INSU), CNRS, MISTRALS, Paris, France)
- Shlomit Paz (University of Haifa, Israel)
- Arnau Queralt Bassa (Advisory Council for the Sustainable Development of Catalonia (CADS), Barcelona, Spain)
- Maria Snoussi (Mohammed V University, Rabat, Morocco)
- Andrea Toreti (European Commission – Joint Research Centre (JRC), Ispra, Italy)
- Ethemcan Turhan (Environmental Humanities Lab, Kungliga Tekniska Högskolan (KTH), Stockholm, Sweden)
- Elena Xoplaki (Justus-Liebig Universität Gießen, Germany)

#### A.4.2 Key stages of MedECC report production

##### *Development of the detailed outline of the report – March 2018*

The overall structure of the report was discussed and validated during the scoping workshop, which took place in Aix-en-Provence, France, in October 2016. Detailed outlines of chapters were developed during thematic workshops: (i) on “Water, food, energy” (May 2017, Rabat, Morocco), (ii) on “Development, health and human security” (June 2017, Palermo, Italy), (iii) on “Ecosystems and ecosystem services” (July 2017, Marseille, France) and (iv) on drivers of climate and environmental change (March 2018, Aix-en-Provence, France).



### *Development of the First Order Draft (FOD) – April 2019*

Numerous on-line and on-site meetings between the MedECC SC members were held, starting with the Barcelona meeting in 2017. The MedECC Secretariat was established in May 2018. The first LA on-line meeting (on-line) was held in October 2018 to discuss the report production procedure and timeline. The 1<sup>st</sup> physical Mediterranean Assessment Report (MAR1) LA meeting was held in Milan (Italy), on March 4-7 2019. The meeting gathered 58 participants from 16 countries: MAR1 CLAs and LAs, MedECC SC Members and MedECC Partners. The main objective of this meeting was to work together on the 1<sup>st</sup> Mediterranean Assessment Report (MAR1). Authors discussed and further developed the contents of each chapter. The discussions in cross-chapter groups made it possible to verify the consistency of information provided across the whole report and identify overlaps.

The First Order Draft (FOD) of all chapters was finalized in April 2019. The FOD had at least 70% completed text for all major sections. It underwent a review internal to the assessment (Co-coordinators, CLAs, LAs, SC) in May 2019, which provided an opportunity to understand where the overlaps are between chapters, and gaps in text and expertise.

### *Development of the Second Order Draft (SOD) – September 2019*

Between June and September 2019 LAs held numerous on-line meetings. The SOD was the first complete draft of the technically and scientifically balanced assessment. Each chapter was required to include an Executive Summary. At this stage, authors had thought about graphics and had either identified existing graphics for inclusion or identified where graphics will be developed. Authors were also asked to be mindful of the language used in the preparation of the SOD and to present the range of scientific, technical and socio-economic evidence clearly and concisely.

In preparing the SOD and at subsequent stages of revision after review, CLAs were requested to clearly identify disparate views for which there is significant scientific or technical support, together with the relevant arguments.

The Executive Summary located at the beginning of each chapter of the report outlines the key findings arising from the assessment process. The summaries are crucial in how the outcomes of MedECC assessment are communicated to its primary audience. They are not abstracts, but a synthesis, analysis and collective expert judgment of the chapter findings. A key statement in the SPM should be readily traceable back to an Executive Summary statement(s) which in turn must be readily traceable back to a section(s) of the chapter text, which in turn should be traceable where appropriate to the primary literature through references.

### *Peer-review of SOD by scientific experts – October-November 2019*

An open call for independent reviewers was launched. The MedECC Coordinators and the Secretariat selected the reviewers. The reviewers come from a variety of institutions but are required to have a scientific background in the field of the assessment. The role of the reviewers was to comment on the accuracy and completeness of the scientific, technical or socio-economic contents and the overall scientific, technical or socio-economic balance of the draft report. Expert reviewers provided the comments to the CLAs through the MedECC Secretariat in an agreed format. The MedECC Secretariat received 113 reviews.

Comments were collated and sent to authors of the assessment. Upon request, the Secretariat made available any material that is referenced in the document being reviewed that is not available in the international published literature. Authors needed to have this material available in case a request is made.

