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Agenda item 6: Preparation of MAP Assessment Studies on the Interactions between Environment and Development

Draft Executive Summary of the 2019 State of the Environment and Development in the Mediterranean Report (SoED 2019)

Note by the Secretariat

In 2018-2019, the MAP assessment work related to sustainable development was driven by Strategic Outcome 1.4 and Indicative Key Output 1.4.1 of the MAP Medium-Term Strategy (MTS) 2016-2021 (Decision IG.22/1) towards publication of assessment studies addressing interactions between environment and development in the Mediterranean.

As reflected in Decisions IG.23/4 and IG.23/14, MTS Strategic Outcome 1.4 and Indicative Key Output 1.4.1 were translated in the preparation of the 2019 State of the Environment and Development in the Mediterranean Report (SoED 2019) and MED2050 Foresight Study, including Case Studies on the Blue Economy in the Mediterranean. Progress and key achievements in relation with these activities are presented in document UNEP/MED WG.469/3.

The present document corresponds to the SoED 2019 Executive Summary. Based on the draft SoED 2019 Chapter 9 "Synthesis and Conclusions" (work in progress, Annex I), key messages are proposed for discussion at the end of the document.

The draft SoED 2019 Executive Summary and Chapter 9 will be reviewed by the Meeting of Plan Bleu Focal Points to be held in Marseille, France, on 27-29 May 2019; comments from Plan Bleu Focal Points will then be shared with the MCSD during the session. Preliminary conclusions and key messages are hereby submitted to the MCSD for general feedback and guidance to the Secretariat on the way forward. The 18th Meeting of the MCSD is therefore expected to provide comments on the draft SoED 2019 Executive Summary, in particular on the proposed key messages, as well as on key findings to be further emphasized and gaps to be addressed in the final version that will be submitted to the next meeting of MAP Focal Points and then to COP 21.

For environmental and cost-saving reasons, this document is printed in a limited number. Delegates are kindly requested to bring their copies to meetings and not to request additional copies.

Draft Executive Summary of the 2019 State of the Environment and Development in the Mediterranean Report (SoED 2019)

I. Socio-economic, political and institutional drivers and trends

1. Bordered by three continents, the Mediterranean basin is characterized by a high orographic diversity, with high mountain chains in close proximity to the sea (the Alps, Apennine Mountains, Atlas, Dinaric, Greek and Lebanon Mountains, Pyrenees, and Taurus) and desertic areas (Sahara). The region has a seasonal climate, with mild winters, warm and dry summers, and rainfall at the inter-seasons (autumn and spring). The landscapes are fragmented due to the multiplicity of land uses and heterogeneous land covers, mainly farming, forests, wetlands, urban and industrial areas. The region is a hotspot for coastal and marine biodiversity and endemism. These unique environmental conditions favoured the birth of a wide diversity of human communities, which share a rich history dating back to millennia. The richness of history is testified by more than 130 cultural and natural sites that have been listed as UNESCO World Heritage Sites.

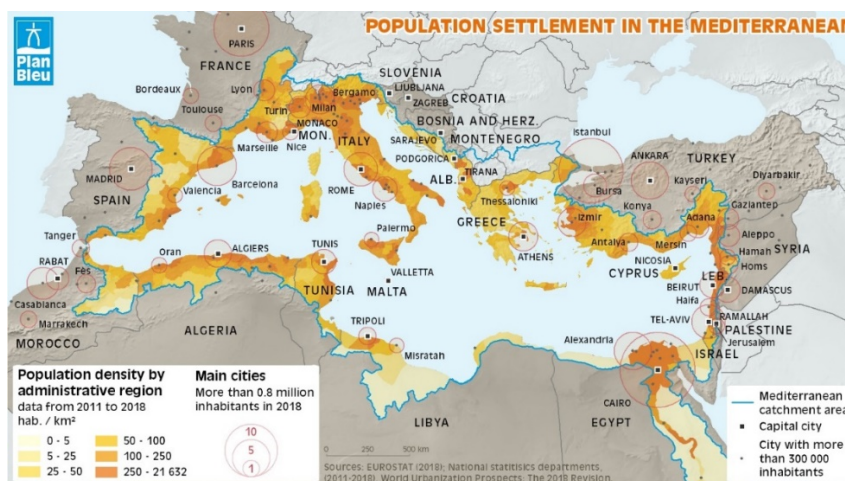


Figure 1: Population density by administrative region and main cities in the Mediterranean catchment area (Source: EUROSTAT, 2018; National statistics departments, 2011-2018, World Urbanization Prospects: The 2018 Revision)

2. The population of the Mediterranean countries amounts to approximately 510 million inhabitants in 2017, representing 6.8 % of the world population, almost one third of which lives in the coastal area and more than 70 % in cities. The regional demographic context is very diverse between the northern and southern shores. Northern Mediterranean Countries (NMCs) are characterized by a low fertility rate, an ageing population, and a relatively low share of active population.

[Figure 2: Age difference between SEMCs and NMCs]

3. Southern and Eastern Mediterranean Countries (SEMCs) are in a phase of demographic transition, with a relatively higher population growth, an overall younger population, and subsequently, a higher share of active population. The general decline in the proportion of rural versus urban population has continued throughout the last decade, with more than half of the population being urban in 2017 in almost all Mediterranean countries. The region has always been a crossroad for migration of people and communities. Migration only within non-EU Mediterranean countries involved about 7.5 million people, while migration from non-EU to EU Mediterranean countries involved about 5.7 million people. The number of refugees originating from Mediterranean countries is particularly high, coming mainly from the State of Palestine and Syrian Arab Republic. The number of refugees hosted in Mediterranean countries is also high, both in terms of absolute number and proportion of refugees to the host country population, in particular Lebanon, Malta and Turkey.

4. In the last decade, geopolitics in the Mediterranean region have been shaken by tension and instabilities. Political stability and well-established democratic systems generally characterize NMCs, although the recent financial and economic recession, started in 2008, led to public discontent and the raise of populist claims, turning the threat of a fragmented EU into a plausible future scenario. Several countries among SEMCs witnessed social and political transformations, with both the rise of democratic aspirations of large parts of the population and the upsurge of extremism, leading to a series of turmoil and upheavals. In Libya and Syrian Arab Republic, civil uprisings unfolded into ongoing international armed conflicts.

5. In spite of these demographic and geopolitical difficulties, human development has experienced a general upward trend throughout the last decade. Gaps between the northern and the southern and eastern shores have reduced but persist. Especially basic education in SEMCs has considerably improved throughout the last decade. Girls' education has improved, although the share of women in the active population is still low for most of the region. Youth unemployment is also a major issue in most parts of the basin, with rates of up to three times the national unemployment level.

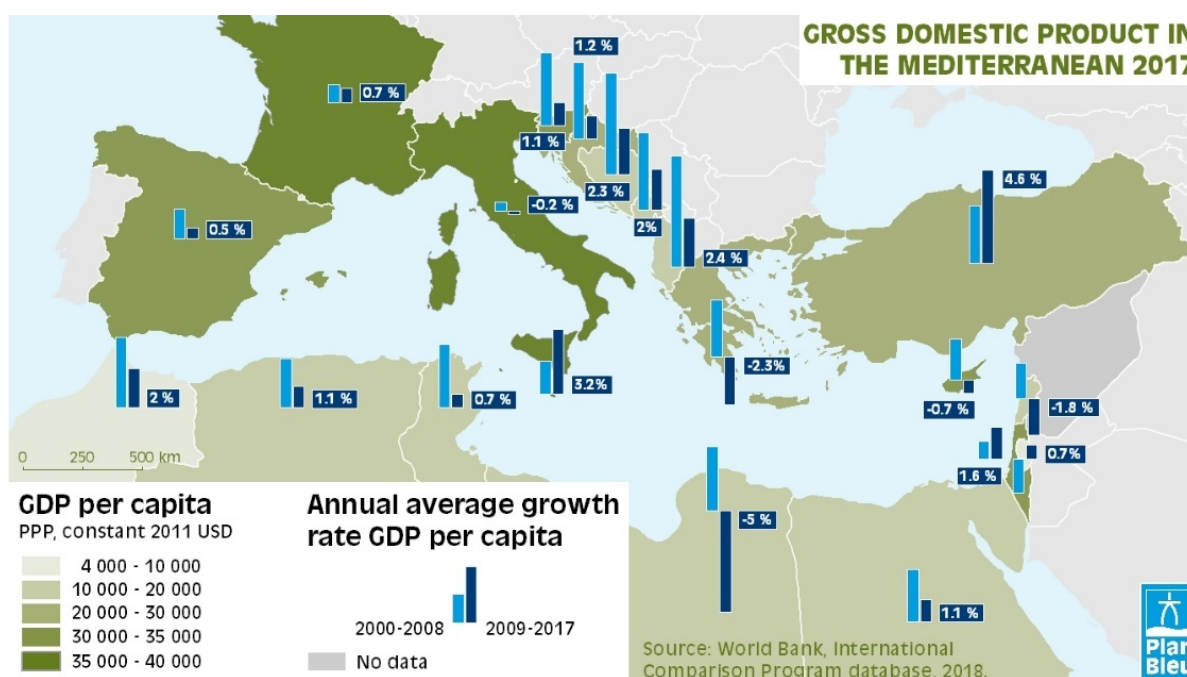


Figure 3: Gross Domestic Product in Mediterranean countries, 2017 (Source: World Bank, International Comparison Program database, 2018)

6. The regional economic context is generally characterized by a high economic dependence on imports, particularly of fossil fuels and cereals. Especially in SEMCs, the general trade deficit, coupled with non-diversified economic structures and a budget deficit, reflect and reinforce the difficulty of national economies to enhance their resilience to internal and external conditions and shocks. GDP growth rates in SEMCs are slightly higher than those of the EU Mediterranean countries, but do not currently allow for a rapid catch-up. Throughout the last twenty years, the share of agricultural and industrial value added in national GDP has decreased in the majority of Mediterranean countries to the benefit of services, which generally account for close to or above half of national GDP. In parallel, over the last decade, government debt, as a percentage of national GDP, has increased in most countries and reaches close to or above 100 % of national GDP in one third of Mediterranean countries. High and increasing debt ratios can be a risk for the financial sustainability and may hinder required public investments in the environment sector.

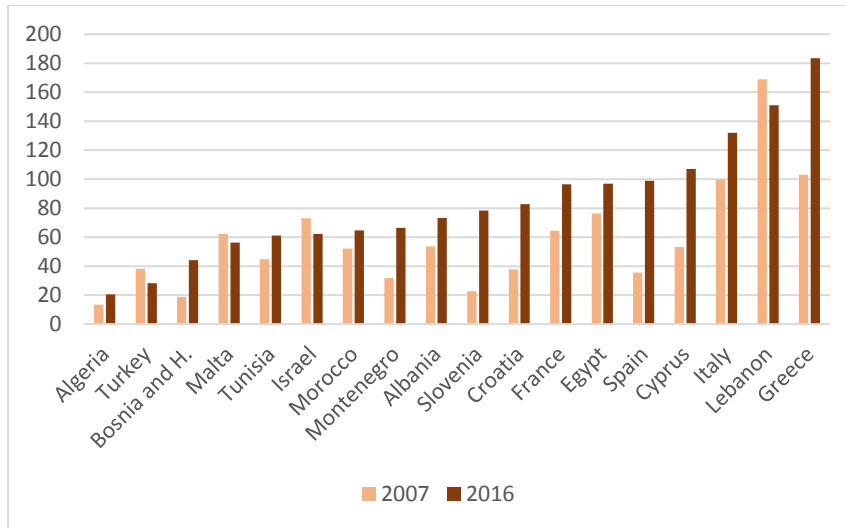


Figure 4: General Government Gross Debt, % of GDP, 2007 and 2016 (Source: IMF World Economic Outlook)

7. Throughout the last decade, cooperation frameworks and integration schemes in Euro-Mediterranean relations have not achieved the expected level of shared prosperity through enhanced political association and economic integration. Political integration included thematic ministerial conferences and parliamentary meetings, and cooperation on security-related matters. Economic integration progressed with tariff dismantling under free trade agreements already in force, and the signature of a number of additional trade agreements, mainly between the EU and accession candidates, remaining however relatively limited in comparison to other regions in the world.

II. Climate change

8. The Mediterranean basin is already experiencing climate change, at rates that exceed global averages. The IPCC AR5 considers the Mediterranean Region is “highly vulnerable to climate change” due to the influence of multiple stressors and potential associated “systemic failures”. This vulnerability is related to high coastal urbanization and to the limited adaptive capacity of coastal countries, especially in the South.

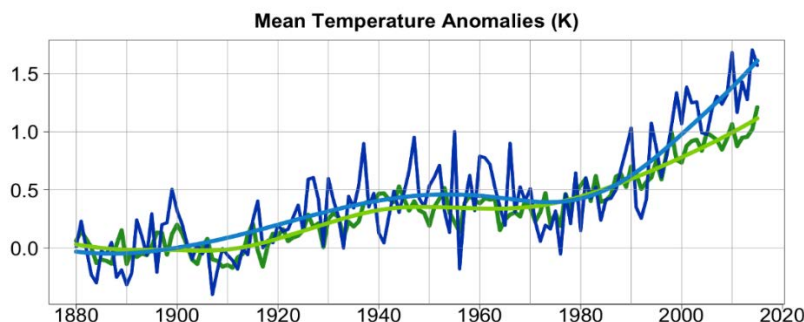


Figure 5: Historic warming of the atmosphere, globally and in the Mediterranean Basin. Annual mean air temperature anomalies are shown with respect to the period 1880-1899, with the Mediterranean Basin (blue) and the globe (green) presented with and without smoothing. Data from Berkeley Earth available at <http://berkeleyearth.org/> (Source: Cramer et al, 2018).

9. The air temperature in the Mediterranean basin has warmed by +1.6 °C above pre-industrial values, well above global average, and future projections indicate a warming of around +2.2 °C when the global average will pass the + 1.5 °C threshold. Warming will be more evident during summer months, and heat waves are expected to occur more frequently than in the past, especially in the East,

with further amplification in cities due to the “urban heat island” effect. The frequency and intensity of both droughts and heavy precipitation events has already increased since 1950 and is expected to continue to grow. A 2 °C global warming will likely be accompanied by a reduction in summer precipitation of about 10 to 15 % in some areas, while an increase of 2 to 4 °C would imply a reduction of precipitations of up to 30 % in southern Europe, especially in spring and summer. Heavy rainfall events are likely to intensify by 10 to 20 % in all seasons except summer. The Mediterranean water temperature is also expected to rise between + 1.8 °C and + 3.5 °C by 2100, with hot spots expected in the east of Spain and in the eastern Mediterranean Sea. In addition, sea level is expected to rise at about 3 cm per decade, a sharp increase compared to the period 1945 to 2000 (0.7 mm per year) and similar to global sea level increase. Finally, the Mediterranean Sea is subject to ocean acidification, that is the decrease of water pH due to the absorption of the CO₂ emitted by human activities, at rates in line with global averages.

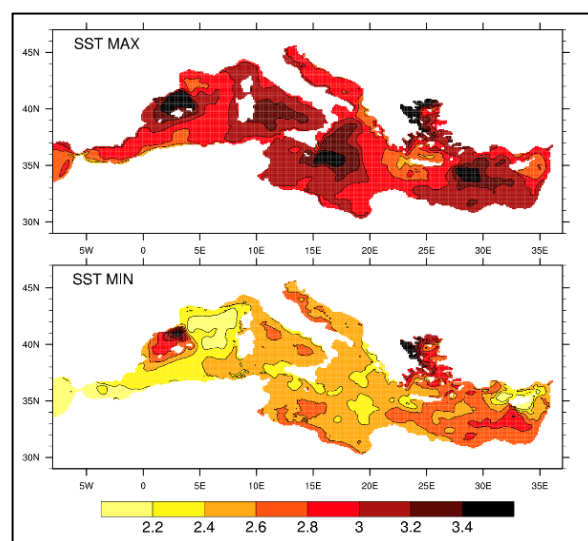


Figure 6: Sea surface temperature anomalies maxima (top) and minima (bottom) for the 2070–2099 period (vs. 1961–1990), in °C (Source: Adloff et al. 2015).

10. Climate change is expected to have significant impacts on the terrestrial, coastal and marine environment of the Mediterranean region. These include an expected increase in aridity, due to reduced precipitation and warming; an increased risk of more frequent and severe fires; and, negative impacts on the wildlife of inland wetlands and freshwater ecosystems by falling water levels and reduced water quality. The expected decrease in ecosystem integrity, biodiversity, and carbon storage capacity will lead in turn to soil erosion, soil fertility loss, and desertification. Overall crop productivity is expected to fall by over 20 % in 2080 in the Mediterranean countries, with peaks of an almost 40 % decrease in Algeria and Morocco.

11. The particularly high density of coastal population and infrastructure on the shoreline linked to a limited tidal range make the Mediterranean coast particularly vulnerable to changes in climate and sea level. Extreme rainfall and droughts, combined with sea-level rise, will contribute to a raise in the risk of coastal flooding and erosion, with increasing damage to key infrastructure and highly populated cities, which are primarily located in the coastal area. In particular, the effects of sea level rise are expected to be high for most low-lying coasts of the Mediterranean basin. These risks may be even higher along the southern and eastern shores, where monitoring systems are limited and the adaptive capacity is generally lower than in the north. Coastal erosion and flooding will generate loss of coastal land where important cultural heritage sites are located.

12. Sea warming, ocean acidification, and marine storms are expected to have negative impacts on marine biodiversity and dependent human activities. Increased water temperatures will lead to a rise in mass mortality events of sensitive species (especially coralligenous, sponges, and mollusks), favor warm-water affinity species at the expense of cold-water affinity ones, cause increased hypoxia or anoxia in large coastal areas and lead to a shift in dominant species towards non-indigenous ones in some sensitive areas. Ocean acidification will impact organisms producing carbonate shells and skeletons, such as calcifying plankton organisms, and other pelagic and benthic organisms with calcareous body parts, such as corals, mussels, and sponges, affecting tourism and aquaculture. Marine storms will increasingly damage marine and coastal ecosystems such as *Posidonia oceanica* meadows, which currently play a key role in fixing CO₂, providing habitat and protecting the coast from extreme events.

III. Biodiversity and ecosystem services

13. The Mediterranean is a semi-enclosed sea with multiple types of coastline including deltas, coastal plains, high cliffs, and mountainous areas, providing various natural and anthropogenic landscapes, and multiple types of sea-bottoms hosting diverse ecosystems and habitats. It counts more than 17,000 marine species and supports an estimated 4 to 18 % of the world's known marine species. Moreover, it holds the highest rate of endemism at global level (20 to 30 % of species are endemic). For these reasons, the Mediterranean Sea is considered as a biodiversity hotspot.

14. The built-up area in the Mediterranean coastal belt has increased substantially throughout the last decades; between 1965 and 2015, three fourth of the Mediterranean countries doubled or more than doubled the built-up area in the coastal belt of 1 km from the coastline. This leaves less space for natural coastal ecosystems and increases coastal risks for the people living in the coastal zone. Land-use change and subsequent fragmentation represent a major driver of the loss of biodiversity and ecosystem services in the Mediterranean basin. In parallel, rural zones experience land intensification driven by mechanized agriculture, forest fragmentation, and land abandonment, the latter especially in NMCs.

15. Mediterranean coastal ecosystems include wetlands, coastal aquifers, forests, agricultural land and soft and rocky shores. Mediterranean wetlands are characterized by a rich endemism, and host tens of millions of migratory, wintering, and breeding water birds. Wetlands provide several ecosystem services, including the capacity to mitigate impacts of floods, freshwater provision, carbon capture and recreational services. However, wetlands experience habitat loss (- 48 % since 1970), due to pressures such as conversion of wetlands to agricultural and urban areas, water pollution, alteration of the hydrological functioning, overfishing, coastline retreat, and sea level rise. A total of 397 Mediterranean Wetlands of National Importance has been designated (of which 113 sites are mainly coastal and marine), in the framework of the Ramsar Convention, 44 % of which have developed a management plan.

16. Coastal aquifers are an essential source of water supply in the Mediterranean catchment but are limited and unevenly distributed. They support many ecosystems, and provide essential ecosystem services, like water purification and storage, biodegradation of contaminants, nutrient recycling, and mitigation of floods and droughts. Current pressures on water resources are derived from increasing water demand linked to population dynamics, economic and social development, technological trends, and the increment of climate change. These pressures often lead to groundwater pollution, level depletion and seawater intrusion, which causes the salinization of soil and underground resources. It is therefore essential to manage groundwater using the Integrated Water Resources Management

(IWRM) approach (promoted in EU Member States through the Water Framework Directive), in combination with Integrated Coastal Zone Management (ICZM).

17. Forests are steadily increasing in Mediterranean countries, from 68 million ha in 1990 to 82 million ha in 2015. They are particularly important because they represent both a regional identity, a source of economic wealth, and a key element to sustainably manage watersheds in a region prone to erosion issues. They provide important goods and services, such as timber and non-timber products, primary production, nutrients recycling, air quality, climate and hydrology regulation, soil protection from erosion, and cultural and recreational services. In NMCs, forest fires are larger today than half a century ago due to increased fire risk from biomass accumulation linked to land abandonment; while, in SEMCs considerable degradation exists due to intensive fuelwood extraction and grazing. Climate change and linked increased and prolonged drought and fire risk are further challenging forest dynamics. Recognizing the importance to protect forests, eight Mediterranean countries (Algeria, France, Israel, Lebanon, Morocco, Spain, Tunisia, and Turkey), in addition to Iran and Portugal, endorsed the Agadir Commitment that compel them to restore at least eight million hectares of degraded forest ecosystems by 2030.

18. *[Section on Mediterranean agro-ecosystems pending]*

19. Mediterranean coastal environments (soft sediment coasts, muddy environments, rocky and soft shores and cliffs) provide important ecosystem services, such as shoreline stabilization and buffering, coastal defense, groundwater storage, and water purification. They suffer from accelerated erosion rates and substratum loss of rocky shores due to urbanization and coastal infrastructure expansion, sea level rise, and reduced river sediment inputs. About 1,238 coastal terrestrial species are identified by IUCN as threatened with extinction. Major drivers of species extinction include tourism and recreational activities, urbanization, agriculture, livestock, and invasive species.

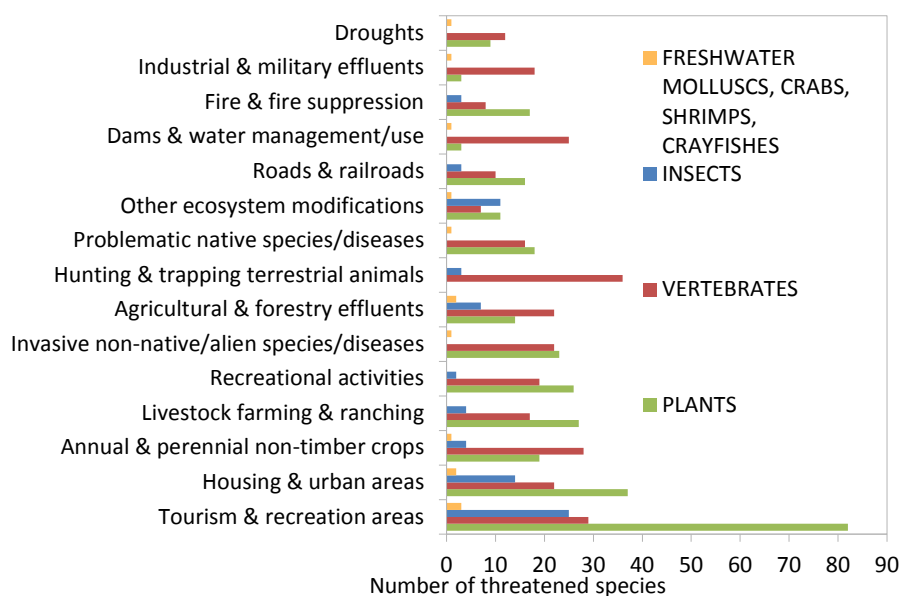


Figure 7: Main threats affecting coastal species in risk of extinction (IUCN Red List Categories CR, EN and VU) in the Mediterranean region (Source: IUCN)

20. Seagrass meadows, coralligenous and dark ecosystems are the most representative marine ecosystems particular to the Mediterranean Sea. Seagrass meadows, especially the endemic species *Posidonia oceanica*, show signs of regression due to both natural and anthropogenic pressures. Coralligenous ecosystems cover about 2,760 km²; they contribute to carbon sequestration and storage, and generate a remarkable natural productivity that contributes to the maintenance and development of fisheries resources, while being also attractive for tourists and scuba divers. Destructive fishing gears,

boat anchoring, invasive species, pollution, and climate change are the main threats to coralligenous habitats and the species they host, with reported cases of mass mortality events and slower growing rates. Dark habitats, in which aphotic ecosystems rely, are among the most fragile and unknown components of the Mediterranean marine biodiversity. They support commercial fishing resources and have an important role in biogeochemical cycles sustaining the balance of the marine trophic chain. They are threatened by land-based nutrients, waste discharge (including litter) and oil and gas activities. There is a growing awareness of the need to preserve dark habitats; in 2005, the FAO-General Fisheries Commission for the Mediterranean (GFCM) adopted a ban on the use of towed fishing gears in depths beyond 1,000 m. Current knowledge on these particular ecosystems still needs to be improved, promoting capacity building for habitat mapping and information sharing among coastal countries. At least 78 marine species assessed by IUCN are threatened with extinction, especially cartilaginous fish, marine mammals, reptiles and corals, due to interaction with fisheries, overfishing and other anthropogenic pressures.

21. Finally, non-indigenous and invasive species are increasingly present in the Mediterranean region. By 2017, more than 1,000 non-indigenous marine species have been recorded in the Mediterranean Sea, with 618 species considered established. The main vectors for introductions are corridors (in particular the Suez Canal) and maritime transport (through ballast water and hull fouling). Non-indigenous and invasive species may have negative impacts on marine ecosystems and dependent economies and societies.

22. The building of a coherent, representative, and well managed network of Marine Protected Areas (MPAs) is a priority in the Mediterranean region. To date, about 1,200 MPAs and other effective area-based conservation measures cover over 8.9 % of the Mediterranean Sea, close to the global Aichi 11 and SDG 14 Target of 10 % coverage. However, only about 10 % of these sites properly implement management plans, due to the lack of financial resources and skilled staff, as well as legal and policy gaps.

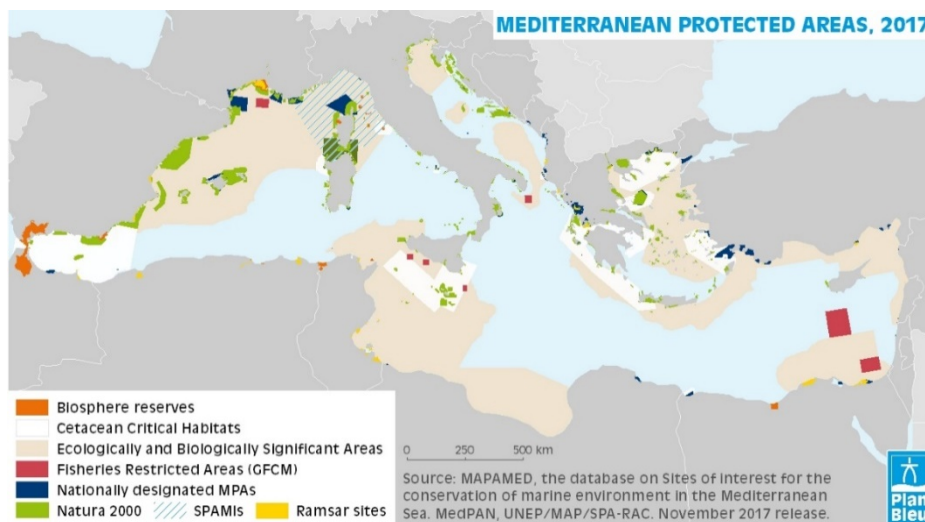


Figure 8: Mediterranean protected areas, 2017 (Source: MAPAMED, 2017) [updated figure pending]

IV. Economic activities and their pressures

23. Production and consumption patterns in the Mediterranean region have been undergoing profound changes throughout the last decades, which have led, in combination with demographic growth, urbanization, and a raise of living standard, to increasing resource consumption and environmental degradation. The increase in the demand of processed, refined food, manufactured goods and in coastal tourism couple with food loss and waste packaging overuse and the associated

losses of scarce resources such as water, land and energy. This adds to inefficient industrial processes and unsustainable waste management, putting further pressure on natural resources on which Mediterranean economies depend.

24. Agriculture always played an important role in the socio-economic development and is anchored in the Mediterranean identity. However, its importance has been gradually declining in the last decades, both in terms of its share in GDP generated, as well as in the number of farms and employed people. In the northern shore, this is mainly due to agricultural modernization and the consequent raise in labor productivity. Agricultural modernization and massive rural exodus released land and surplus labor; this structural transition has not yet fully taken place in the southern countries. Quantities of fertilizers and pesticides used for agriculture in Mediterranean countries are above the global average, with on average 6.7 kg of pesticides per hectare against a global average of 2.1 kg; and 176 kg (NMCs) and 185 kg (SEMCs) of fertilizers per hectare compared to a global average of 138 kg in 2015. The main environmental impacts of the agricultural sector include the run-off of nutrients and agrochemicals to the sea, which leads to algal and phytoplankton blooms, eutrophication, and bioaccumulation of chemical pollutants, as well as high resource consumption (water, soil, energy).

25. *[SoED section on fisheries and aquaculture pending]*

26. *[SoED section on energy pending]*

27. Thanks to its unique combination of mild climate, rich history and cultural heritage, exceptional natural resources and proximity to major source markets, the Mediterranean region is nowadays the world's leading tourism destination, receiving about one third of the world's international tourists. The Mediterranean basin is also the world's second largest destination for cruise ships. Tourism contributes directly to about 11 % of the total economic wealth and jobs in the region. It is extensively developed in NMCs and has witnessed a significant growth in SEMCs over the last twenty years, despite a slowdown of international arrivals in the South from 2011 onwards, showing the sector's volatility and lack of resilience to shocks. In parallel, there has also been a significant and rapid increase in cruise ship movements over the last two decades; the number of cruise passengers in 2017 (24 million) was more than double compared to 2006. However, the economic growth induced by tourism activities has often been to the detriment of environmental integrity and social equity. Mass tourism with a high seasonality is a major consumer of natural resources, especially water, food and energy, and pollutes marine and freshwater environments. Tourism-related coastal man-made infrastructures may alter and damage landscapes. These challenges are going beyond national borders and require regional coordination.

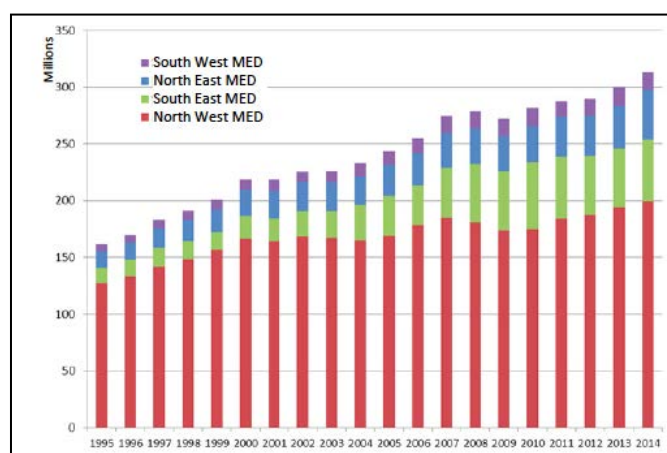


Figure 9: Mediterranean International Tourist Arrivals 1995-2014 (Source: Plan Bleu 2016, based on UNWTO Data 2016) [updated figure pending]

28. Transport is the highest energy-consuming sector in the Mediterranean. Public transportation and train systems are developed in the northern shore, while they need further development on the southern and eastern shores. *[Sentence on automobile fleet pending]*. Road transport generates ambient air pollution, exposing people to hazardous emissions of air pollution, noise, and anthropogenic heat, with an associated high cost in terms of welfare loss. Investments in public transport and electrification, as well as urban planning measures are needed to reduce these impacts. In parallel, commercial aviation continues growing in the Mediterranean region, above 300 million passengers annually. Aviation is responsible for an estimated 4.9 % of global anthropogenic greenhouse gas emissions and existing technological solutions to decarbonize aviation are not mature at this stage.

29. The Mediterranean Sea is the crossroads of major global maritime passages, namely the Suez Canal, the Strait of Gibraltar, and the Bosphorus and Dardanelles Straits. Intra-Mediterranean traffic accounts for 58 % of total traffic, with a steady increase over the last decade. Europe is the main shipping connection, receiving about 40 to 50 % of total extra-Mediterranean traffic. Oil transport and cruise ship tourism are the two most important activities. The Mediterranean Sea hosts major oil transportation lanes; in total, the Suez Canal and the Turkish Straits accounted for about 13 % of the world’s seaborne oil trade in 2015. Major impacts of maritime transport include operational, accidental or intentional pollution from the release of oil, litter, and hazardous and noxious substances, including toxic gases and particulates such as sulphur oxides (SO_x) and nitrogen oxides (NO_x), as well as greenhouse gas emissions; introduction of non-indigenous species through ballast waters; and underwater noise.

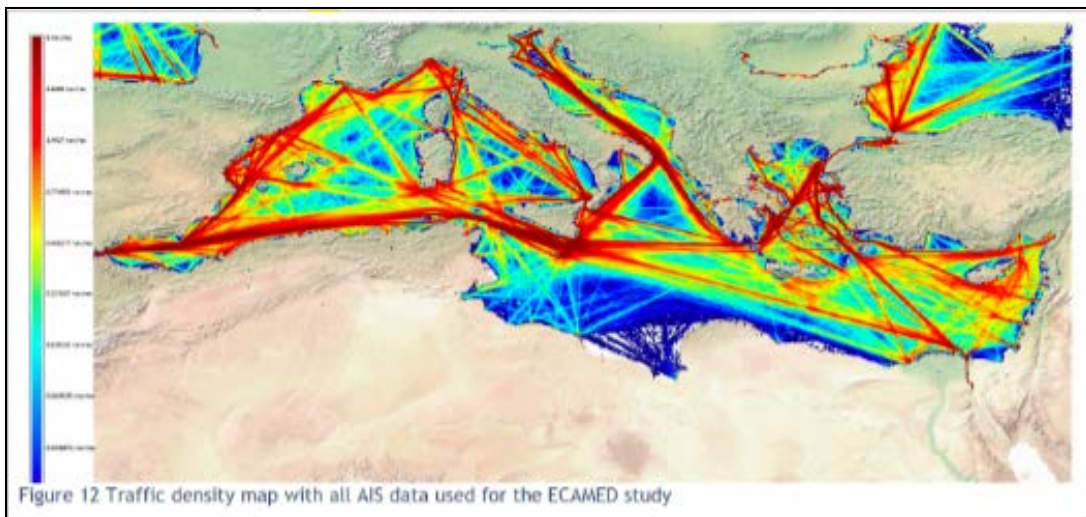


Figure 10: Traffic density in the Mediterranean Sea Area (Source: INERIS, 2019)

30. Emerging sectors with potential development include the marine biotechnology sector, i.e. the search for genes, molecules, and organisms with features that may be of benefit for society and have value for commercial development, and marine and seabed mining, i.e. the production, extraction and processing of non-living resources in seabed or seawater. Currently, there are no deep-sea mining activities in the Mediterranean Sea, mainly because of the low resource potential of the region, as well as low technological development, and regulation of these activities is currently lacking. Deep-sea mining activities may adversely affect deep-sea ecosystems through physical alterations, stirring-up of potentially toxic sediment plumes, noise, vibration and light induced, or through inappropriate waste management.

[Figure 11: Pollution hotspots on the Mediterranean coast]

31. Nutrients, heavy metals, persistent organic pollutants (POPs), pesticides, hydrocarbons, and marine litter are the main pollutants of the Mediterranean Sea. Eutrophication represents a major issue in coastal areas that are known to be influenced by natural and anthropogenic inputs of nutrients, such as the Gulfs of Lion and Gabès, the Adriatic Sea, northern Aegean, and Nile-Levantine. The limited data available for specific areas of the Mediterranean region show that key nutrient concentrations in the water column are generally in ranges characteristic of coastal areas. Levels of major pollutants show a decreasing trend, even though important issues remain, especially for heavy metals in coastal sediments, as well as for known hotspots associated with urban and industrial coastal areas. A decreasing trend has been observed for aqueous effluents from specific industrial sectors, such as the food and beverages, metals production and processing, and paper and wood production, while increasing trends have been observed for waste and wastewater management and the energy and chemical sectors. Emerging contaminants, such as plastic additives, cosmetics, plasticizers, nanoparticles, and pharmaceuticals, represent an under-investigated threat to ecosystem and human health which deserves attention, especially because, to date, municipal treatment plants are unable to remove them. Underwater noise pollution is also an issue of raising concern for its major impacts on cetaceans, especially in relation to identified hotspot overlapping important habitats of cetaceans such as the Pelagos Sanctuary and the Strait of Sicily.

32. The Mediterranean Sea is one of the most marine-litter affected areas in the world. More than 200 tons of plastic enter the Mediterranean Sea every day, and plastics account for up to 95 to 100 % of total floating marine litter, and more than 50 % of seabed litter. Single-use plastics represent more than 60 % of the total recorded marine litter in Mediterranean beaches, which is typically generated from beach recreational activities. Major causes of plastic pollution include the increase of plastic use, unsustainable consumption patterns, and ineffective and inefficient waste management practices. *[Key information on waste management pending.]* Less than one third of the plastic produced each year in Mediterranean countries is recycled. Wastewater is also an important pathway through which marine litter enters the sea. To date, less than 8 % of wastewater undergoes tertiary treatment. Other important sources of marine litter are fisheries, tourism, and shipping. Marine litter impacts marine organisms mainly through entanglement and ingestion, but also through colonization and rafting. It also has economic and social impacts through clean-up costs, as well as potential loss of income and jobs from tourism, residential property values, recreational activities, and fisheries.

V. Marine and Coastal Zone Management

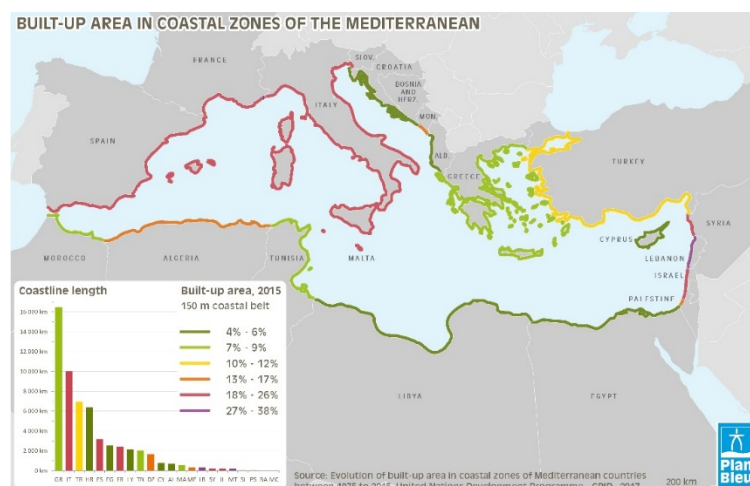


Figure 12: Evolution of built-up area in coastal zones of the Mediterranean countries between 1975 and 2015 (Source: UNDP-GRID, 2017)

33. In many areas, the Mediterranean coastal zone shows a high population density and related infrastructure as well as touristic, commercial and industrial stakes, many of these situated close to mean sea level. This makes coastal zones highly vulnerable to sea-level rise, storm-surges, flooding and erosion. In the coastal belt, the built-up area has increased substantially in the last decades, leaving less space for natural coastal ecosystems and diminishing their capacity to provide important services to humans. The Integrated Coastal Zone Management (ICZM) Protocol of the Barcelona Convention, in its article 8, provides that Contracting Parties shall establish in coastal zones, a zone of at least 100 m in width where construction is prohibited. However, the built-up area within the first 150 m wide belt along the coastline is above 20 % in almost half of Mediterranean countries (in 2015). An integrated and inclusive approach is necessary to address challenges linked to coastal urbanization and conservation of coastal ecosystems.

34. Integrated Coastal Zone Management (ICZM) and Marine Spatial Planning (MSP) offer valuable coherent and sustainable responses to current challenges to Mediterranean coasts. The ICZM Protocol to the Barcelona Convention has been ratified by half of the Contracting Parties, while another six have signed it. Most experiences in ICZM, especially in the southern Mediterranean, have been conducted since the mid-1980s through 18 Coastal Area Management Programmes (CAMPs), among other initiatives. These experiences have enabled capacity building at administrative and managerial level, as well as at technical and scientific research levels. In addition, EU countries are preparing maritime spatial plans following the provisions of the EU Directive on MSP. To this respect, in 2017 the Contracting parties of the Barcelona Convention agreed on a “Common Regional Framework” to introduce MSP into the delivery of the ICZM Protocol, as the main tool for the implementation of ICZM in the marine part of the coastal zone. Moreover, both ICZM and MSP deal with the land-sea interactions and address conflicts between human uses and coastal and marine ecosystems, by applying a precautionary, adaptive, science-based approach. For these reasons, ICZM and MSP are recognized as the most appropriate operational tools in achieving sustainable development in the coastal zones.

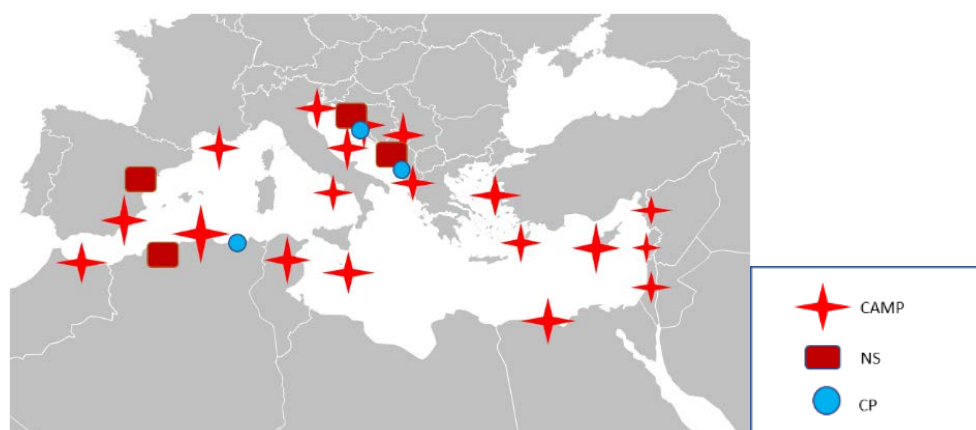


Figure 13: Locations of CAMPs (in all countries except Libya and Monaco); national ICZM strategies (NS) in Algeria, Spain, Montenegro and Croatia; coastal plans (CP) in Algeria, Montenegro and Croatia, in 2019.