### *MedECC Steering Committee and Coordinating Lead Authors meeting – December 2019*

The objective of this meeting was to discuss the results of the external peer review by scientific experts, develop the Summary for Policy-makers and to plan next steps for producing the Final Draft (FD). The

SPM (of about 20 pages) was produced by a team consisting of Coordinators, CLAs and selected LAs. The SPM is primarily based on the chapters' Executive Summaries. It contains the main policy-relevant, but policy-neutral findings of the assessment in synthesized and less technical language, generally in the form of top key messages and presented without reference to the main chapters. These messages represent the highest level of synthesis of the assessment and may be structured differently from the set of main findings in the SPM.

#### *Development of the Final Draft (FD) – February-April 2020*

The FD incorporated further development of the assessment by chapter teams as well as the results of the peer-review of SOD by scientific experts. All review comments require a written response – the resulting tables will be made publicly available upon request. Where authors reject a comment, they will provide written justification for doing so.

#### *Review of the draft SPM by stakeholders – May-June 2020*

The draft of the SPM was reviewed by governments and other relevant stakeholders through an open and transparent process. Drafts of report chapters were also provided as a source of the findings provided in the SPM.

The SPM approval procedure is organized with the UNEP/MAP – Barcelona Convention Secretariat and its Plan Bleu Regional Activity Centre, through their Focal Points and/or the Members of the Mediterranean Commission on Sustainable Development (MCSO), as well as with UfM Member State representatives within the regional Climate Change Expert Group (CCEG). The exact procedure has been established in close cooperation with UNEP/MAP and UfM.

During review and approval by policy-makers, the scientific content of the report and the clarity of its presentation were discussed.

#### *Finalization of draft Assessment Report and SPM for Plenary discussion – July-August 2020*

The final draft will take into consideration all comments from the review by stakeholders and policy-makers. Where authors reject a comment, they will provide written justification for doing so. A final draft of the SPM including key messages and graphics was also developed during this period.

The preparation of the final version of the report, considering all stakeholder and expert comments, was undertaken by the Coordinators, CLAs and LAs in consultation with the MedECC Editorial Committee. This stage is critical for the coordination of key findings and policy relevant messages in the SPM, for developing graphics, for quality assurance of chapters and ensuring consistency and traceability of confidence statements between the SPM and the chapters.

The final draft should reflect comments made by policy-makers, stakeholders and scientific experts. If necessary, authors, together with review editors and reviewers can try to resolve areas of major differences of opinion. Reports should describe different, possibly controversial, scientific, technical and socio-economic views on a given subject, particularly if they are relevant to the policy debate. The final report will credit all Coordinators, CLAs, LAs, CAs, reviewers and MedECC Editorial Committee and other contributors, as appropriate, by name and affiliation.

#### *Plenary consultation on the SPM – 22 September 2020*

The revised Summary for Policy-makers (SPM) of the First Mediterranean Assessment Report (MAR1) was the subject of the plenary consultation with policy-makers, governments, decision makers and stakeholders, which took place on 22 September 2020 (in Marseille, France and on-line). Due to the health crisis, the plenary consultation was predominantly held virtually. The particular aim of the plenary consultation was to ascertain that MAR1 findings, as presented in the SPM, are fully comprehensible and unambiguous and that the remarks from the on-line consultation were well integrated. This meeting gathered more than 100 participants. It was attended by representatives from 15 countries.

The agreed changes were implemented in the SPM, which should no longer be changed (except for editorial and technical modifications). At the end of the meeting the conclusions and recommendations were adopted. Participants in the plenary session were: Focal Points of the Union for the Mediterranean Climate Change Expert Group (UfM CCEG) and the UfM Environment Task Force, Focal Points of Plan Bleu/Regional Activity Centre (United Nations Environment Programme / Mediterranean Action Plan (UNEP/MAP)), Members of the Steering Committee of the Mediterranean Commission on Sustainable Development (MCSD), MedECC Coordinators, Secretariat, Steering Committee members and MAR1 Coordinating Lead Authors, Plan Bleu, UNEP/MAP and UfM Secretariat representatives.