35. Addressing multiple pressures and stakes on a limited area, ICZM and MSP go hand in hand with the combination of complementary policy instruments, including regulation, economic instruments, dedicated funding, information and awareness raising and land-based instruments. These include, the establishment of setback zones, and the creation of green infrastructure (such as salt marshes, coral and oyster reefs, and dunes), also in cities. These tools can result in several benefits, including habitat and biodiversity protection, preservation of cultural and natural assets and traditional landscapes, climate change adaptation, and improved human health. Nature-based solutions, i.e. actions to protect,

sustainably manage and restore ecosystems providing human well-being and biodiversity benefits, can be implemented in an integrated manner. Finally, territorial cohesion policies and strategies, integrating coastal zones and the hinterland, such as the ones initiated by the EU; the Mediterranean Strategy for Sustainable Development (MSSD); as well as the initiatives of the Union for the Mediterranean, are central towards sustainable spatial planning.

VI. Food and water security

36. Renewable water resources in the Mediterranean basin are concentrated mainly in northern countries (67 %). In 2015, nearly 220 million people were in water scarcity or stress situations in the Mediterranean countries, mainly in SEMCs. Water scarcity has led to unsustainable consumption and over-abstraction of surface and groundwater resources, which contributed to further water shortages. Aquifers are being over-exploited, leading to groundwater pollution and seawater intrusion in coastal areas. Irrigated agriculture is the most water-demanding sector (55 % of the total), followed by the energy and domestic sector, urban and rural drinking water supply, and touristic activities. Water demand varies significantly throughout the year and locally, and peaks in summer especially for irrigation and tourism. Total water consumption lays well below the total available resources in the NMCs, while in the SEMCs it exceeds available water resources. By 2050, water demands are projected to double or even triple, driven by population and economic growth, expansion of irrigated areas, and increasing crop water needs resulting from warmer and drier conditions. Water use efficiency is particularly low in agriculture, due to water losses that call for the modernization of irrigation systems. About 10 million people, corresponding to 2 % of total Mediterranean population, do not have access to safe drinking water or sanitation, mostly in the south-east areas, although significant improvements have been made.

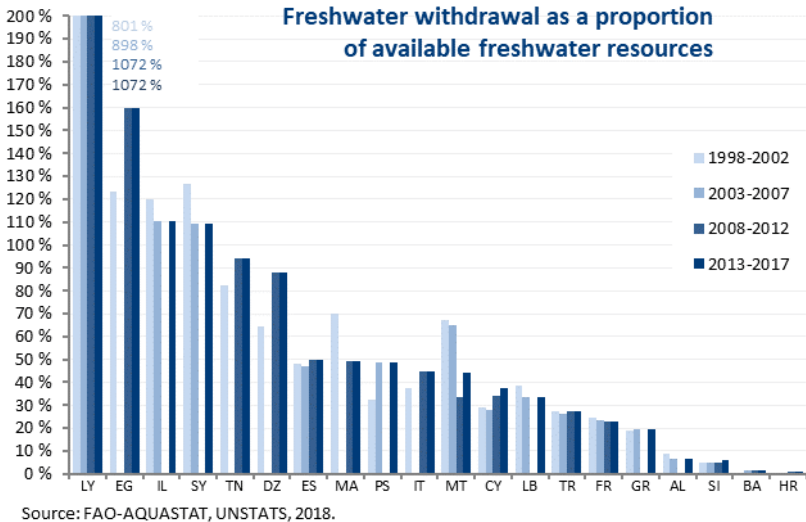


Figure 14: Freshwater withdrawal as a proportion of available freshwater resources, 1998-2017 (Source: FAO-AQUASTAT, UNSTATS, 2018)

37. Food security is granted when people constantly have physical and economic access to enough food, which is healthy and nutritious and allows them to satisfy their energy needs and their food preferences, while leading a healthy and active life. Food production in the Mediterranean countries exceeds consumption in fruits and vegetables, wine, and olive oil, while being chronically deficient in cereals. This deficit is essentially due to agroclimatic conditions and to the generally low availability of both water and arable land. The intrinsic limitation of natural resources and current rates of population growth, especially in the south and east, lead to an increase in the dependence on food imports. Projections indicate that this situation will worsen in the coming decades, mainly under the

pressure of climate change and population growth. Current statistics show that access to food is generally lower in rural areas, due to physical (e.g. absence of infrastructures and markets) or economic (e.g. low purchase power, rising prices) reasons, making the rural population particularly vulnerable. Food habits are gradually changing in the last decades, with the abandonment of the traditional Mediterranean diet, towards a “western” nutrition style rich in proteins, fats, and refined cereals. Food security has been improved in the Mediterranean countries, often at the expenses of nutritional quality, of locally-produced, seasonal and diverse food, and of traditional conservation know-how. These changes have growing environmental, economic, and human health impacts, including biodiversity loss and food waste, an even higher dependence on cereal imports, a higher vulnerability to the volatility of international prices, as well as phenomena of both under- (e.g. anaemia) and over-nourishment. In the period 2012 to 2016, obesity shows a rising trend, with an obesity rate above 20 % in almost all Mediterranean countries and peaks of more than 30 % in Egypt, Lebanon, Libya, Malta and Turkey in 2016.

[Figure 15 – Map on agricultural balance and cereal dependency pending (Source: FAO 2018)]

38. Overexploitation of resources (water, soil) put increasing pressures on food and water availability. Land use changes and intensification of the agriculture in response to population growth (particularly in the south) or access to subsidies (EU countries) increase soil erosion, which affects agricultural productivity and increases pollution and eutrophication, with higher risks of flash floods, and reservoirs siltation. Soil pollution is mainly linked to the use of fertilizers and pesticides, used increasingly in the Mediterranean region, posing at the same time threats to human and environmental health through diffuse water pollution, animal death, and soil contamination. Climate change will amplify most of these pressures and impacts on the availability, quality, stability of and access to water and food, thus further threatening water and food security.

VII. Health and environment

39. The deep and complex relation between environmental conditions and human health is recognized by the international community as a pressing emerging issue. In Mediterranean countries, 15 % of deaths are attributed to modifiable environmental factors, compared to 23 % worldwide, and ranging between 8 % and 27 % across countries in 2012. Major risks to human health derive from ambient air pollution and some remaining inadequate drinking water quality and sanitation services. Climate change is expected to exacerbate risks for human health: the expected increase of air temperatures, including a raise in the frequency and intensity of heat waves, can seriously affect the health of the most vulnerable population groups, including the elderly in an aging population. There is high certainty that the recent observed climatic trends will contribute to the future transmission of vector-, food-, and water-borne diseases. Areas with elevated probability for West Nile infections, linked to climate change, will likely expand and eventually include most of the Mediterranean countries. Extreme events, like floods, may lead to the spread of water-borne and vector-borne (e.g. mosquitoes) infectious diseases. Floods also cause personal injuries, enteric infections, increase mental health problems, and lead to potential contamination by toxic chemicals. An increase of allergies is also expected, due to the modifications in the geographic distribution range of some plant species, the extension of the pollen season, and an increased production of pollen. The intrusion of saltwater into groundwater, caused by sea level rise, may deprive parts of the population of drinking water and increase the saline content of drinking water sources, which in turn may have serious health consequences.

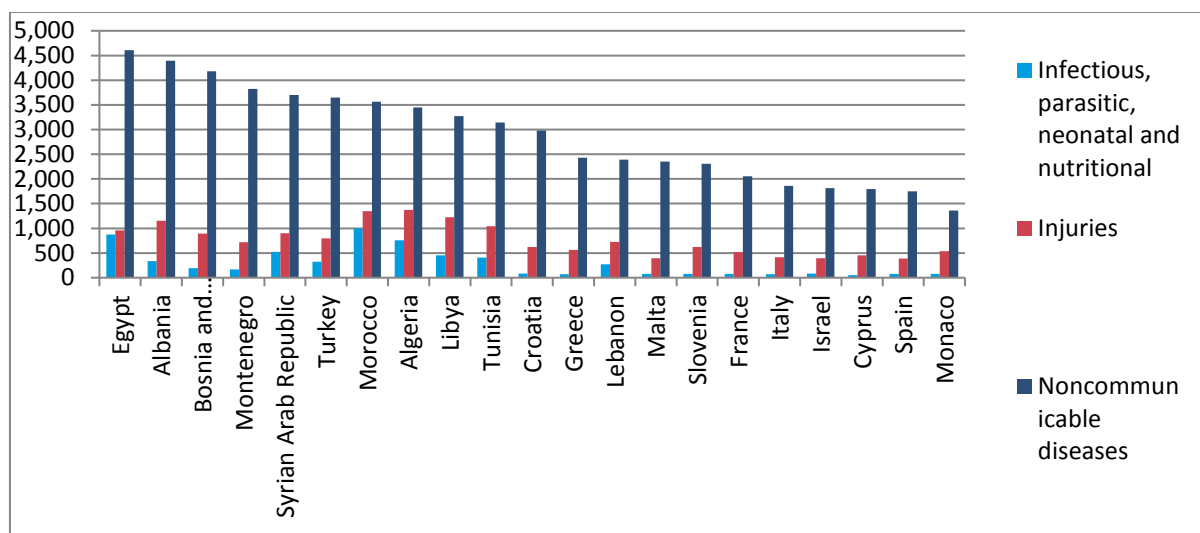


Figure 16: Age-standardized disability adjusted life years (DALYs) attributable to the environment per 100,000 population in 2012 (Source: WHO, 2019)

40. Man-made and natural disaster risks and emergencies are a reality in the Mediterranean region and have the potential to temporarily or permanently alter the inhabitants' access to safe environmental infrastructure and services. The Mediterranean is an area of relatively high seismic and volcanic activity with a series of destructive earthquakes, volcanic eruptions and tsunamis on record, having displaced and killed thousands of Mediterranean inhabitants. In addition, man-made emergencies linked to political turbulence and war force large numbers of people to flee these situations and find new, often improvised, housing and means of living including water and sanitation services. Providing healthy environments for people is thus a particular challenge. Forced displacement of people can also cause environmental degradation, not only in the (destroyed) areas left behind but also in the areas that receive massive population flows. Emergency and preparedness plans, integrating health and environment considerations are key to disaster management in order to protect the health of humans and ecosystems.

41. *[Section to be further documented: Urbanization and growing human population density in coastal metropolises exacerbate air pollution and increase the transmission of contagious illnesses.]*

42. Human health and well-being are influenced by goods and services provided by Mediterranean ecosystems. The relationship between human health and natural ecosystems is receiving increasing attention by researchers. In terrestrial areas, urbanization puts at risk natural, including recreational areas *[to be completed]*. In marine areas, overfishing and sea warming contribute to the depletion of some fish stocks, while microbial and chemical contamination, and toxins from harmful algal blooms threaten the quality of seafood, which is an important component of the Mediterranean diet. Human activities such as bottom trawling, and microbial and chemical contamination, threaten the Mediterranean marine organisms that furnish bioactive substances, which are used to develop new drugs to treat major human diseases, such as cancer. Contamination also negatively affects the recreational use of coastal and marine waters, and their capacity to provide benefits to users. Thus, there is a need to safeguard the goods and services provided by the Mediterranean marine ecosystem in order to enhance health benefits and minimize health risks. Researchers, policymakers, healthcare providers and public health practitioners, and the public should further address the interactions and the value of Mediterranean ecosystems for human health and wellbeing.

VIII. Governance

43. The United Nations Convention on the Law of the Sea (UNCLOS, adopted in 1982) requires countries sharing an enclosed or semi-enclosed sea to cooperate with each other to coordinate the management, conservation, exploration, and exploitation of the living resources of the sea, and to protect and preserve the marine environment. Accordingly, several agreements are in place in the Mediterranean region to protect the coastal and marine environment. The most important is the Convention for the Protection of the Mediterranean Sea against Pollution (the Barcelona Convention), signed in 1976 and revised in 1995 (Convention for the Protection of the Marine Environment and the Coastal Region of the Mediterranean), administered by UNEP, aiming to prevent, abate, combat and, to the fullest extent possible, eliminate pollution of the Sea, and to protect and enhance the marine and coastal environment so as to contribute to its sustainable development. Seven Protocols to the Convention are in place, covering aspects such as the protection of the sea against pollution from both land- and sea-based sources (including from hazardous waste, and from the exploration and exploitation of the continental shelf), for fostering cooperation in preventing and combating pollution from ships, promoting Specially Protected Areas and Integrated Coastal Zone Management (ICZM).

<i>Contracting Parties</i>																							
	Albania	Algeria	Bosnia and Herzegovina	Croatia	Cyprus	European Union	Egypt	France	Greece	Israel	Italy	Lebanon	Libya	Malta	Monaco	Montenegro	Morocco	Slovenia	Spain	Syria	Tunisia	Turkey	
<i>Legal instruments</i>																							
Barcelona Convention																							
and Amendments																							
Dumping Protocol																							
and Amendments																							
Emergency Protocol																							
Prevention and Emergency Protocol																							
LBS Protocol																							
and Amendments																							
SPA Protocol																							
SPA and Biodiversity Protocol																							
Offshore Protocol																							
Hazardous Wastes Protocol																							
ICZM Protocol																							
Instrument of ratification, adhesion approval or accession deposited and Convention or Protocol entered into force																							
No instrument of ratification, adhesion, approval or accession deposited																							
Instrument of ratification, adhesion, approval or accession deposited but Protocol has not entered into force yet																							

Figure 17: Ratification of Barcelona Convention and Protocols by the individual Contracting Parties.

44. The Mediterranean Commission on Sustainable Development (MCSDD) is a multi-stakeholder advisory body that was established in 1995 to assist countries in their efforts to integrate environmental issues in their socio-economic programmes and promote sustainable development. The unique mechanism that the MCSDD represents allows to look at sustainable development in its entirety and gives a strong voice to all actors that work towards sustainability in the Mediterranean region.

45. Other regional initiatives address environmental governance, including the Union for the Mediterranean (UfM), Union of Arab Maghreb, League of Arab States, Dialogue 5+5 (a framework for intergovernmental cooperation in the Western Mediterranean), etc.

46. The multiplication of governance frameworks on environment and sustainable development in the Mediterranean region calls for the need to address sustainable development in an integrated way, along three main axes: the integration of regional governance among existing bodies; the integration of different governance levels, from regional to national and local; and, the integration of both land and marine governance. This is in line with the Mediterranean Strategy for Sustainable Development (MSSD) that was adopted in 2016 by the Contracting Parties to the Barcelona Convention, as a strategic guiding document for all stakeholders and partners to translate the 2030 Agenda for Sustainable Development (2030 Agenda) at the regional, sub-regional and national levels. The Strategy provides an integrative policy framework for securing a sustainable future for the Mediterranean region consistent with the Sustainable Development Goals (SDGs). In line with SDG 12 on Sustainable Consumption and Production (SCP), the MSSD supports investment in the environment as the optimum way to secure long-term sustainable jobs and socio-economic development. Environmental and social assessment tools are implemented such as Environmental Impact Assessment (EIA; all countries), Strategic Environmental Assessment (SEA; about three quarters of countries have SEA legislation in place), and other assessments required in a transboundary context (e.g. the Kiev Protocol).

47. *[Section on local governance and territorial integrated approaches pending.]*

48. Public and stakeholder engagement is also central towards the promotion of sustainable development policies in the Mediterranean region. Mediterranean countries have established a set of commitments to apply participatory processes for policies and assessments such as EIA, SEA, and Integrated Water Resource Management (IWRM), following the approach established in the Aarhus Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters. Informed participation in decision-making leads to better decisions, enhancing public confidence to governmental decisions and, ultimately, contributing to achieve political stability and sustainable economic development. So far, 12 of the 22 Mediterranean countries are Parties of the Aarhus Convention. The strong increase of mobile phone subscriptions and people using the Internet has opened new opportunities for access to information and public participation in the environmental debate, including through social media.

49. Education, research, innovation, and capacity building are inherently interlinked and offer significant opportunities to develop Mediterranean natural and cultural assets, acting as drivers of economic and social development. There is an active North-South interface and a series of political and socio-economic driving forces, such as the capacity-building activities of the Mediterranean Action Plan (MAP), various EU-led initiatives, and the activities of the Union for the Mediterranean (UfM) for cooperation in higher education and research, including the Mediterranean Strategy on Education for Sustainable Development (MSESD), adopted in 2014 as the first of its kind in the world. These instruments should be further streamlined to address sustainable development issues and strengthen the capacity to develop ‘fit-for-purpose’ scientific information that can be communicated to decision-makers via effective science-policy interfaces.

IX. Synthesis and conclusions

50. This section will be based on Chapter 9 “Synthesis and Conclusions”, as included in Annex I, after having included recommendations from Plan Bleu National Focal Points. Proposed messages of the Draft Chapter 9 are included below.

Major drivers and pressures, and associated trends

51. **Demographic trends: Population in the Mediterranean region continues to grow, being increasingly meridional and urban, with a relatively young South and older North** (paragraph II.1 of Chapter 9 in Annex I).

52. The population of the Mediterranean riparian countries (including Palestine) amounts to approximately 510 million people in 2017, representing 6.8% of the world population. While population has been stabilizing in the North since 1980, population in the South and East of the basin has more than doubled (from 152 million in 1980 to 311 million in 2017) and is expected to increase by an additional 130 million people by 2050.

53. Demographic transition has been completed in two thirds of Mediterranean countries and is underway in the remaining ones.

54. Population in southern countries is 14 years younger than in the north.

55. Around 71 % of Mediterranean population lives in urban areas.

56. One out of three Mediterranean people lives in a coastal area.

57. Demographic trends and urbanization impact the environment in multiple interconnected ways.

58. **Human development: While education and health have considerably progressed in the south and east of the basin, large north/south divides remain driven by persistent GDP gaps and aggravated by conflicts** (paragraph II.2 of Chapter 9 in Annex I).

59. The economies of Mediterranean countries have undergone important variations between 2007 and 2017, struck by the global financial crisis in 2008 and the European debt crisis starting late 2009.

60. Throughout the last decade, Mediterranean geopolitics have been shaken by tension and instabilities.

61. In spite of demographic growth and geopolitical difficulties, human development, as measured through the Human Development Index (HDI), has experienced an upward trend throughout the last decade, significantly increasing in almost all countries.

62. Basic education has considerably improved throughout the last decade, especially in southern Mediterranean countries with literacy rates showing drastic increases.

63. Girls' education has improved but the share of women in the active population is still low.

64. The Mediterranean region is a global hotspot in terms of forced migrations.

65. **Macroeconomic situation: Mediterranean countries are increasingly vulnerable to external conditions and shocks, including environmental shocks** (paragraph II.3 of Chapter 9 in Annex I).

66. Mediterranean countries are vulnerable to external conditions and shocks.

67. Cooperation frameworks and integration schemes in Euro-Mediterranean relations have not achieved shared prosperity through enhanced political association and economic integration.

68. Youth unemployment is a critical issue in most of the basin. Total unemployment rates differ broadly from 4% (Israel and Malta) to around [24%] (Bosnia Herzegovina).

69. Throughout the last twenty years, agriculture and industry have lost ground while services developed.

70. Mediterranean economies increasingly rely on debt.

71. The Mediterranean basin is unable to produce enough agricultural and food products for its own consumption and is therefore highly dependent on international trade and imports of agricultural products and sensitive to the volatility of international prices.

72. Dependence on environmental health. Mediterranean economies are dependent on environmental health, in particular in coastal areas (paragraph II.4 of Chapter 9 in Annex I).

73. Mediterranean countries, communities and economies are dependent on natural coastal and maritime resources to create wealth, provide jobs, and continue to develop locally.

74. Mediterranean countries remain the world's leading tourism destination with nearly 30% of international tourist arrivals, doubling in 20 years.

75. The Mediterranean also stands as the second biggest cruising region in the world (16.7 % of global cruise fleet deployment in 2018), after the Caribbean.

76. Mediterranean fisheries and aquaculture play a strong role in the economy.

77. Mediterranean agriculture's role in national wealth creation and employment is very heterogenous between countries.

78. Marine biotechnologies and bioprospecting with applications in medicine, food, materials, energy and cosmetics are a young and growing sector in the Mediterranean region.

79. Environmental pressures from economic sectors: Despite the emergence of low impact solutions, economic sectors exert increasing pressures on the environment, driven by a rapid growth in polluting sectors and a diversification of economic activities in marine areas (paragraph II.5 of Chapter 9 in Annex I).

80. The Mediterranean region has one of the world's highest ecological deficits.

81. While being economically profitable in the short term, coastal mass tourism generates considerable environmental damage (habitat loss, increase of water consumption and waste production, disturbance of protected and endangered species mainly due to underwater noise, water pollution as well as introduction of invasive species).

82. Transport is the highest energy consuming sector (with 31 % of total energy consumption in northern countries and 38 % in southern and eastern countries) and, with a very strong dependence on fossil fuels, among the largest contributors to GHG emissions and air pollution in the Mediterranean region.

83. The Mediterranean Sea is host to the world's busiest shipping lanes, accommodating large parts of the world fleet which pass through the Suez Canal, the Bosphorus and Dardanelles and the Gibraltar straits, connecting Asia with Western Europe ports and serving the growing ports in the Mediterranean and Black Sea regions.

84. Energy [evidence to be completed]

85. More than two hundred offshore oil and gas platforms are active in the Mediterranean.

86. Industry [evidence to be completed]

87. Quantities of fertilizers and pesticides used for agriculture in Mediterranean countries are above the global average.

88. Large water footprints per capita are found throughout the Mediterranean exceeding the global average, with especially high volumes of water contained in imported goods and services.

State and impact

89. **Land-cover and land-use change: Ambitious objectives and disparate policy measures have not been sufficient to preserve natural land cover and agricultural land use, in particular in coastal areas** (paragraph III.1 of Chapter 9 in Annex I).

90. Land cover and land use in the Mediterranean region continue to change as a result of human activities, with urban sprawl (residential, touristic, commercial and industrial area expansion) and infrastructures diffusing throughout the region.

91. Urban areas dynamics [key message to be written]

92. Soil and surface erosion [key message to be written]

93. In the Mediterranean region, nearly 8.3 million hectares of arable land have been lost since 1960, impacting biodiversity and the provision of ecosystem services, and 80 million ha of land are degraded.

94. Within the limit of the Mediterranean biome, the extent of forests has remained stable, with contrast between northern and southern shores.

95. Areas of coastal wetlands continue decreasing.

96. In the coastal belt, the built-up area has increased substantially in the last decades, leaving less space for natural coastal ecosystems and increasing risks for people living in the coastal zone.

97. **Natural resources, biodiversity and ecosystem services: Multiple human induced pressures combine to threaten critical resources, biodiversity components and ecosystem services in the Mediterranean** (paragraph III.2 of Chapter 9 in Annex I).

98. Mediterranean coastal ecosystems offer important services to the inhabitants of the basin; but their functioning is threatened by past and current land-use management.

99. The region is a hotspot for marine biodiversity and endemism, which are fragile and threatened by species extinctions and habitat losses.

100. Seagrass meadows occurring in the Mediterranean, including the endemic species *Posidonia oceanica*, play an important role in terms of habitat for biodiversity, water quality regulation, coastal protection and carbon fixation and storage.

101. Ecosystem services associated with Coralligenous [Key message to be written]

102. Over 90% of fish stocks are overexploited or ecologically unbalanced.

103. Water scarcity is considered as one of the main factors challenging sustainable development, especially in southern and eastern Mediterranean countries and island states.

104. Significant differences in the proportion of water demands exist between Mediterranean catchments and seasonally.

105. The Mediterranean Sea (and particularly the Levantine basin) is a hotspot for alien species introductions some of which causing a decrease or collapse in native species populations.

106. Greenhouse gas emission reduction objectives are still far from being met. While the CO₂ emissions of most Northern Mediterranean countries have been decreasing since 2005, those of most eastern and southern countries increased, in particular due to demographic growth.

107. [Message on pollution to be completed (air, eutrophication, contaminants, riverine inputs and making the case for management at the water basin level) with clear links to level of GES achievement/QSR results]

108. Waste management [evidence to be collected]

109. Driven by the increase of plastic use and the lack of recycling, unsustainable consumption patterns, inadequate and ineffective waste management schemes, high pressures from tourism and shipping, coupled with significant riverine inputs, the Mediterranean has become a highly marine-litter affected area.

110. Although land-based sources are dominant in generating marine litter, sea-based sources actively contribute to the problem with an estimated EU average of 32 % and values up to 50 % for some sea basins.

111. Health and environment: while health has globally improved in the region, pollutants, climate change, new lifestyles and consumption patterns raise increasing health concerns (paragraph III.3 of Chapter 9 in Annex I).

112. In the Mediterranean, 15 % of deaths are attributed to modifiable environmental factors, compared to 23 % worldwide.

113. Air pollution is critical, its negative impact in various health components being increasingly well documented.

114. Contaminated drinking water sources affect human health.

115. Under 5-year old's deaths attributed to environmental causes have been reduced in the east and south of the basin.

116. Climate change increases risks for human health. Increased and longer heat waves are a health risk factor especially for the elderly.

117. Man-made and natural disasters and emergencies are a reality in the Mediterranean region and have the potential to temporarily or permanently alter the inhabitants' access to safe environmental infrastructure and services.

118. In many countries in the region, a triple nutritional burden can be observed, adding undernutrition, overfeeding (obesity and noncommunicable diseases) and nutritional deficiencies.

119. Degradation of coastal and marine ecosystems limit their benefits for humans.

120. Whereas environmental factors influence human health, the health sector itself influences the state of the environment, producing a magnitude of different kinds of waste, including untreated pharmaceutical residues in wastewater that travel down water basins and end up in the marine environment, [and potentially in the food chain].

121. Climate change is already affecting the Mediterranean, exacerbating preexisting challenges (paragraph III.4 of Chapter 9 in Annex I).

122. The Mediterranean basin is affected by climate change at a pace well above global average, in particular by more rapid warming of ambient air and sea surface in all seasons.

123. Climate change already exacerbates regional challenges, inducing an increase in risks of droughts, floods, erosion, and fires.

124. Due to a limited tidal range, Mediterranean coastal infrastructures and settlements are often closer to mean sea level, than in most regions of the world, which makes them highly vulnerable to sea-level rise, storm-surges, flooding, erosion and local land subsidence.

125. Climate change, together with a lack of regulatory and control mechanisms, has accelerated the spread of non-indigenous species leading to a shift in species composition and functioning of ecosystems.

126. Considering the particular intensity of climate forcing (increased temperature, precipitation decrease, acidification, extreme events increase), non-climate forcing (population growth, including tourist arrivals), vulnerability and exposure of major stakes (land cover, population density, economic activities, heritage sites), the Mediterranean Basin is considered a climate change hotspot.

Major progress in addressing regional issues, and associated responses

127. Common objectives. Over the last ten years, Mediterranean countries have adopted global and regional common objectives, setting a shared path towards sustainable development (paragraph IV.1 of Chapter 9 in Annex I).

128. Since their adoption in 2015, 2030 Agenda and Sustainable Development Goals (SDGs) have become a major common reference framework for policy design and evaluation globally.

129. Most Mediterranean countries are committed to the Paris Agreement on Climate Change.

130. Environmental agreements. Despite multilateralism losing support, environmental agreements remain a key area of cooperation (paragraph IV.2 of Chapter 9 in Annex I).

131. While international negotiations on trade and people mobility have suffered from a decreased appetite for multilateralism, environment and sustainable development remain major areas for global and regional cooperation.

132. Mediterranean participation in binding Multilateral Environmental Agreements is generally high, with few notable exceptions.

133. Over more than 40 years, the Barcelona Convention has led to the adoption of 7 legally binding protocols and numerous strategies and action plans.

134. Mediterranean countries have enhanced their legal and institutional capacity to protect the coastal zones.

135. A “Common Regional Framework” on ICZM is in development in 2019, with the main objective to introduce maritime spatial planning as an important tool/process for the implementation of ICZM in the marine part of the coastal zone.

136. Integration and system-based approaches are increasingly recognized as the most efficient way to address systemic factors, and combined pressures and impacts (paragraph IV.3 of Chapter 9 in Annex I).

137. The adoption of SDGs renewed attention on interactions among environment and development objectives.

138. Since the 1990’s integrated approaches based on ecosystems have replaced and complemented sectoral approaches. This evolution is actively implemented in the Mediterranean.

139. River basins are a coherent scale for management of anthropogenic activities and natural resources.

140. The emergence, consolidation and implementation of such systemic approaches are key to addressing dysfunctions and bottlenecks within the Mediterranean socio-ecological/economic system, which are systemic themselves, resulting from multiple drivers, pressures, actions and actors and their interactions, rather than from specific and isolated factors.

141. Pollution sources. Investments and collaborations have addressed some major pollution sources and health hazards (paragraph IV.4 of Chapter 9 in Annex I).

142. Most Mediterranean people use safely managed drinking water services in 2015, demonstrating continued progress in terms of access to water in the region despite population growth. However, more than 26 million are still to be served.

143. The proportion of the Mediterranean population using safely managed sanitation services has increased in most countries of the region, but objectives are still far from being reached.

144. [Wastewater treatment: evidence to be collected, in relation with SEIS project]

145. Considerable improvement in the treatment of wastewater has led to a significant improvement in bathing water quality; but specific localized problems subsist [and may even be wide spread when strong rainfall events occur due to stormwater overflow].

146. Despite a steady increase in oil and other cargo volumes moved by ship, accidental spillages of oil and other harmful substances from ships into the Mediterranean have decreased.

147. Monitoring and assessment. Common monitoring and assessment frameworks have been adopted to improve information-based decision making (paragraph IV.5 of Chapter 9 in Annex I).

148. SDGs, targets and indicators [key message to be written, including links with the MCSD dashboard]

149. Awareness and reporting on the link between environmental conditions and human health has improved.

150. An Integrated Monitoring and Assessment Programme (IMAP)

151. SEIS [to be completed]

152. Stakeholder participation and engagement. The diffusion of stakeholder networks, inclusive approaches, and technological development provide improved opportunities for stakeholder participation and engagement (paragraph IV.6 of Chapter 9 in Annex I).

153. Stakeholder participation and engagement [key message to be written]

154. Civil society mobilization [key message to be written]

155. Since the 2000s, the strong increase of mobile phone subscriptions and people using the Internet has opened new opportunities for access to information and public participation in the environmental debate, including through social media.

156. Local governance and territorial approaches. The importance of local governments and territorial approaches in tackling environmental challenges is increasingly recognized (paragraph IV.7 of Chapter 9 in Annex I).

Remaining and emerging challenges, and priorities for future action

157. Overcoming the gaps between adoption, implementation and enforcement (paragraph V.1 of Chapter 9 in Annex I).

158. Enforcement. While commitments towards sustainable development in the Mediterranean Region, in particular in the framework of the Barcelona Convention, have been recognized as sources of inspiration for other regions and regional seas agreements for decades, implementation and enforcement remain incomplete.

159. Critical areas where surveillance and enforcement are considered insufficient include pollution surveillance and illegal waste disposal.

160. System-based approaches: water-food-energy nexus

161. **Raising the profile of environmental institutions and stakes** (paragraph V.2 of Chapter 9 in Annex I).

162. Giving due consideration to the long term. Policy-making continues to encounter major barriers hindering the taking into account of the long and very long term in its decisions, whereas adaptation and renewal dynamics of ecosystems generally require time scales exceeding the duration of a human life. The most significant of these barriers are conflicting time scales between policy-making and ecosystem dynamics and a lack of ecosystem wealth accounting within national and international accounts.

163. Further adopting and implement strategic environmental assessment, environmental impact assessments [To be completed]

164. Improving public access to information and participation is a key condition to raise the political profile of environmental issues. [To be completed]

165. **Upgrading the ambition of environmental regulations** (paragraph V.3 of Chapter 9 in Annex I).

166. Strengthening adoption. While 6 out of 7 protocols are in force in 2019, three of them are only ratified by half or less than half of the Contracting Parties and still require particular attention to ensure full regional coverage.

167. Designating the Mediterranean as an emission control area. Feasibility studies examining the possibility of designating the Mediterranean Sea, or parts thereof, as sulphur oxides (SO_x) emission control area(s) (ECA(s)) under MARPOL Annex VI, indicate that a Mediterranean ECA would result in significant health and environmental benefits.

168. Expanding Marine Protected Areas and Other Effective area-based Conservation Measures in critical environments. While strong protection measures have demonstrated their efficiency, their coverage remains limited in the Mediterranean, and suggest the importance to continue to:

169. Evolving from the polluter pays to the extended producer responsibility principle. *[to be written]*

170. **Adopting efficient policy mixes, upscaling the use of economic tools, land tenure instruments, stakeholder awareness and involvement** (paragraph V.4 of Chapter 9 in Annex I).

171. Regulatory measures do not always suffice.

172. Reduce and manage waste. [Marine litter negative impact on ecosystems is expected to be further exacerbated by an increase in plastic entering the sea, plastic sedimentation and microplastics – *to be completed*]

173. Disseminate green, blue and circular economy innovations. Over the last decades, the Mediterranean has seen the emergence of promising innovations either restoring the environment or offering alternatives to environmentally damaging solutions. However, efforts to scale-up these innovations remain critical for a significant impact on environmental quality and job creation.

174. Investing in policy platforms

175. **Developing permanent collaboration frameworks** (paragraph V.5 of Chapter 9 in Annex I).

176. Strengthening transboundary efforts and developing permanent collaboration frameworks.

177. **Investing in environmental and economic transitions** (paragraph V.6 of Chapter 9 in Annex I).

178. Climate change adaptation in particular in coastal areas will require major funding.

179. Sustainably managing protected areas requires the development of permanent funding mechanisms.

180. Water will continue being a critical resource in upcoming decades with strategic investments needed in improving water efficiency and upscaling reuse.

181. There is a high potential in the Mediterranean for the reuse of treated wastewater.

182. Emerging challenges

183. **Anticipating the transformation of coastal areas, activities, landscapes, and infrastructure associated with sea-level rise and increase in coastal risks** (paragraph V.7 of Chapter 9 in Annex I).

184. With an expected increase in sea level rise, coastal erosion and coastal extreme events, adaptive strategies will be required for organising where needed strategic retreat and ensure when appropriate a sustainable transition in economic activities and human settlements.

185. **Minimizing impact associated with the expansion and diversification of maritime activities** (paragraph V.8 of Chapter 9 in Annex I).

186. The "maritimisation" of human activities is an emerging trend adding on the impact on a continued "littoralization". This phenomenon requires extending the approach and practices of integrated coastal zone management towards more offshore waters (through maritime spatial planning).

187. **Monitoring and regulating emerging industries, pollutants and toxic substances** (paragraph V.9 of Chapter 9 in Annex I).

188. Monitoring and regulating marine bio-technology industries and deep-sea mining.

189. Monitoring and regulating emerging pollutants and toxic substances [*to be completed*]

Critical knowledge gaps and priorities for future research

190. **Put knowledge to use is a key challenge** (paragraph V.1 of Chapter 9 in Annex I).

191. **Understand and communicate on the stakes of environmental degradation** (paragraph VI.2 of Chapter 9 in Annex I).

192. Evaluate economic and social stakes associated with expected and potential trends in sea level rise, coastal erosion and coastal extreme events

193. Evaluate key ecosystem services and stakes associated with ecosystem preservation, restoration or creation at regional level

194. **Generalize and sustain the implementation of common monitoring frameworks** (paragraph VI.3 of Chapter 9 in Annex I).

195. Implement national monitoring programmes in alignment with IMAP, establish data exchange protocols and expand monitoring of the state of ecosystems to also cover drivers, pressures, impacts and responses. It appears important to overcome gaps in knowledge of the Mediterranean coastal and marine biodiversity.

196. Monitor emerging activities at sea, extraction of coastal minerals including sand, and emerging pollutants

197. Learn from experience (paragraph VI.5 of Chapter 9 in Annex I).

198. Closing the policy-cycle by conducting and linking *ex ante* and *ex post* policy evaluation is key to designing coherent, transparent and evidence-based policies.

199. Capitalize and share innovative findings across multiple stakeholders, in particular in themes that attract a lot of interest such as the blue economy.

Annex I

SoED 2019 Draft Chapter 9 “Synthesis and Conclusions”

As submitted to Plan Bleu National Focal Points in May 2019



3 May 2019
Original: English

Plan Bleu's National Focal Points Meeting

Marseille, France, 27-29 May 2019

SoED 2019 Chapter 9 "Synthesis and Conclusions"

For environmental and economic reasons, this document is printed in a limited number. Delegates are kindly requested to bring their copies to meetings and not to request additional copies.

Introductory Note

The present note introduces two complementary working documents: PBRAC WD.3 SoED 2019 Chapter 9 Synthesis and Conclusions; and PBRAC WD.4 SoED 2019 Summary for Decision Makers.

Those documents are supported by information documents PBRAC Inf5.1 to .8: SoED initial draft Chapters 1 to 8; as well as PBRAC Inf. 3.: MedECC preliminary assessment; and PBRAC Inf. 6 Summary of the State of Mediterranean Forests 2018.

Besides comments and feedback, the present note calls for national contributions (see below).

National contributions could preferably be identified and communicated to Plan Bleu prior the Focal Points meeting, ideally by 18 May, so Plan Bleu RAC could update Focal Points accordingly. Contact: ltode@planbleu.org

The UN Environment/MAP Mid-Term Strategy (MTS) 2016- 2021 sets the objective to publish “Periodic assessment based on DPSIR approach” addressing inter alia interaction between environment and development in the Mediterranean (Key Output 1.4). This objective has been translated in the 2018-2019 Programme of Work through Activity 1.4.1.1. The Report on the State of the Environment and Development in the Mediterranean (SoED 2019) will provide a comprehensive and up-to-date assessment of the state of the environment and main sustainability issues in the region, insisting on interactions. SoED 2019, scheduled for publication early 2020, will be the result of a collective work involving jointly the Mediterranean Action Plan (MAP) components, the Contracting Parties to the Barcelona Convention and numerous external partners on a voluntary basis, with Plan Bleu leading the elaboration of the report.

Throughout 2018, collaboration methods and modalities for SoED 2019 preparation were refined and set in place, involving more than 100 contributors and reviewers, organised in thematic chapter working groups. In March 2018, voluntary contracting parties were invited to nominate experts to participate in the chapters’ preparation. Following a recommendation by the MAP Bureau, the report Steering committee also associated national representatives from the North, South and East Mediterranean countries, together with MAP components and four technical partners. The Steering Committee supported in particular the preparation of the SoED 2019 main findings and conclusions, through three successive meetings in October 2018 (via teleconferencing), January 2019 (Geneva, Switzerland), and March 2019 (Marseille, France).

SoED 2019 chapters and Summary for Decision-Makers are still work in progress. Preliminary draft versions are shared with Plan Bleu Focal Points and MCSD members with three objectives:

1. Prioritize findings to be further emphasized in the report and Summary for decision makers;
2. Prioritize gaps to be completed before COP 21, and provide recommendations for an adoption at COP21;
3. Strengthen national contributions.

During preliminary consultations on distinct chapters of the SoED 2019, a series of comments have already been received. Plan Bleu and chapter Co-leads have taken into account many of these comments, but others still need to be addressed throughout the next months. General points include:

- Some sections (indicated in the draft) are still in the process of been drafted or expected from external contributors;
- Key messages need to be made more explicit in the chapters;

- The overall “storytelling” will be improved based on prioritized key messages (the report is based on contributions from many experts with different backgrounds); this will require reorganizing some chapters or sections;
- Links between the different chapters and sections will be made more explicit;
- Sections on responses to environmental and development challenges will be reorganized to enhance clarity and completed to include more analytical assessments whenever feasible;
- National data and case studies will be completed with support from National Focal Points;
- The length of the report needs to be shortened, aiming at a report of around 300 to 400 pages;
- Editing and completion of references and bibliography is ongoing. Only clearly referenced data selected according to international standards and practices will be used in the final report;
- Illustrations and maps will be enhanced and harmonized to the extent possible;
- The final layout of the report will be based on a more advanced version;
- Titles are still working titles.

This consultation marks an important milestone at an intermediate stage of the report’s elaboration, allowing to **collect feedback, revisions and complementary information that will help the authors, Plan Bleu and Co-leads for the further elaboration of the report.**

National Focal Points are invited in particular to provide national case studies and updates on national data and policies. Specific sections in the report where complements are of particular importance, have already been identified:

- Updates on national policies and instruments are needed on:
 - o National sustainable development strategies (NSSD) cf. Table 2 in Chapter 8 (have NSSD been adopted, do NSSD integrate 2030 Agenda, Do NSSD integrate/mention MSSD? Date of the first edition and number of updates, are NSSD in revision; please indicate title and date and, if possible, share a copy of the latest NSSD version);
 - o Climate change adaptation and mitigation strategies cf. Tables 1 and 4 in Chapter 2 to be revised and completed based on national information;
 - o National strategies, plans and instruments available to preserve and sustainably manage coastal land (ICZM strategies, regulatory measures, land tenure/acquisition/easement mechanisms; funding mechanisms, etc.) cf. Table 1 in Chapter 5 to be revised and completed based on national information;

For easier reference, those tables are available in a draft compiled form in Annex 1: i.e. document PBRAC WD3 SoED Chapter 9_Annex 1.
- National examples and case studies (half a page maximum per case study) are needed on:
 - o Adaptation to climate change;
 - o Economic instruments in environmental policies: taxes, subsidies, quotas and trading mechanisms, payment schemes, offsets (and – if possible - lessons learned from their implementation);
 - o (Innovative) funding mechanisms for green, blue and/ or circular initiatives.

National Focal Points are invited to designate or provide the contacts of a reference person in the objective to complete/improve data and information on water issues (i.e. data about Mediterranean watersheds) and especially on some indicators of the Mediterranean Sustainability Dashboard useful for the SoED 2019: Water demand (total and by sector), Level of water stress (freshwater withdrawal as a proportion of available freshwater resources).

National contributions could preferably be identified and communicated to Plan Bleu prior the Focal Points meeting, so Plan Bleu could update Focal Points on key missing elements.

Contact: ltode@planbleu.org

Note on the elaboration of this document

Guidance for the Elaboration of Chapter 9 Synthesis and Conclusions

While the full SoED 2019 aims at providing a comprehensive view of the state of the environment and development in the Mediterranean, Chapter 9 focuses on a set of conclusions and key messages relevant to marine and coastal issues or closely connected, and their interactions with development. Chapter 9 brings together evidence from the other chapters in an integrated approach. It draws connections between the issues raised, along the DPSIR chain, while addressing cumulative and combined phenomena. Chapter 9 gives the reader “take away messages” that convey policy-relevant but not policy-prescriptive suggestions, as well as questions for further research. Chapter 9 is expected to include about 20 pages of key findings and conclusions. While the Summary for Decision Makers is expected to be extensively illustrated, Chapter 9 concentrates on key messages, and refers to other chapters or sections in the chapters where detailed illustrations (graphs, figures, maps...) can be found.

Methodological Approach

SoED 2019 chapters are still under elaboration. The present document has been prepared by Plan Bleu with the support of all components and the SoED Steering Committee to synthesize the main points of the SoED 2019 draft chapters. Elements proposed in this document shall be further enhanced and prioritized as the contents of the chapters are completed. **This document is thus work in progress.** Sentences in italics and scare brackets indicate key messages that are expected to emerge as the report further develops, or currently subject to complementary analyses, calculation, verification or updating.

This methodological note also aims at discussing how key findings and conclusions will be presented in the final SoED Report, with the following proposal:

- Each key finding will be introduced by a sentence in bold summarizing the *take away message*.
- Further details substantiating this finding – including quantitative data when available – will follow in regular characters.
- To ensure that data sources can easily be identified, explicit sources will be mentioned in Chapter 9 whenever feasible. When findings aggregate various sources, side-notes will indicate chapters and sections in the report where the analysis is substantiated, as key messages will often summarize and put in perspective information from several chapters.
- To the extent possible, priority key messages in bold will be accompanied by a side-note appreciating the level of both scientific consensus and political/stakeholder consensus.
- It is planned that the level of scientific consensus is informed on a scale with two options (strong evidence for past or present state and strong confidence for projections / partial evidence for past or present state and partial confidence for projections), initially proposed by the SoED authors or chapter co-leads and then submitted for validation by the Scientific Committee. Scientific evidence can be considered partial when data sets are “old” or relate to only part of the region, or when information should be supported by further scientific research.
- It is suggested that the level of Contracting Party consensus is informed on a scale with two options (accepted / under discussion), initially set at accepted by default and then submitted to Plan Bleu Focal Points, MAP Focal Points and COP for validation.

The current proposed draft strongly builds on the recommendations from the SoED Steering Committee.

Box 1: Proposed analysis framework for assessing the level of scientific/stakeholder consensus on key messages

<p>Key point (qualitative description)</p>	<p>Indication on scientific/[Stakeholders] consensus on the key message</p>
<p>Evidence supporting the key message (quantitative when possible), with reference to reliable information source.</p>	<p>Indication in which chapter(s) or section(s) more detailed information can be found.</p>

Example:

The Mediterranean Basin has been affected by recent climate change at rates exceeding global averages, in particular by more rapid warming during all seasons, in the air and ocean.

While global mean surface temperature is now about 1.1 °C¹ above pre-industrial values, the Mediterranean region approaches a warming of 1.6 °C² and is expected to have warmed by 2.2°C³ when the global mean passes the 1.5°C⁴ level identified in the Paris Agreement at around 2040. The sea surface temperature in the Mediterranean has already warmed by around 0.4°C⁵ and is expected to reach between 1.8°C and 3.5°C by 2100⁶.

Side Notes

- ¹ Strong evidence & accepted
- ² Strong evidence & accepted
- ³ Strong confidence & accepted
- ⁴ Strong confidence & accepted
- ⁵ Strong evidence & accepted
- ⁶ Strong confidence & accepted

For more information, refer to chapter 2.

The SoED 2019 aims at connecting to other relevant global and regional processes, namely the 2030 Agenda and the linked Sustainable Development Goals (SDGs), its regional transposition the Mediterranean Strategy for Sustainable Development 2016-2025, and the Ecosystem Approach with its Integrated Monitoring and Assessment Programme (IMAP) implemented by UNEP-MAP and covering 11 Ecological Objectives (EO). **Work on establishing linkages between the SoED 2019 and those key references is ongoing.** Some examples of identified linkages are indicated in this draft version of Chapter 9, as follows:



(Icon of relevant SDG n°) → Link with SDG x, Target x.y: Description of Target

MSSD → Link with MSSD 2016-2025 Objective x, Strategic direction x.y: Description of the Strategic Direction

EO → Link with Ecological Objective x: Description of the Ecological Objective

Preliminary draft of SoED 2019 Chapter 9: “Synthesis and Conclusions”

Draft in progress

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I. Introduction: Linking MED QSR 2017, SoED 2019 and MED 2050

1. Since the late 1970s, Mediterranean countries have agreed to cooperate to put “*at the disposal of political leaders and decision-makers all information that will enable them to develop plans likely to ensure sustained optimal socio-economic development without degrading the environment*”^{vi}. To continue fulfilling this objective, Mediterranean countries have asked the Secretariat of the Barcelona Convention to produce three major assessments from 2016 to 2021.
2. Published in 2018, the *Mediterranean 2017 Quality Status Report (QSR 2017)* was the first assessment based on the Mediterranean Action Plan Ecological Objectives and Integrated Monitoring and Assessment Programme (IMAP) indicators adopted in 2016 by all Mediterranean riparian countries, parties to the Barcelona Convention. Despite the limited availability of data and the fact that the IMAP implementation was still in an early phase, the 2017 MED QSR provided relevant details on the status of the marine and coastal Mediterranean ecosystems and the achievement of Good Environmental Status (GES), using all available data for the IMAP Common Indicators. Results are available on the following website: <https://www.medqsr.org/fr>
3. The Mediterranean State of the Environment and Development Report 2019 (SoED 2019) has a wider and more systemic scope. The SoED 2019 considers a range of sustainability issues related to the environment and development in the Mediterranean region and outlines their interactions. On marine ecosystems, for example, the SoED 2019 contributes to assess SDG 14: “Conserve and sustainably use the oceans, seas and marine resources for sustainable development”. SoED 2019 thus puts IMAP indicators, among others, in the context of a network of causal links and interactions.
4. A regional foresight at horizon 2050, MED2050, to be developed by 2021, will use both the 2017 MED QSR and SoED 2019 as baselines to explore scenarios and transition pathways towards a sustainable and inclusive future in the Mediterranean.
5. All three assessments will inform Mediterranean decision-makers in their identification of key areas requiring further joint or coordinated action, drawing elements for the future Mediterranean Action Plan Medium Term Strategy 2022-2027.

II. Major drivers and pressures, and associated trends

II.1. Demographic trends: Population in the Mediterranean region continues to grow, being increasingly meridional and urban, with a relatively young South and older North

6. **The population of the Mediterranean riparian countries (including Palestine) amounts to approximately 510 million people in 2017ⁱⁱ, representing 6.8% of the world population. While population has been stabilizing in the North since 1980, population in the South and East of the basin has more than doubled (from 152 million in 1980 to 311 million in 2017) and is expected to increase by an additional 130 million people by 2050.** In 2017, 39% of the Mediterranean countries’ population live on the northern shore and 61% on the southern and eastern shores. In decreasing order, population growth rate in the past decades is highest in Palestine, Lebanon, Israel, Egypt, Algeria and Syrian Arab Republic. The most populated Mediterranean country is Egypt with 98 million people in 2017, followed by Turkey (70 millions) and France (67 million). 2017 population density is highest in Monaco, Malta and Palestine, and lowest in Libya (ranging from 4 to almost 20,000 people per km²)ⁱⁱⁱ.
7. **Demographic transition has been completed in two thirds of Mediterranean countries and is underway in the remaining ones.** The demographic convergence with northern Mediterranean countries is striking in Lebanon, Tunisia and Turkey. In Morocco and Libya, where fertility continues to decline, this convergence is only a few years away. [This trend is coherent with an increasing urbanization, as in demographic transition fertility rates generally decline fastest in urban areas and remain highest in the most remotely settled and rural zones.] Contrary to earlier projections, the

demographic transition seems to have come to either a halt or a rebound in Algeria and Egypt. In Israel, fertility rates have increased in the last three decades, exceeding the symbolic threshold of three children per woman. All southern Mediterranean countries show a fertility rate at or above the replacement rate of 2.1, leading to population growth, with the exception of Lebanon (1.7). Fertility is below replacement rate in all northern Mediterranean countries, leading to population decrease and aging. Migration does however impact these dynamics.

8. **Population in southern countries is 14 years younger than in the north.** While the average median age of southern and eastern Mediterranean countries is about 28 (ranging from 20 to 31), in northern Mediterranean countries the average median age is 42 (ranging from 34 to 45).

9. **Around 71 % of Mediterranean population lives in urban areas.** Urban population has continued to increase throughout the region in the last decade with more than half of the population being urban in 2017 in all countries except for Egypt (57% rural population) and Bosnia Herzegovina (52%). A new phenomenon is the decline in absolute numbers of the rural population in Albania (-2,4%), Croatia (-1%), Montenegro (-1%), Algeria (-0,4%), Slovenia (-0,5%), and Turkey (-0,5%), while Egypt still registers an annual growth of 2% of its rural population.

10. **One out of three Mediterranean people lives in a coastal area^{iv}.** The share of the coastal population ranges from 5% in Slovenia to 100% in island countries (Cyprus, Malta) and Monaco. Coastal urbanization is also driven by tourism, with the Mediterranean region hosting more than 337 million international tourist arrivals (ITAs) per year, representing about 27 % of world tourism in 2016^v, largely concentrated in coastal zones and summer months.

11. **Demographic trends and urbanization impact the environment in multiple interconnected ways.** Population and urbanization dynamics are key drivers of change in environmental characteristics, such as land-use change, changes in the functioning of ecosystems, resource abstraction, demand in environmental services, and various types of pollution. However, population exert their influences synergistically with other factors, such as consumption and production patterns, cultural preferences, government investments, global markets, local institutions, and ecosystems resilience.

II.2. Human development: While education and health have considerably progressed in the south and east of the basin, large north/south divides remain driven by persistent GDP gaps and aggravated by conflicts

12. **The economies of Mediterranean countries have undergone important variations between 2007 and 2017, struck by the global financial crisis in 2008 and the European debt crisis starting late 2009.** All European Mediterranean countries witnessed a downturn of their GDP per capita between 2008 and 2009. Ten years after the 2008 crisis, Cyprus and Greece, particularly struck by the European debt crisis, have not recovered their pre-crisis GDP per capita. South Mediterranean countries have shown a surprising resilience to the 2008 crisis, but the added political instability and conflicts since the Arab Springs has left the region with relatively low growth rates.

13. **Throughout the last decade, Mediterranean geopolitics have been shaken by tension and instabilities.** The European Union is showing a timid recovery from the 2008 economic crisis, with significant discrepancies between northern and southern European countries. The EU also faces difficulty to find a satisfactory common response to the ongoing refugee crisis. The rise of populist claims has turned the threat of fragmentation of the European Union into a plausible future scenario (among others). To the south, a number of countries witnessed disruptive social and political transformations, with both the rise of democratic aspirations of large parts of the population and the upsurge of extremism, leading to a series of turmoil and upheavals, with severe consequences and uncertainties for the region's economies and societies. Tensions exacerbated in several areas of the region, such as in Libya and Syrian Arab Republic, where civil uprisings unfolded into ongoing international armed conflicts^{vi} with no end in sight. Although a direct causality is controversial,

climate change is likely to have played a role in triggering the Syrian crisis as the country was struck by the longest and most intense drought in the last 900 years when the crisis began^{vii}.

14. **In spite of demographic growth and geopolitical difficulties, human development, as measured through the Human Development Index (HDI), has experienced an upward trend throughout the last decade, significantly increasing in almost all countries. Major gaps between the northern and southern/eastern shores of the Mediterranean persist but have reduced,** as HDI progressed faster in southern/eastern countries than in northern ones^{viii}. In 2015, HDI was highest in Israel (world rank 19) and lowest in Syria (world rank 149). The largest progress has been experienced in Albania, Algeria, Bosnia Herzegovina and Turkey, with major increases in life expectancy in Algeria and Turkey, particularly high increases of gross national income in Albania, Bosnia Herzegovina and Turkey. A steady upward trend in average schooling duration has been experienced in all Mediterranean countries. In Libya, HDI went down as a result of the breakdown of the economy, while HDI in Syrian Arab Republic collapsed due to severe degradation of all three components of HDI: life expectancy, duration of schooling and per capita national income.

15. **Basic education has considerably improved throughout the last decade, especially in southern Mediterranean countries** with literacy rates showing drastic increases, notably in Morocco, Tunisia and Turkey. Very significant progress in primary education has been observed between 2000 and 2016 in southern and eastern Mediterranean. However, access to tertiary education remain unequal.

16. **Girls' education has improved but the share of women in the active population is still low.** The gender parity index of the enrolment rate in primary and secondary schools increased in most of the Mediterranean countries. Nevertheless, the share of woman in the active population is still low [30% in the MENA countries].

17. **The Mediterranean region is a global hotspot in terms of migrations. This issue is linked to environmental pressures and needs, and significantly impacts human development in the region.** Turkey hosts the highest number of refugees worldwide, estimated at 3.54 million people, and counts more than 300 thousand asylum seekers. In Lebanon, the proportion of refugees hosted in country is the highest in the world (16.4 % of host country population)^{ix}. It is also high in Turkey (4.3 %) and Malta (1.7 %). The consequences of migrations on host countries, in terms of related demographic changes and the need to meet the basic human needs of incoming migrants necessitates a flexible and effective response, notably in refugee camps. Access to water, food and sanitary services, as well as waste management, are of specific concern in terms of camp operationalisation. Syria is the country from which the highest number of refugees originates in the world, with an estimated 34.5 % of its population having left the country. There was an unprecedented peak in the number of refugees and migrants entering Europe via Western (Spain), Central (Italy) and Eastern (Greece) Mediterranean routes in 2015; with more than 1 million arrivals that year^x. Major countries of origin include Syria, Palestine, the Maghreb countries, as well as sub-Saharan African countries. In European Mediterranean countries, immigration flows range from 8.4 thousand new international migrants per year in Malta to 332.6 thousand in France^{xi}; Spain, Italy and France having some of the highest values worldwide (in the top 5). This inflow of migrants has led to tension between countries and institutional capacity challenges^{xii}. Among others, environmental and climatic changes are important drivers of migration, especially for water-scarce countries, in vulnerable areas e.g. rainfed farmland, water-contaminated sites, urban slums.

II.3. Macroeconomic situation: Mediterranean countries are increasingly vulnerable to external conditions and shocks, including environmental shocks

18. **Mediterranean countries are vulnerable to external conditions and shocks.** Especially in southern Mediterranean countries, non-diversified economic structures, coupled with a general trade deficit (external balance) and budget deficit reflect and reinforce the difficulty of national economies to develop more competitive products that could enhance the economies' resilience^{xiii}.

19. Cooperation frameworks and integration schemes in Euro-Mediterranean relations have not achieved shared prosperity through enhanced political association and economic integration.

Political integration in the Mediterranean region has been limited throughout the last decade and mainly focused on thematic ministerial conferences and parliamentary meetings under the Union for the Mediterranean and the Parliamentary Assembly of the Mediterranean, as well as some cooperation on security-related matters. Economic integration has been less timid with tariff dismantling under free trade agreements already in force and the signature of a number of additional trade agreements, mainly between the EU and accession candidates, remaining however relatively limited in comparison to other regions in the world. Little progress has been achieved in the dismantling of non-tariff barriers to trade, in particular subsidies which are still common across the region, including subsidies considered environmentally damaging^{xiv}. Trade among EU and Mediterranean countries did not increase much faster than trade of EU countries with the rest of the world, with the share of intra-Mediterranean imports remaining stable and exports from EU to other Mediterranean countries slightly increasing between 2005 and 2015, meaning that trade regionalization remained low in the region^{xv}.

20. Youth unemployment is a critical issue in most of the basin. Total unemployment rates differ broadly from 4% (Israel and Malta) to around [24%] (Bosnia Herzegovina)^{xvi}. Youth (age 15-24) unemployment shows rates of up to three times the national unemployment level^{xvii}. Given the relatively young age structure in southern and eastern Mediterranean countries and the high youth unemployment rates, the creation of new jobs, especially for young people, has become a cross-cutting priority concern for Mediterranean policy makers. The emergence of innovative sectors within the green and blue economy could contribute to the creation of these needed jobs^{xviii}, and any proposal for an environmental transition in economic or housing sectors is examined in light of employment concerns.

21. Throughout the last twenty years, agriculture and industry have lost ground while services developed^{xix}. In Mediterranean countries, services generally account for close to or above half of national GDP with Albania (47 %) and Algeria (46 %) having the lowest service share and Malta (75 %), Cyprus (74 %) and Lebanon (74 %) the highest. In only three Mediterranean countries, industry represents around or more than 30 % of national value added: Algeria (with an economy highly dependent on oil and gas), Egypt (the only Mediterranean country having recently experienced a significant increase in the contribution of industry to GDP) and Turkey. Israel (19 %) and Lebanon (12 %) have the lowest contribution of industry to their national economies. The share of agriculture in national GDP is generally below 10 %, except for five countries: Albania (19 %), Algeria (12 %), Morocco (12 %), Egypt (11 %), and Tunisia (10 %). Algeria is the only Mediterranean country in which the share of the agricultural sector is increasing (from 8 % in 1990 to 12 % in 2017). *[evidence to be completed to explain how shifts in sectors has been associated with environmental stakes]*

22. Mediterranean economies increasingly rely on debt. Over the last decade, government debt, as a percentage of national GDP has increased in most Mediterranean countries, except for Turkey, Malta, Israel and Lebanon. The government debt over GDP ratio is close to or above 60 % in all Mediterranean countries except for Algeria, Bosnia Herzegovina and Turkey, and reaches close to or more than 100 % in Cyprus, Egypt, France, Greece, Italy, Lebanon and Spain, with Greece reaching more than 180 %^{xx}. High and increasing debt ratios can be a risk for the financial sustainability of Mediterranean governments and hinder public investments in the environment sector.

23. The Mediterranean basin is unable to produce enough agricultural and food products for its own consumption and is therefore highly dependent on international trade and imports of agricultural products and sensitive to the volatility of international prices. The agricultural production deficit is mainly due, on the one hand, to agro-climatic conditions, and on the other hand to the scarcity of arable land and water resources. Faced with a growing demand for food products, especially cereals, food security is increasingly threatened in countries where population growth and demand are sustained. Regarding cereals, especially wheat, Mediterranean countries account for one-third of world imports while they only house 7 % of the world's population. Egypt and Algeria are among the largest cereal importers in the world and the import dependency ratio for cereals in the Mediterranean (import / consumption ratio) is very high (42 % in Egypt, 60 % in Tunisia, 72 % in

Algeria, 86 % in Lebanon). The only countries in the Mediterranean whose agricultural balance is in surplus are France and Spain. The contribution of small-scale family farming to food security should not be underestimated. Small scale crop and livestock production in family farms significantly contribute to the food consumption of farmers and their families and to the provision of food adapted to local tastes, including urban dwellers.

24. Several Mediterranean countries are also highly dependent on oil and gas, or tourism, sectors vulnerable to economic or security crises. *[evidence to be completed.]*

II.4. Dependence on environmental health. Mediterranean economies are dependent on environmental health, in particular in coastal areas

25. **Mediterranean countries, communities and economies are dependent on natural coastal and maritime resources to create wealth, provide jobs, and continue to develop locally.** It is therefore essential to recognize the importance of a sustainable economy to address key environmental and socio-economic challenges in Mediterranean countries.

26. **Mediterranean countries remain the world's leading tourism destination** with nearly 30% of international tourist arrivals, doubling in 20 years. Recently, this growth has been concentrated in northern countries. The **coastal and maritime tourism** sector is extensively developed in the northern Mediterranean countries and has witnessed a significant growth in southern and eastern Mediterranean countries, despite a significant slow-down of international arrivals in the south from 2011 onwards. International tourist arrivals in the Mediterranean region grew from 58 million in 1970 to more than 337 million in 2016 and are projected to reach 500 million by 2030^{xxi}. Tourism provides around 11 % of total Mediterranean employment and 11 % of total Mediterranean GDP^{xxii}.

27. **The Mediterranean also stands as the second biggest cruising region in the world** (16.7 % of global cruise fleet deployment in 2018), after the Caribbean. In 2018, the Mediterranean noted more than 28 million cruise passenger movements, compared to just over 8.5 million in 2000.

28. **Mediterranean fisheries and aquaculture** play a strong role in the economy^{xxiii}. Fishing generates 250,000 jobs and a direct and indirect economic impact of approximately 13 billion € annually. Aquaculture accounts for more than 50 % of total fish production and plays an important role in coastal communities, contributing to socio-economic development and employment (more than 120,000 direct jobs and 750,000 indirect jobs).

29. **Mediterranean agriculture's role in national wealth creation and employment is very heterogenous between countries.** Agriculture provides between 1.5 % (France) and 19 % (Albania) of national GDP in Mediterranean countries and between 1 % (Israel) and 40 % (Albania) of national employment, with a general decreasing trend in the share of GDP and employment (except for Greece, Libya and Syria where agricultural employment has increased relatively in recent years). *[Add a sentence on the dependence of the agricultural sector on environmental health]*

30. **Marine biotechnologies and bioprospecting with applications in medicine, food, materials, energy and cosmetics are a young and growing sector in the Mediterranean region.** The high rate of endemism and quantity of species with high potential for application (sponges and extreme microorganisms) make the Mediterranean a promising region for these activities, with a significant potential for the generation of revenue and (highly qualified) jobs.

II.5. Environmental pressures from economic sectors: Despite the emergence of low impact solutions, economic sectors exert increasing pressures on the environment, driven by a rapid growth in polluting sectors and a diversification of economic activities in marine areas

31. **The Mediterranean region has one of the world's highest ecological deficits.** The Mediterranean Ecological Footprint^{xxiv} per capita (3.2 gha^{xxv}/cap) is higher than the global average (2.8 gha/cap), while the biocapacity per capita to support this footprint is lower than global average in most

Mediterranean countries (except for France, Croatia, Montenegro and Slovenia). The ecological footprint exceeds biocapacity in all countries, leading to an ecological deficit. From 2010 to 2014, the Ecological Footprint per capita decreased in most Mediterranean countries^{xxvi}. This is mostly due to the effects of the economic crisis, which slowed down resource consumption, a reduction of CO₂ emissions in northern countries and population growth in the southern countries spreading the total footprint over a larger population. Variations in the ecological footprint continue to be coupled to variations in GDP, noting, however, a slower growth rate of ecological footprint compared to GDP.

32. **While being economically profitable in the short term, coastal mass tourism generates considerable environmental damage** (habitat loss, increase of water consumption and waste production, disturbance of protected and endangered species mainly due to underwater noise, water pollution as well as introduction of invasive species). In addition, profits are not necessarily invested in local development. Tourism in Mediterranean countries faces three complementary challenges: to sustain and expand the development of an alternative offer to mass tourism, less seasonal, more environmentally sustainable and socially beneficial, based on rural and cultural assets (including ecotourism); to concomitantly reduce the footprint of mass tourism, its pressure on scarce natural resources, fragile ecosystems and costly environmental infrastructure; and finally to strengthen tourism linkages with other sectors in the local economy generating indirect benefits on local employment while potentially driving demand for sustainable products.

MSSD → Link with MSSD 2016-2025 Objective 3, Strategic direction 3.5: Promote urban spatial patterns and technological options that reduce the demand for transportation, stimulate sustainable mobility and accessibility in urban areas.

33. **Transport is the highest energy consuming sector** (with 31 % of total energy consumption in northern countries and 38 % in southern and eastern countries) and, with a very strong dependence on fossil fuels, among the largest contributors to GHG emissions and air pollution in the Mediterranean region. GHG emissions in the region are mainly caused by terrestrial traffic, and in a much smaller proportion maritime and air traffic. Road transport accounts for 70 % of transport energy use in the Mediterranean basin, mainly stemming from private vehicles. Transport also leads to significant air pollution, particularly in cities and representing a major challenge for human health.

34. **The Mediterranean Sea is host to the world's busiest shipping lanes**, accommodating large parts of the world fleet which pass through the Suez Canal, the Bosphorus and Dardanelles and the Gibraltar straits, connecting Asia with Western Europe ports and serving the growing ports in the Mediterranean and Black Sea regions. The Suez Canal/SUMED Pipeline and the Turkish Straits accounted for over 13 % of the world's seaborne oil trade in 2015 and the Mediterranean coastal States' fleet accounts for more than 17 % of the world's oil tanker capacity in 2017. Pressures from maritime transport essentially include potential accidental (clear downward trend) and illicit (remaining issue) discharges of oil and hazardous and noxious substances; marine litter; water discharge and hull fouling (shipping being the primary source of the over 1000 established non-indigenous species in the Mediterranean); air emissions from ships (gases and particulates like sulphur oxides (SO_x) and nitrogen oxides (NO_x) which are toxic for humans, and GHG); underwater noise; collisions with marine mammals; land take through port infrastructure; and anchoring (destructive for sea floor ecosystems).

35. **Energy** *[evidence to be completed]*

36. **More than two hundred offshore oil and gas platforms are active in the Mediterranean .** With new discoveries of large fossil fuel reserves and explorations in the region, this figure is set to increase. Ongoing offshore exploration in the Levantine Basin, in Lebanon and Syrian Arab Republic, as well as in the Nile Delta Basin and Aegean Basin could contain significant reserves of oil and gas and could transform the eastern Mediterranean ecosystems and economies. *[evidence to be completed]*

37. **Industry** *[evidence to be completed]*

38. **Quantities of fertilizers and pesticides used for agriculture in Mediterranean countries are above the global average.** The average per hectare fertilizer consumption is of 176 kg in northern Mediterranean countries, and of 185 kg in southern and eastern Mediterranean countries, compared to the global average of 138 kg^{xxvii} in 2015. The average consumption of pesticides in the Mediterranean basin in 2015 was 6.7 kg per hectare, compared to the world average of 2.12 kg. France, Italy, Spain and Turkey are the Mediterranean countries using or selling the highest amount of pesticides for the agricultural sector in 2016^{xxviii}.

39. Large **water footprints** per capita are found throughout the Mediterranean exceeding the global average^{xxx}, with especially high volumes of water contained in imported goods and services. Southern and eastern countries are more dependent on these water imports (e.g. Egypt, Israel, Syrian Arab Republic). The use of water within the national consumption and production systems of Mediterranean countries shows a water deficit (higher abstracted quantities of water than available renewable water resources) in all southern and eastern Mediterranean countries. Desalination develops in a context of water scarcity. Despite technological improvement, desalination plant rejections remain an environmental concern for coastal ecosystems. *[Evidence to be completed]*

III.State and impact

III.1. Land-cover and land-use change: Ambitious objectives and disparate policy measures have not been sufficient to preserve natural land cover and agricultural land use, in particular in coastal areas.

40. **Land cover and land use in the Mediterranean region continue to change as a result of human activities, with urban sprawl** (residential, touristic, commercial and industrial area expansion) **and infrastructures diffusing throughout the region. Landscapes are typically fragmented due to a multitude of land uses,** and ecological continuity is a constraint for many biodiversity components.

41. **Urban areas dynamics** *[key message to be written]*

42. **Soil and surface erosion.** *[key message to be written]*

43. **In the Mediterranean region, nearly 8.3 million hectares of arable land have been lost since 1960,** impacting biodiversity and the provision of ecosystem services, and **80 million ha of land are degraded**^{xxx}. Land degradation threatens food and water security through accelerated soil erosion and fertility loss, water over-abstraction, soil and water pollution, loss of vegetation cover and biodiversity, and climate change exacerbation.

44. **Within the limit of the Mediterranean biome, the extent of forests has remained stable, with contrast between northern and southern shores.** In northern Mediterranean countries, land abandonment in rural areas, associated to depopulation, has led to natural recovery and forest expansion. In southern and eastern countries, pressures on agricultural and forest ecosystems remain significant due to strong demographic pressures on land and water resources, urban sprawl, forest overexploitation, and overgrazing.^{xxxi} Although the forest area of Mediterranean countries at national scale has been increasing from 68 million ha in 1990 to 82 million ha in 2015^{xxxii}, forests in the Mediterranean biome cover 18 % of total area and remain stable. Mediterranean forests are subject to fragmentation due to land cover change including urban sprawl and infrastructure expansion. The area of other wooded lands (small trees, shrubs and bushes) has decreased from 36 million ha in 1990 to 32 million ha in 2015. The coverage of trees outside forests (found in extensive agroforestry systems, urban forests and as elements of the landscape) has been increasing between 2000 and 2010^{xxxiii}. Climate change-induced longer droughts and heat waves, combined with uncontrolled biomass accumulation due to land abandonment in northern countries, is leading to an increased risk of wild fires.

45. **Areas of coastal wetlands continue decreasing.** The Mediterranean basin hosts 19-26 million hectares of wetlands^{xxxiv}, and according to a broad sample of 400 Mediterranean wetland sites, about 48 % of natural wetland habitats have been lost between 1970 and 2013. The surface area of natural coastal wetlands such as wet meadows and marshes have decreased by more than 10 % over the past decades, whereas artificial wetlands like pools, reservoirs and storage ponds have increased by more than 50 %^{xxxv}, the latter being designed mainly for agricultural and aquaculture purposes.

46. **In the coastal belt, the built-up area has increased substantially in the last decades, leaving less space for natural coastal ecosystems and increasing risks for people living in the coastal zone.** Between 1975 and 2015, three out of four Mediterranean countries doubled or more than doubled the built-up area in the belt situated of 1 km from the coastline. Urban expansion and industrialization around coastal cities are driven by waterfront development for economic activities, such as tourism and real estate, marinas, fishing and trading ports, industrial plants that need the proximity of seawater for cooling or for production export (energy, mineral), desalination, etc., with diverse environmental and social impacts. The ICZM Protocol, in its article 8, provides that Contracting Parties shall establish in coastal zones, a zone of at least 100 m in width where construction is not allowed. However, the built-up area within the first 150 m wide belt along the coastline is above 20 % in almost half of Mediterranean countries (in 2015)^{xxxvi}. The past and ongoing development of harbors, dikes and others coastal structures is further declining the extent of rocky shores and cliffs, which have decreased by approximatively 20 % over the last 50 years in EU countries. Land-use change and subsequent fragmentation represent a major driver of the loss of biodiversity and ecosystem services in the Mediterranean Basin to date^{xxxvii}.

III.2. Natural resources, biodiversity and ecosystem services. Multiple human induced pressures combine to threaten critical resources, biodiversity components and ecosystem services in the Mediterranean.

47. **Mediterranean coastal ecosystems offer important services to the inhabitants of the basin; but their functioning is threatened by past and current land-use management.** Ecosystem services offered by wetland and coastal aquifers include water purification, flood and drought mitigation, and water provision, among others. The services offered by these ecosystems are much more significant than their relative land surface. However, loss of natural wetlands habitats and excessive abstraction of groundwater in the region limits the capacity of these ecosystems to provide services. Soft and rocky shores (e.g. beaches, cliffs), representing the majority of the Mediterranean coastline^{xxxviii}, offer services like natural sea defence, nutrient cycling and erosion control and provide opportunities for tourism. Coastal infrastructure development, water and sediment flow alteration at the watershed scale, and pollution, alter the functioning of these ecosystems and their services. Agroecosystems, forests and shrublands, as well as their ecosystem services (e.g. food, fuel and fibre production), are mainly impacted by landscape fragmentation. *[Further develop evidence on trends]*

48. **The region is a hotspot for marine biodiversity and endemism, which are fragile and threatened by species extinctions and habitat losses.** Although the Mediterranean Sea is a low primary productivity ecosystem due to limited nutrient inputs from fluvial and Atlantic origins, and despite only covering 0.82 % of the world's ocean surface, it hosts more than 17,000 marine species and contributes to an estimated 4-18 % of the world's known marine species. The Mediterranean Sea represents the highest proportion of threatened marine habitats in Europe (32 %) with 21 % being listed as vulnerable and 11 % as endangered, with seagrass ecosystems experiencing the most rapid recession. Marine ecosystems support fish stocks restoration, resilience to climate change, sailing, diving and wildlife-watching activities, for example. Fishing and harvesting aquatic resources, considering overfishing, bycatch and the damaging impacts on marine habitats, is the main driver of increasing fish species extinction risk in the Mediterranean region^{xxxix}. Over the 1950 to 2011 time-period, the abundance of top predators including a number of marine mammals has diminished by ~41 % and fish species has reduced by ~34 %, including commercial and non-commercial species, while an increase of about 23 % of the organisms at the bottom of the food web has been observed^{xl}.

EO → Link with Ecological Objective 1 Biodiversity: Biological diversity is maintained or enhanced.

49. **Ecosystem services associated with Posidonia.** Seagrass meadows occurring in the Mediterranean, including the endemic species *Posidonia oceanica*, play an important role in terms of habitat for biodiversity, water quality regulation, coastal protection and carbon fixation and storage. Localized regressions have been recorded in the region, in relation to natural and anthropic pressures such as mooring, seabed disturbing fishing, and excessive sand and organic matter discharge. *[Further develop evidence]*

50. **Ecosystem services associated with Coralligenous** *[Key message to be written]*

51. **Over 90% of fish stocks are overexploited or ecologically unbalanced^{xii}.** The number of overexploited or collapsed fish stocks in the Mediterranean Sea has increased between 1970 and 2010^{xlii}. The pattern of exploitation and the state of different fish stocks is especially critical in the eastern Mediterranean compared to the western and central Mediterranean. Fishery overexploitation is the main driver of marine populations and has led to the bad state of most highly commercial stocks and the low abundance of top predators *[evidence to be completed based on pending contribution on fisheries]*.



→ Link with SDG 14, Target 14.4: By 2020, effectively regulate harvesting and end overfishing, illegal, unreported and unregulated fishing and destructive fishing practices and implement science-based management plans, in order to restore fish stocks in the shortest time feasible, at least to levels that can produce maximum sustainable yield as determined by their biological characteristics.

52. **Water scarcity is considered as one of the main factors challenging sustainable development, especially in southern and eastern Mediterranean countries and island states.** Total renewable water resources are unevenly distributed across the basin, with 67 % in the northern sub-region, 23 % in the eastern sub-region and 10 % in the southern sub-region^{xliii}. Around 30 % of the Mediterranean population live in water scarce countries^{xliv}, and an additional 13 % in countries facing absolute water scarcity^{xlv}. With less than 500 m³ total renewable water resources per capita per year Algeria, Israel, Libya, Malta, the State of Palestine and Tunisia face important water-related challenges. On the contrary, northern countries are in a situation of relative water security (> 1,700 m³ per inhabitant per year). However, national averages hide significant regional and seasonal disparities, and natural water scarcity in the Mediterranean region is getting aggravated, even in the North, by population growth, urbanization, growing food and energy demands, pollution and climate change.

53. **Significant differences in the proportion of water demands exist between Mediterranean catchments and seasonally. By 2050, under a business-as-usual water-use scenario, water withdrawals are projected to double or even triple in catchments of the southern and eastern rims due to population growth, expansion of irrigated areas and increasing crop water needs resulting from warmer and drier conditions^{xlvi}.** Water demand for irrigation purposes represents more than half of the total water demand over all Mediterranean catchments (production of cereals, vegetables and citrus), except in France and Italy where water demands for energy and industrial purposes prevail, and in Slovenia and Croatia where domestic water demands prevail^{xlvii}. Water demands vary throughout the year, mainly according to tourism. Under a business-as-usual scenario, trends in irrigated land expansion should lead to a 150 % increase in agricultural water withdrawals in Algeria, Libya, Israel and Lebanon by 2050, an 80 % increase on average in the Maghreb and Turkey and a 20 to 25 % increase in other southeastern catchments^{xlviii}. Environmental requirements (environmental flows) which are necessary for sustaining ecological continuity, riparian productivity and many other services provided by fluvial systems, are often underestimated, neglected and strongly impacted by over-abstraction.

54. **The Mediterranean Sea (and particularly the Levantine basin) is a hotspot for alien species introductions some of which causing a decrease or collapse in native species populations.** More than 1,000 non-indigenous marine species have been recorded in the Mediterranean, of which 618 are established^{xlix}. The main vectors for species introduction are maritime transport (through ballast water and hull fouling) and corridors (in particular the Suez Canal). Aquaculture and aquarium trade provide additional ways of introduction. Mediterranean Sea warming leads to spreading of some

“warm-water” invaders and reduction of some indigenous species. There is evidence that some invaders have already had a strong ecological impact on marine ecosystems, communities and activities, while others are becoming commercially exploited fishing resources.

EO → Link with Ecological Objective 2 Non-indigenous species: Non-indigenous species introduced by human activities are at levels that do not adversely alter the ecosystem.

55. **Greenhouse gas emission reduction objectives are still far from being met.** While the CO₂ emissions of most Northern Mediterranean countries have been decreasing since 2005, those of most eastern and southern countries increased, in particular due to demographic growth. Northern countries on the one hand and southern and eastern countries on the other now both emit about 1 Giga ton of CO₂ per year^l. Total CO₂ emissions from Mediterranean countries account for 5 % of world emissions estimates. Emissions per inhabitant stand around 4 tonnes per capita on average, remaining highly differentiated among countries (ranging 0.5 to 10 tonnes per capita). Mediterranean countries with highest total CO₂ emissions (higher than 100 kt in 2014) include Turkey, Italy, France, Spain, Greece and Algeria. Total CO₂ emissions have decreased between 2000 and 2014 in Italy, France, Spain, Greece, Croatia, Slovenia, and Cyprus (Northern countries) and Syrian Arab Republic, and have increased in Turkey, Israel, Lebanon (East), Egypt, Algeria, Morocco, Libya, Tunisia (South), and Bosnia-Herzegovina (North). The evolution of greenhouse gas emissions in Mediterranean countries (2002 to 2012) shows an increase of 6.6 % for the region^h.

56. *[Message on pollution to be completed (air, eutrophication, contaminants, riverine inputs and making the case for management at the water basin level) with clear links to level of GES achievement/QSR results]* Considering the 16 River Basin Districts monitored in terms of surface water pollution and habitat degradation along the Mediterranean coastline, 49 % of water bodies on average are failing to achieve the Good Ecological status, the highest % being found in Sicily, Italy, and lowest in Corsica, France^{lii}.

EO → Link with Ecological Objective 5 Eutrophication: Human-induced eutrophication is prevented, especially adverse effects thereof, such as losses in biodiversity, ecosystem degradation, harmful algal blooms and oxygen deficiency in bottom waters.

EO → Link with Ecological Objective 9 Pollution: Contaminants cause no significant impact on coastal and marine ecosystems and human health.

57. *Waste management [evidence to be collected]*

- *Municipal waste management systems*

- *Impact of waste management on marine litter.*

MSSD → Link with MSSD 2016-2025 Objective 3, Strategic direction 3.4: Promote sustainable waste management within the context of a more circular economy.

58. **Driven by the increase of plastic use and the lack of recycling, unsustainable consumption patterns, inadequate and ineffective waste management schemes, high pressures from tourism and shipping, coupled with significant riverine inputs, the Mediterranean has become a highly marine-litter affected area.** The Mediterranean is one of the most highly affected areas in the world, especially for microplastics, with plastics being the most abundant type of marine litter. Marine Litter is impacting marine organisms mainly through entanglement and ingestion, but also through colonization and rafting. Marine litter also poses an economic burden through clean-up costs, as well as potential loss of income and jobs from tourism, residential property values, recreational activities and fisheries. The effects of micro- and nano-plastics and associated Persistent Organic Pollutants (POPs) and Endocrine Disrupting Chemicals (EDCs) in the marine environment represent an additional risk to human health, as well as for marine organisms. Acknowledging the importance of prevention and the application of sustainable circular economy principles, the Regional Plan on Marine Litter Management in the Mediterranean provides for a set of policy, legal, institutional, regulatory (including economic incentive instruments) and technical nature measures, addressing different aspects of marine litter prevention and management from land- and sea-based sources. At national level, important prevention measures have been adopted in the majority of Mediterranean countries. National legislation and policies are already in place for recycling (8 countries) and for reducing the use of single-use plastic bags (17 countries) tackling the major marine

litter items found in the Mediterranean. In the Mediterranean, plastics account for up to 95 to 100 % of total floating marine litter and more than 50 % of seabed marine litter^{liii}. Concentrations of microplastics at the surface of the Mediterranean Sea are largely above 100,000 items per km²^{liv} and maxima reach more than 64 million floating particles per km²^{lv}.

EO → Link with Ecological Objective 10 Marine litter: Marine and coastal litter do not adversely affect coastal and marine environment.

59. **Although land-based sources are dominant in generating marine litter, sea-based sources actively contribute to the problem with an estimated EU average of 32 % and values up to 50 % for some sea basins.** It is estimated that the fishing and recreational sectors are relatively large sea-based sources contributors, with shares of 30 % and 19 % respectively (the balance provided by merchant shipping). If an average treatment of 25 % is assumed, the gross waste generation would be an approximate 1.2 million tonnes per year for all shipping sectors in EU. Fishing and recreational vessels together account for about half of the total MARPOL Annex V waste generation.

III.3. Health and environment: while health has globally improved in the region, pollutants, climate change, new lifestyles and consumption patterns raise increasing health concerns

60. **In the Mediterranean, 15 %^{lvi} of deaths are attributed to modifiable environmental factors^{lvii}, compared to 23 % worldwide^{lviii}.** Among Mediterranean countries, the number of deaths attributed to these conditions ranges between 8 % and 27 % in 2012^{lix}. *[Message to be completed with information about type of health impact (non-communicable diseases, infectious/ parasitic/ neonatal/ nutritional diseases, injuries and about different pressures (ambient air pollution and specifically ships air emissions in ports, water, ...)]*

61. **Air pollution is critical, its negative impact in various health components being increasingly well documented.** Levels of urban ambient air pollution in Mediterranean countries are highest in Egypt (100.6 µg/m³), which are far above world and European averages (39.6 µg/m³ and 14.2 µg/m³, respectively). Other Mediterranean countries with levels >40 µg/m³ include Libya and Bosnia-Herzegovina^{lx}. *[Issue to be further explained, contextualized]*

62. **Contaminated drinking water sources affect human health.** [In some areas], water is contaminated by untreated sewage that leads to increased nitrite and bacteriological count in water. Also drinking water sources [in many areas] are affected by leakage of nitrates from extensive fertilizers use in agricultural activities leading to an increase in nitrates level beyond 50 mg per l (which is beyond WHO limits for drinking water quality)^{lxi}.

63. **Under 5-year old's deaths attributed to environmental causes have been reduced in the east and south of the basin.** However, progress remains possible. In 2016, the burden of disease related to diarrhoeal diseases from water, hygiene and sanitation in Mediterranean countries was above 30 000 disease adjusted life years (DALYs) in children under 5 years in Algeria, Egypt, Morocco and Syrian Arab Republic.

64. **Climate change increases risks for human health.** Increased and longer heat waves are a health risk factor especially for the elderly. Transmission of vector-, food- and water-borne diseases is facilitated by higher temperatures. The risk of personal injury increases with a higher frequency and intensity of extreme weather events. Modifications in pollen patterns favour asthma and allergies. Finally, drinking water sources are at risk of loss, decreasing quality and salination through intrusion of saltwater, potentially causing a significant rise in cardiovascular diseases.

65. **Man-made and natural disasters and emergencies are a reality in the Mediterranean region and have the potential to temporarily or permanently alter the inhabitants' access to safe environmental infrastructure and services.** The Mediterranean is an area of relatively high seismic and volcanic activity with a series of destructive earthquakes, volcanic eruptions and tsunamis on record, having displaced and killed thousands of Mediterranean inhabitants. Man-made emergencies linked to political turbulence and war force large numbers of people to flee these situations and find

new, often improvised, housing and means of living. In such emergencies, providing healthy environments for people is a particular challenge. Forced displacement of people can also cause environmental degradation, not only in the (destroyed) areas left behind, but also in the areas that receive massive population flows. Emergency and preparedness plans, integrating health and environment considerations are key to disaster management to protect the health of humans and ecosystems.

66. **In many countries in the region, a triple nutritional burden can be observed, adding undernutrition, overfeeding (obesity and noncommunicable diseases) and nutritional deficiencies.** A worrying increase in overweight and obesity is to be noted between 2012 and 2016 in all Mediterranean countries^{lxii}. The adult obesity rate exceeds 30 % in 2016 in Egypt, Lebanon, Libya, Malta and Turkey. It is lower in the Balkans but is everywhere above 20 % (except in Bosnia and Herzegovina), leading to increased risks to public health (cardiovascular diseases, type 2 diabetes, metabolic syndrome).

67. **Degradation of coastal and marine ecosystems limit their benefits for humans.** Coastal and marine ecosystems provide a number of health benefits ranging from food provision, including the particularly healthy fatty acids contained in fish, to the provision of bioactive metabolites used in drugs to treat certain diseases, and the provision of leisure activities contributing to physical and mental health. The degradation of coastal and marine ecosystems negatively impacts their capacity to provide the mentioned ecosystem services and thus reduces the linked human health benefits.

68. **Whereas environmental factors influence human health, the health sector itself influences the state of the environment,** producing a magnitude of different kinds of waste, including untreated pharmaceutical residues in wastewater that travel down water basins and end up in the marine environment, [and potentially in the food chain]. Liquid waste from healthcare facilities is often discharged directly in municipal wastewater networks. This contains also radioactive elements, heavy metals and hazardous substances from laboratories, bacteria and pathogens, blood, etc. leading to environmental contamination^{lxiii}.

III.4. Climate change is already affecting the Mediterranean, exacerbating preexisting challenges

69. **The Mediterranean basin is affected by climate change at a pace well above global average, in particular by more rapid warming of ambient air and sea surface in all seasons.** While global mean air temperature is now about 1.1 °C above pre-industrial values, the Mediterranean region approaches a warming of 1.6 °C. It is expected to have warmed by 2.2 °C between 2030 and 2052 when the global mean is expected to reach the 1.5 °C threshold highlighted in the Paris Agreement. Without additional mitigation, in some regions of the Mediterranean the temperature increase is expected to exceed 3.8 °C by 2100. In parallel, the sea surface temperature in the Mediterranean has already warmed by around 0.4 °C per decade during the period between 1985 and 2006 and is expected to reach between + 1.8 °C and + 3.5 °C by 2100 compared to the period between 1961 and 1990. Heat waves are becoming stronger and more frequent, and are especially accentuated in urban centers due to the heat island effect. Summer precipitation is expected to decrease by 10 to 30 % at the global atmospheric increase of 2 °C, and heavy rainfall events are likely to intensify and become more erratic. The sea is absorbing CO₂, which causes ocean acidification at an unprecedented rate of - 0.018 to - 0.028 pH units per decade, with significant expected consequences on calcifying organisms, impacting marine biodiversity and aquaculture. Wild fire risks are growing with climate change-induced longer fire seasons and increasing heat waves in combination with drought.

70. **Climate change already exacerbates regional challenges, inducing an increase in risks of droughts, floods, erosion, and fires. In the upcoming decades, climate change is expected to further threaten food and water security, as well as human livelihoods and health.** Tourism, fisheries, aquaculture and agriculture have already started to be adversely affected by both changes in general climatic patterns and extreme events. Freshwater resources' quality and quantity decrease while warming and decreased precipitation locally lead to the reduction of yields (especially for winter

and spring crops in the South) and increased irrigation requirements. Combined with potentially increasing pests, dependence on international food imports will become stronger in southern and eastern Mediterranean countries. Fish stock composition and distribution will likely change with favoring of warm-water species and a decrease in fish size. Direct and indirect climate change drivers may result in favourable, unfavourable or neutral changes in fisheries and aquaculture, in the short- or long-term and at different spatial scales. Unfavourable changes are likely to predominate in Mediterranean aquaculture, adversely affecting investment and growth in a sector projected to be the backbone of increasing sea food supply to meet the growing demands.

71. **Due to a limited tidal range, Mediterranean coastal infrastructures and settlements are often closer to mean sea level, than in most regions of the world^{lxiv}, which makes them highly vulnerable to sea-level rise, storm-surges, flooding, erosion and local land subsidence.** The sea is rising at an accelerating rate of 2.6 to 2.9 mm per year, implying an increase currently estimated at 52 to 190 cm by 2100. Considering the high concentration of human population and activities in the Mediterranean coastal zone, exposure is high. Sea-level rise also causes salinization of coastal wetlands and aquifers and, combined with a disturbed sediment balance on Mediterranean shores, leads to erosion. Projections of sea-level may be significantly revised in upcoming years, especially due to unprecedented rapid melting of the ice caps.

72. **Climate change, together with a lack of regulatory and control mechanisms, has accelerated the spread of non-indigenous species leading to a shift in species composition and functioning of ecosystems.** Mediterranean species are partly responding to climatic changes by changing their geographical distribution. However, the expected migration of species to cooler areas as the ocean warms up is limited in enclosed seas like the Mediterranean Sea. Moreover, certain inland, coastal and marine habitats are also being degraded, causing loss of biodiversity and ecosystem services. Stratification changes, salinization and eutrophication are examples of indirect impacts affecting valuable and unique habitats. Increasing water temperature will lead to more frequent mass mortality events, especially in coralligenous but also in sponges or mollusks, including in aquaculture sectors. Calcifying organisms are especially vulnerable to acidification. Global warming in combination with direct anthropogenic impacts such as water extraction and pollution, largely affect water budgets in Mediterranean wetlands (salinity, continuity, depth, inundation), and thereby the structure of the communities, which inhabit them, e.g. birds^{lxv}.

73. **Considering the particular intensity of climate forcing (increased temperature, precipitation decrease, acidification, extreme events increase), non-climate forcing (population growth, including tourist arrivals), vulnerability and exposure of major stakes (land cover, population density, economic activities, heritage sites), the Mediterranean Basin is considered a climate change hotspot.** A multi-scale risk assessment shows that areas in three out of four Mediterranean countries are at “extremely high risk”, with a general predominance in southern and eastern Mediterranean countries, but also in Italy^{lxvi}.

IV. Major progress in addressing regional issues, and associated responses

IV.1. Common objectives. Over the last ten years, Mediterranean countries have adopted global and regional common objectives, setting a shared path towards sustainable development

74. **Since their adoption in 2015, 2030 Agenda and Sustainable Development Goals (SDGs) have become a major common reference framework for policy design and evaluation globally.** [Numerous] Mediterranean countries have revised or are revising their National Strategy on Sustainable Development to transpose the 2030 Agenda and SDGs at the national level. The Mediterranean Strategy for Sustainable Development (MSSD), its monitoring dashboard and the Simplified Peer Review Mechanism SIMPEER have contributed to the regional and national implementation of the 2030 Agenda, while taking into account local and regional specificities.

75. **Most Mediterranean countries are committed to the Paris Agreement on Climate Change.** 85% of Mediterranean riparian countries have ratified the Paris agreement and 80 % have submitted their first Nationally Determined Contributions (NDC). Some Mediterranean countries have demonstrated an important mobilisation on the international scene, welcoming international or regional climate change events (e.g. Morocco, France). In addition, a 15 % increase in renewable energy consumption (2005-2015) regionally^{lxvii} indicates an effort to shift from carbon-intensive energy sources to alternative sources. However, some renewable energy developments raise debates on potential environmental trade-offs associated with impacts on biodiversity, resource consumption, recycling, etc. that could deserve further assessment.



→ Link with SDG 13, Target 13.2: Integrate climate change measures into national policies, strategies and planning.

MSSD → Link with MSSD 2016-2025 Objective 4, Strategic direction 4.4: Encourage institutional, policy and legal reforms for the effective mainstreaming of climate change responses into national and local development frameworks, particularly in the energy sector.

IV.2. Environmental agreements. Despite multilateralism losing support, environmental agreements remain a key area of cooperation

76. **While international negotiations on trade and people mobility have suffered from a decreased appetite for multilateralism, environment and sustainable development remain major areas for global and regional cooperation.** The adoption in 2008 of the ICZM Protocol, the 2016 Regional Climate Change Adaptation Framework for the Mediterranean Marine and Coastal Areas, the 2016 Regional Action Plan on Sustainable Consumption and Production, the 2018 Regional Plan of Action for Small-Scale Fisheries in the Mediterranean and the Black Sea, as well as the Mediterranean Strategy for Sustainable Development 2016-2025, testify of this constant appetite for cooperation on sustainable development in the Mediterranean region.

77. **Mediterranean participation in binding Multilateral Environmental Agreements is generally high, with few notable exceptions.** The Convention concerning the protection of World Cultural and Natural Heritage, Basel Convention, Convention on Biological Diversity, Framework Convention on Climate Change (UNFCCC) and Convention to Combat Desertification (UNCCD) have been ratified by all 21 Mediterranean riparian countries and the European Union. Other conventions and agreements on biodiversity conservation and pollution reduction are strongly supported in the region, such as CITES, CMS, AEW, ACCOBAMS and Stockholm Convention. However, the Nagoya Protocol^{lxviii}, Minamata Convention^{lxix}, Aarhus Convention^{lxx} and Espoo Convention^{lxxi} have been ratified by less than 50% of the Mediterranean countries. The Aarhus Convention and its Protocol on PRTRs are the only legally binding global instruments on environmental democracy, empowering people with the rights to access information, participate in decision-making in environmental matters and to seek justice. The Espoo Convention sets out the obligations of Parties to assess the environmental impact of certain activities at an early stage of planning. It also lays down the general obligation of States to notify and consult each other on all major projects under consideration that are likely to have a significant adverse environmental impact across boundaries.

78. **Over more than 40 years, the Barcelona Convention has led to the adoption of 7 legally binding protocols and numerous strategies and action plans.** The marine area covered by conservation measures (Marine Protected Areas and Other Effective Conservation Measures) nearly reached [223,000 km² in 2018], representing more than 8.9 % of the Mediterranean Sea surface, close to Aichi target of 10 %. However, it is estimated that only about 10 % of the sites declared have a proper implementation of their management plans.



→ Link with SDG 14, Target 14.5: By 2020, conserve at least 10 % of coastal and marine areas, consistent with national and international law and based on the best available scientific information.

MSSD → Link with MSSD 2016-2025 Objective 2, Strategic direction 2.3: Promote networks of ecologically protected areas at national and Mediterranean level and enhance stakeholder awareness on the value of ecosystem services and the implications of biodiversity loss.

79. **Mediterranean countries have enhanced their legal and institutional capacity to protect the coastal zones.** Half of the Contracting Parties have ratified the ICZM Protocol and another six have signed it. The latest report on General Status of Progress in the Implementation of the Barcelona Convention and its Protocols (UNEP (DEPI)/MED IG.23/Inf.14) shows that for the period 2014–2015, twelve countries submitted their national implementation reports of the ICZM Protocol. The ICZM Protocol encourages the development of national coastal regulation, legislation and the creation of coastal agencies. Overall, seven countries have a legal framework in place for the protection of the coast^{lxxii}, and seven additional countries have launched the preparation of one. Similarly, seven countries have a national ICZM strategy^{lxxiii}, and five others are preparing one. Moreover, coastal protection agencies or local bodies to protect the coast have been established in six countries^{lxxiv}, and in four additional countries, dedicated funds, land acquisition mechanisms or development plans for coastal zone management have been put in place.

80. **A “Common Regional Framework” on ICZM is in development in 2019, with the main objective to introduce maritime spatial planning as an important tool/process for the implementation of ICZM in the marine part of the coastal zone.** This framework should help countries plan and manage maritime human activities according to MAP ecosystem approach.

IV.3. Integration and system-based approaches are increasingly recognized as the most efficient way to address systemic factors, and combined pressures and impacts

81. **The adoption of SDGs renewed attention on interactions among environment and development objectives.** Synergies, complementarities and trade-offs among different dimensions of sustainable development are frequently analysed in the context of SDGs. The recent TEEB report: *The Economics of Ecosystems and Biodiversity for agriculture and food* (2018), 2019 being declared by the Convention on Biological Diversity a year to celebrate “Our Biodiversity, Our Food, Our Health”, and the wide-spread interest for the emerging concept of “nature-based solutions” testify of the trend to consider environmental objectives in their interactions with human well-being.

82. **Since the 1990’s integrated approaches based on ecosystems have replaced and complemented sectoral approaches. This evolution is actively implemented in the Mediterranean.** [Since 1989 PAP/RAC has been implementing CAMPs using ICAM]. In 2000, Parties to the Convention on Biological Diversity adopted globally the Ecosystem based Approach (EcAp), defined as “*a strategy for the integrated management of land, water and living resources that promotes conservation and sustainable use in an equitable way. It is based on the application of appropriate scientific methodologies focused on levels of biological organization which encompass the essential processes, functions and interactions among organisms and their environment.*” EcAp “*recognizes that humans, with their cultural diversity, are an integral component of ecosystems*”^{lxxv}. Since 2008, the Contracting Parties to the Barcelona Convention agreed to progressively apply the Ecosystem Approach to manage human activities in the Mediterranean, with the ultimate objective to achieve the Good Environmental Status (GES)^{lxxvi}. In the context of the Barcelona Convention, EcAp renew the emphasis on the integration of cross-cutting issues and challenges, and strengthen our ability to understand and address cumulative risks and effects as well as to focus actions on priority targets in a single integrated framework. *[To be completed]*

83. **River basins are a coherent scale for management of anthropogenic activities and natural resources.** Water runoff throughout the Mediterranean basin and discharge of specific quantity, timing and quality into the Mediterranean Sea support nutrient, sediment and carbon flows which are essential for the functioning of coastal and marine ecosystems. The increase in the number and capacity of dams in Mediterranean countries^{lxxvii}, as well as changing land covers, and pollution sources upstream, have notable impacts on downstream ecosystems and the services they provide. *[To be completed]*

84. **The emergence, consolidation and implementation of such systemic approaches are key to addressing dysfunctions and bottlenecks within the Mediterranean socio-ecological/economic**

system, which are systemic themselves, resulting from multiple drivers, pressures, actions and actors and their interactions, rather than from specific and isolated factors.

IV.4. Pollution sources. Investments and collaborations have addressed some major pollution sources and health hazards

85. **Most Mediterranean people use safely managed drinking water services^{lxxviii} in 2015, demonstrating continued progress in terms of access to water in the region despite population growth. However, more than 26 million are still to be served^{lxxix}.** 6 out of 22 Mediterranean countries (Algeria, Egypt, Libya, State of Palestine, Syrian Arab Republic and Turkey) do not yet have monitoring data on the use of safely managed drinking water services^{lxxx}, indicating a difficulty in monitoring the achievement of SDG Target 6.1. Nevertheless, available data show a significant progress between 2005 and 2015 (increase from 83 % to 90 % of the population in the region using safely managed drinking water services in monitored countries^{lxxxi}). In Albania, Lebanon and Morocco, more than 30 % of the population still do not use safely managed drinking water services.



→ Link with SDG 6, Target 6.1: By 2030, achieve universal and equitable access to safe and affordable drinking water for all.

86. **The proportion of the Mediterranean population using safely managed sanitation services has increased in most countries of the region, but objectives are still far from being reached.** In the past decade, access to adequate and equitable sanitation and hygiene has increased from 58 % (2005) to 65 % (2015) of the population using safely managed sanitation services^{lxxxii}. Progress has been recorded particularly in Albania, Egypt, Israel, Lebanon, Morocco, Tunisia and Turkey. While the gap between northern and southern countries remains unchanged, the gap between northern and eastern decreased. More than 160 million people still did not use safely managed sanitation services in 2015, i.e. more than half of the population in Algeria (81 %), Lebanon (80 %), Bosnia and Herzegovina (77 %), Libya (74 %), Morocco (62 %) and Turkey (56 %). Therefore, access to adequate and equitable sanitation and hygiene still represents a tremendous challenge in some Mediterranean countries, and especially in Egypt, Morocco and Turkey (> 100 million people lacking safely managed sanitation services in these three countries combined).



→ Link with SDG 6, Target 6.2: By 2030, achieve access to adequate and equitable sanitation and hygiene for all and end open defecation, paying special attention to the needs of women and girls and those in vulnerable situations.

87. *[Wastewater treatment: evidence to be collected, in relation with SEIS project?]*

88. **Considerable improvement in the treatment of wastewater has led to a significant improvement in bathing water quality; but specific localized problems subsist** [and may even be wide spread when strong rainfall events occur due to stormwater overflow]. In 2017, most northern Mediterranean Countries report over 75 % of excellent bathing water quality and over 90 % of good or excellent bathing water quality, with exception of Albania with about 12 % of poor basin water quality sampled^{lxxxiii}. In part of the Mediterranean, bathing water quality remains a permanent or occasional barrier to tourism and a sanitary risk, [in particular due to the difficulty to manage heavy rainfall events, and seasonal activities (tourism) putting limited infrastructure under stress.]

89. **Despite a steady increase in oil and other cargo volumes moved by ship, accidental spillages of oil and other harmful substances from ships into the Mediterranean have decreased.** Between 1994 and 2013, approximately 32,000 tons of oil have been released into the Mediterranean Sea as a result of incidents. The number of incidents involving oil spills dropped from 56 % of the total number of incidents for the period 1977 - 1993, to 40 % for the period 1994 – 2013. 61 % of these incidents resulted in a spillage of less than 1 tonne^{lxxxiv}. In the Mediterranean, the quantities of harmful or noxious substances (HNS) accidentally spilled have considerably decreased during the period 1994 - 2013 and have become insignificant since 2003. However, risks associated with the

transport by ships of oil and HNS with possible harmful consequences on biota and ecosystems cannot be completely eliminated, especially in vulnerable areas such as the Mediterranean Sea. It can be concluded that the impact of the international regulatory framework adopted through the IMO as well as technical cooperation at regional level have contributed to this outcome, especially as far as prevention of accidental pollution is concerned. The support of REMPEC provided to the Mediterranean coastal States since 1976, has contributed to this positive trend.

IV.5. Monitoring and assessment. Common monitoring and assessment frameworks have been adopted to improve information-based decision making

90. **SDGs, targets and indicators** [*key message to be written, including links with the MCSD dashboard*]

91. **Awareness and reporting on the link between environmental conditions and human health has improved.** Since 2012, the World Health Organisation (WHO) reports on the “environmental burden of disease” globally and at the national level. [*to be completed*]

92. **An Integrated Monitoring and Assessment Programme (IMAP)** is being developed in the Mediterranean with support from the MAP system, to assess progress towards the Good Ecological Status. IMAP is based on eleven Ecological Objectives (EO), corresponding twenty-eight operational objectives and their related 27 agreed common indicators covering three clusters (i) pollution and marine litter, (ii) biodiversity and non-indigenous species and (iii) coast and hydrography. The initial implementation phase of the IMAP (2016-2019) resulted in the development of the first 2017 Mediterranean Quality Status Report built on the structure, objectives and data collected under EcAp roadmap / IMAP Decision implementation. [*to be completed*]

93. **SEIS** [*to be completed*]

IV.6. Stakeholder participation and engagement. The diffusion of stakeholder networks, inclusive approaches, and technological development provide improved opportunities for stakeholder participation and engagement

94. **Stakeholder participation and engagement** [*key message to be written*]

95. **Civil society mobilization** [*key message to be written*]

96. **Since the 2000s, the strong increase of mobile phone subscriptions and people using the Internet has opened new opportunities for access to information and public participation in the environmental debate, including through social media.** From 2000 to 2015, the proportion of people using the internet increased in Northern Mediterranean countries from around 15 % to around 75 % and in southern countries from less than 5 % to around 50 %. The number of active mobile phone subscriptions has increased from 1 to 30 % in 2000 to 40 to 80 % in 2015 with discrepancies between countries. Internet access and open-source software have allowed citizen science projects to emerge as a virtual and physical place where citizens, researchers and decision makers can cooperate to monitor the state of the environment in the Mediterranean, especially in relation to conservation biology or ecology (e.g. COMBER^{lxxxv}, CIGESMED^{lxxxvi}). The information thereby collected can provide a strong basis for short- and long-term planning and decision-making in the region.

IV.7. Local governance and territorial approaches. The importance of local governments and territorial approaches in tackling environmental challenges is increasingly recognized

97. **Territorial approaches** [*key messages to be written*]

98. [*Local governments role in mitigating and adapting to climate change, key message to come*]

99. [*Local agri-food production systems preservation, labelling, and reemergence*]

V. Remaining and emerging challenges, and priorities for future action

100. Previous reports on the state and prospects of the environment and development in the Mediterranean published by Plan Bleu in 1989 and 2005 had identified three main challenges: (i) integrating environment into sectoral policies, (ii) promoting sustainable local and territory-specific development and (iii) strengthening regional cooperation.

- On integrating environment into sectoral policies, progress has been achieved through the Barcelona Convention and the establishment of integrated tools, among others, the ICZM Protocol, the Ecosystem Approach or the SCP Action Plan. However much remains to be done at regional, national and local levels, as ambitious regional and international agreements are rarely fully implemented on the ground, and important gaps persisting in enforcing them. Ministries in charge of environment remain under-considered and underfunded. With the rapid development of sectors impacting the environment, ensuring a transition towards more environmentally sustainable and socially inclusive sectors remains for example a critical target, as demonstrated by the mobilization on Blue and Green Economy.
- Territorial approaches have been successfully strengthened in the last years with decentralization moving forward in some countries, and advocacy for local decision-making progressing through various fora. Local authorities play a crucial role in driving and implementing concrete climate change mitigation and adaptation measures.
- Regional cooperation in the Mediterranean has experienced major difficulties due to geopolitical circumstances, but cooperation on environmental matters has been more active than in other fields over the last decade. With the multiplication of relevant information sources and pilot experiences, cooperation will remain a key condition of success in the upcoming decades.

In conclusion, a number of issues linked to the three mentioned challenges remain insufficiently addressed. Implementation of regulations, tools and approaches, and upscaling of pilot initiatives are critical bottlenecks.

101. This section insists on a limited number of remaining and new challenges that call for priority action. Areas where to focus efforts have been identified based on: (i) gaps between commitments or objectives and achievements; (ii) promising research and innovations including policy innovations.

Remaining challenges

102. *[This section remains to be completed and further structured.]*

V.1. Overcoming the gaps between adoption, implementation and enforcement

103. **Enforcement. While commitments towards sustainable development in the Mediterranean Region, in particular in the framework of the Barcelona Convention, have been recognized as sources of inspiration for other regions and regional seas agreements for decades, implementation and enforcement remain incomplete.**

104. Created in 2008, the Compliance Committee of the Barcelona Convention and its Protocols plays a key role in facilitating compliance with the Barcelona Convention and its Protocols, by promoting the identification, as early as possible, of implementation and compliance difficulties encountered by Parties. This takes the form of a sustained interaction between the Compliance Committee and Contracting Parties, which translates into guidance on general and specific compliance issues. The Compliance Committee can be triggered by Contracting Parties, the Secretariat and by the Committee itself. However, it has not yet been triggered to date.

105. *[Enforcement also remains limited at national level. Several countries in the east and south do not have environmental police. Even some EU countries see their budget in this area being cut or restructured]. [evidence to be completed]]*

106. **Critical areas where surveillance and enforcement are considered insufficient include pollution surveillance and illegal waste disposal^{lxxxvii}.**

- *[further development to be included even beyond the BC, to include Agenda 2030, Convention on Biological Diversity, Kiev convention ESPOO, Aarhus Conventions as suggested by the Steering Committee 2nd Meeting].*
- *[Recent cases of enforcement to be presented as potential sources of inspiration, including compensation for environmental damage, fine for SO₂ emissions above threshold...]*

107. Leads for improvement include:

- The development and testing of a set of criteria and associated indicators to assess compliance with the Barcelona Convention and its Protocols, with the aim of reinforcing compliance and enforcement;
- Assistance of Contracting Parties in capacity building activities to enhance compliance;
- Further strengthening cooperation and synergies with other MEAs Compliance Committees in areas of common concern with the aim of developing joint activities to promote and facilitate compliance;
- Judicial cooperation, in particular on maritime activities: The Mediterranean Network of Law Enforcement Officials relating to the International Convention for the Prevention of Pollution from Ships (MARPOL) within the framework of the Barcelona Convention (MENELAS) explores the possible development of regional jurisdictional and judicial cooperation in the Mediterranean, along with a common report that would enable the courts of the Contracting Parties to the Barcelona Convention to prosecute all individuals, irrespective of the place of pollution. MENELAS is also considering the possibility of accompanying this judicial cooperation with the downstream establishment of a regional "Blue Fund", to which a part of the pecuniary sanctions would be transferred.

108. **System-based approaches.** By recognizing the importance of watershed approaches in a context of land-sea interactions, adopting EcAp and the ICZM Protocol, Mediterranean riparian countries have clearly indicated their willingness to implement system-based approaches, to address interactions among ecological factors and multiple human activities, to reduce cumulative pressures on fragile or sensitive ecosystems. **The water-food-energy nexus is the approach needed** to pursue sustainable development via an integrated use of resources to satisfy basic needs. A nexus approach can reduce trade-offs and generate additional benefits that outweigh the costs associated to the stronger integration across different sectors. While the nexus approach has gained popularity in the Mediterranean, its implementation remains a challenge. At the institutional level, one Mediterranean country, Malta, covers the water, energy and food sectors under a common Ministry.

V.2. Raising the profile of environmental institutions and stakes

109. **Giving due consideration to the long term. Policy-making continues to encounter major barriers hindering the taking into account of the long and very long term in its decisions, whereas adaptation and renewal dynamics of ecosystems generally require time scales exceeding the duration of a human life. The most significant of these barriers are conflicting time scales between policy-making and ecosystem dynamics and a lack of ecosystem wealth accounting within national and international accounts.** Policy decisions respond to relatively short cycles, while the effects of policy decisions to protect or restore the functioning of ecosystems generally appear in the medium, long or very long term. Economic growth, often used as performance indicator for policy-making, does not sufficiently take into account intergenerational effects and negative externalities caused by human activities and having long-term implications, such as pollution, land-take, resource depletion or greenhouse gas emissions. Scientific knowledge on ecosystem dynamics and the impacts of human activities within these ecosystems is increasing and so is citizen mobilization for sustainable development. Both are major pillars in favor of policy-making for a transition towards sustainable development and the linked consideration of the long-term. This situation calls for strategic and long-term forward-looking frameworks which truly mobilize all stakeholders and facilitate their interactions and active involvement through effective science-policy-society interfaces.

110. **Further adopting and implement strategic environmental assessment, environmental impact assessments** *[To be completed]*

111. **Improving public access to information and participation is a key condition to raise the political profile of environmental issues.** *[To be completed]*

V.3. Upgrading the ambition of environmental regulations

112. **Strengthening adoption. While 6 out of 7 protocols are in force in 2019, three of them are only ratified by half or less than half of the Contracting Parties and still require particular attention to ensure full regional coverage.** Those include the Integrated Coastal Zone Management Protocol (11 ratifications), Offshore Protocol (8 ratifications) and Hazardous Waste Protocol (7 ratifications).

MSSD → Link with MSSD 2016-2025 Objective I, Strategic direction 1.1: Strengthen the implementation of and compliance with the Protocols of the Barcelona Convention and other regional policy instruments and initiatives supplemented by national approaches.

113. **Designating the Mediterranean as an emission control area. Feasibility studies^{lxxxviii} examining the possibility of designating the Mediterranean Sea, or parts thereof, as sulphur oxides (SO_x) emission control area(s) (ECA(s)) under MARPOL Annex VI, indicate that a Mediterranean ECA would result in significant health and environmental benefits, fewer cases of respiratory and cardiovascular diseases and premature deaths avoided annually and favourable cost-effectiveness comparison for costs and health benefits. One of the studies also highlights the benefit of more ambitious measures for the reduction of NO_x emission through a NO_x ECA.**

114. **Expanding Marine Protected Areas and Other Effective area-based Conservation Measures in critical environments. While strong protection measures have demonstrated their efficiency, their coverage remains limited in the Mediterranean, and suggest the importance to continue to^{lxxxix}:**

- declare fishery restricted areas [including no-take zones] where necessary and relevant;
- designate Particularly Sensitive Sea Areas (PSSA)^{xc}, as appropriate.

115. **Evolving from the polluter pays to the extended producer responsibility principle.** *[to be written]*

V.4. Adopting efficient policy mixes, upscaling the use of economic tools, land tenure instruments, stakeholder awareness and involvement

116. **Regulatory measures do not always suffice.** Environmental challenges associated with multiple pressures and activities, including strong economic interests, can most efficiently be tackled only by a conjunction of coordinated instruments. In the Mediterranean region such complex environmental issues include in particular:

- preventing land-cover “artificialization” and fragmentation, in particular in the coastal zone;
- reducing waste;
- broadening the scale of promising innovations for a green, blue and circular economy.

117. As extensively analysed in OECD thematic works, efficient environmental policies often rely on an adequate combination of policy instruments, associating regulatory measures with:

- Economic instruments, fiscal measures, and funding mechanisms, including innovative funding mechanisms and partnerships (e.g. public private partnership) to encourage sustainability transition;
- Awareness raising, education, labelling and voluntary agreements; and
- Instruments supporting environmentally friendly land tenure, land use and land use planning in areas under significant pressures.

118. **Reduce and manage waste.** [**Marine litter** negative impact on ecosystems is expected to be further exacerbated by an increase in plastic entering the sea, plastic sedimentation and microplastics – *to be completed*]

119. **Disseminate green, blue and circular economy innovations. Over the last decades, the Mediterranean has seen the emergence of promising innovations either restoring the environment or offering alternatives to environmentally damaging solutions. However, efforts to scale-up these innovations remain critical for a significant impact on environmental quality and job creation.** Such innovative sectors include:

- Circular economy, i.e. the re-use, repair and recycling of material and products to reduce the need for new resources to be extracted;
- Toxic substance substitution;
- Integrated local-based production systems and products;
- Agro-forestry, agro-ecology and local agri-food systems;
- Non-fossil sources of energy/renewables, including energy recovery from waste;
- Eco-tourism;
- Sectors in transition in the blue economy.

Stand-alone measures are in most cases insufficient to increase adoption, which can require a combination of applied research; improved curricula in universities to include new concepts; specialized training and consumer awareness raising programs; certification and labelling (improving visibility of sustainable products and services on the market); innovative funding mechanisms including mechanisms adapted to small scale investments, micro-business creation, youth employment in waste recycling and reuse...; and regulatory changes (removing barriers, or favouring low impact innovations), etc. Awareness raising on sustainable consumption and production in the general public and the private sector.

120. Ports are a key example, in the Mediterranean, of a sector in need of a sustainability transition based on promising innovations and policy measures. Ports are facing the challenge of providing proper infrastructure to accommodate increasingly large ships and upgraded facilities to an ever-growing number of cruise passengers, to collect and dispose of related oil, harmful substances, sewage and garbage from ships, and to provide solutions to reduce port air pollution. On-going efforts to enhance the management of marine litter from sea-based sources in ports and marinas should also include incentives to deliver waste in port reception facilities. Synergies between the Regional Plan on Marine Litter Management in the Mediterranean and the IMO Action Plan to address marine plastic litter from ships, as well as other relevant plans or initiatives, requires a collaborative approach between UN agencies, in particular IMO, UNEP and FAO to support the implementation process in Mediterranean ports and marinas.

121. On all three subjects above, **investing in policy platforms** can help understand and share experience on suitable combinations of policy instruments rather than stand-alone measures.

V.5. Developing permanent collaboration frameworks

122. **Strengthening transboundary efforts and developing permanent collaboration frameworks.** Since Rio 1992 and 2015 Paris Agreement, stakeholder mobilization on environment and sustainable development goals has bloomed, with the emergence of numerous stakeholder networks and governance fora. In the Mediterranean, networks often gather stakeholders of similar profile, and governance fora often focus on a specialized scope. Interrelations between different types of stakeholders and across governance fora are generally limited in time and dependent on externally funded projects. Few exceptions include the Egyptian Sustainable Development Forum at national level, *Parlement de la Mer* in the French Region of Occitanie at the local level, and - at the regional level - the Mediterranean Commission for Sustainable Development, which has recommended to create a Mediterranean Forum on Sustainable Development. Efforts are required to further strengthen long-term or permanent interlinkages across networks and governance fora.

[Strengthening transboundary efforts to be detailed based on promising recent experiences]

V.6. Investing in environmental and economic transitions

123. **Climate change adaptation in particular in coastal areas will require major funding.** Anticipating adaptation, choosing no-regret solutions including nature-based solutions are among key options to minimize funding needs.

124. **Sustainably managing protected areas requires the development of permanent funding mechanisms.** Only a small proportion of declared marine protected areas have developed sustainable management plans and have sufficient permanent financial and human capacity to implement them. A range of economic instruments and public-private partnerships deserve to be further identified, tested and implemented. Implementation would involve strengthening local capacities to tailor, develop and manage such mechanisms.

125. **Water will continue being a critical resource in upcoming decades with strategic investments needed in improving water efficiency and upscaling reuse.** Losses and leakages in water supply systems, efficiency defects and waste in irrigation and domestic use are estimated at about 100 billion m³ in the whole Mediterranean region, equivalent to approximately 45 % of the total water demand for both sectors. These wastes are considered as significant "pools" of potential water savings, as part of them could be avoided through a more active "water demand management" (WDM) policy. There is an urgent need to modernize irrigation systems in agriculture to improve the value generated by each m³ of water and render farmers aware of water savings.

126. **There is a high potential in the Mediterranean for the reuse of treated wastewater.** Positive experiences in the region show that wastewater can be safely recycled for irrigation or aquifer recharge. Israel and Jordan are leaders in the southern and eastern Mediterranean countries, with a reuse rate of over 85 % on all their wastewater collected. In Europe, Cyprus and Malta are the most advanced countries, with 90 % and 60 % of their treated wastewater being reused respectively, far exceeding the average in Europe (2.4 %)^{xci}.



→ Link with SDG 6, Target 6.4: By 2030, substantially increase water-use efficiency across all sectors and ensure sustainable withdrawals and supply of freshwater to address water scarcity and substantially reduce the number of people suffering from water scarcity.

Emerging challenges

V.7. Anticipating the transformation of coastal areas, activities, landscapes, and infrastructure associated with sea-level rise and increase in coastal risks

127. The risk of climate-related impacts, as defined in the last IPCC report (AR5, 2014), results from the interaction of climate-related hazards (including hazardous events and trends) with the vulnerability and exposure of human and natural systems. Changes in both the climate system and socioeconomic processes including adaptation and mitigation are drivers of hazards, exposure, and vulnerability. **With an expected increase in sea level rise, coastal erosion and coastal extreme events, adaptive strategies will be required** for organising where needed strategic retreat, and ensure when appropriate a sustainable transition in economic activities and human settlements.

V.8. Minimizing impact associated with the expansion and diversification of maritime activities

128. **The "maritimisation" of human activities is an emerging trend adding on the impact on a continued "littoralization". This phenomenon requires extending the approach and practices of integrated coastal zone management towards more offshore waters (through maritime spatial planning).** Human activities are increasingly moving towards the high sea, with both a continued growth of existing maritime activities and the emergence of new activities rendered possible by technological development at sea (beyond 3 and 12 nautical miles). The coastal zone, already subject to a continued pressure from land-based activities and urban development, and saturated by build-up

areas in some parts, is an unavoidable base for these new maritime activities. All start or end on the coast (including ports), generating additional pressures, more or less significant on ecosystems. Avoiding, reducing or compensating these impacts is expected to be a major challenge for the upcoming decades. Managing these new pressures, from the sea side, combined with those already existing on the land side will require to articulate the integrated management of the coastal zone with maritime spatial planning.

MSSD → Link with the MSSD 2016-2025 Objective 1, Strategic direction 1.2: Establish and enforce regulatory mechanisms, including Maritime Spatial Planning, to prevent and control unsustainable open ocean resource exploitation.

V.9. Monitoring and regulating emerging industries, pollutants and toxic substances

129. **Monitoring and regulating marine bio-technology industries and deep-sea mining.** Marine bio-technology industries and deep-sea mining are still very little developed in Mediterranean countries. However due to the uncertainty of their impacts on ecosystems and the potential environmental damages, these activities need to be further studied and their expansion will require monitoring and regulation.

130. **Monitoring and regulating emerging pollutants and toxic substances** *[to be completed]*

VI. Critical knowledge gaps and priorities for future research

131. While research has expanded and research networks have developed with the ambition to include researchers and research centres all around the basin, some knowledge and research gaps deserve priority attention, with a very first goal being to create or strengthen links among existing knowledge resources, often disparate and disconnected, to put “knowledge to use”.

132. The capacity to generate knowledge has tremendously increased. Big data, citizen science, widespread use of remote sensing and GIS, aerial and underwater drones, etc. have considerably increased the capacity to generate and process new data. However, as repeatedly underlined throughout the MED QSR 2017, information gaps remain important in the Mediterranean region, due to the limited availability of coherent and systematic information sets, or limited coordination among information sources and assessments processes.

VI.1. Put knowledge to use

133. **Putting existing knowledge to use** (i.e. reducing “knowledge waste”) is a key challenge in the Mediterranean, with critical knowledge generated in part of the basin, or specific knowledge hubs, universities, local assessments or research programs but insufficiently or ineffectively disseminated to public and private decision makers. Despite the development of various instruments for scientific cooperation (in research and innovation) across Mediterranean countries and sub-regions with a strong support from the European Union, significant disparities remain between the level of monitoring and innovation support on the northern and eastern/southern shores of the Basin. Science policy communication needs to be strengthened to ensure that fit for purpose information efficiently influences policy decisions. Efforts could be further streamlined through the development of efficient data and output sharing platforms. When science-policy or science policy practice collaboration and information sharing opportunities exist, they are often project dependant and thus short lived with important entry costs and limited capitalisation across time. Recent initiatives such as the constitution and functioning of the MedECC expert group on climate and environmental change pave the way towards further consolidated and “user ready” knowledge resources.

VI.2. Understand and communicate on the stakes of environmental degradation

134. **Evaluate economic and social stakes associated with expected and potential trends in sea level rise, coastal erosion and coastal extreme events**

135. **Evaluate key ecosystem services and stakes associated with ecosystem preservation, restoration or creation at regional level**

VI.3. Generalize and sustain the implementation of common monitoring frameworks

136. **Implement national monitoring programmes in alignment with IMAP, establish data exchange protocols and expand monitoring of the state of ecosystems to also cover drivers, pressures, impacts and responses.** 2017 MED QSR identified a vast array of knowledge gaps to implement IMAP and develop 2023 MED QSR. In particular it appears important to **overcome gaps in knowledge of the Mediterranean coastal and marine biodiversity.** While efforts are deployed by the Mediterranean countries, data on marine habitats are still scarce, fragmented and discounted in time and would gain from a complete mapping of the most significant marine habitats. Monitoring of linked drivers, pressures, impacts and responses needs to be enhanced and included in monitoring programmes to provide integrated information needed for the effective design of measures to achieve the Good Environmental Status.

137. Monitoring the SDGs and MSSD, learning together *[to be developed]*

VI.4. Monitor emerging activities and pressures

138. **Monitor emerging activities at sea, extraction of coastal minerals including sand, and emerging pollutants** (cf. above)

VI.5. Learn from experience

139. **Closing the policy-cycle by conducting and linking *ex ante* and *ex post* policy evaluation is key to designing coherent, transparent and evidence-based policies.** Evidence from *ex post* appraisal is particularly scarce in Mediterranean countries but, applied to all types of policy from expenditure to regulations and if shared through common monitoring platforms that are informed via mutualized evaluation processes, would largely contribute to better informed policies, more interdisciplinarity and accountability and potentially reduce the regulatory burden.

140. **Capitalize and share innovative findings across multiple stakeholders, in particular in themes that attract a lot of interest such as the blue economy.** Since Rio + 20, the 2012 “Green Economy in a Blue World” report^{xcii} and the subsequent adoption of SDG 14, Blue Economy emerges as a theme attracting major international attention. Multiple initiatives on Blue Economy have developed at the international, regional and sub-regional levels, with a broad array of sectors and actors involved. In 2018, Mediterranean partners presented in a joint side event some of the regional collaborations on the subject. Contracting parties have also expressed interest for national, sub-regional or regional strategies. A multiplicity of initiatives under various funding mechanisms provide the opportunity to ground policy recommendations in practical experience. Dialogue among scientists, policy makers and practitioners (including private sector, local communities and local governments) and well-structured capitalization efforts will be key to ensure that transitions towards more sustainable and inclusive maritime and coastal sectors take advantage of local experience and innovations.

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- ^{liv} Marine Litter Assessment in the Mediterranean, UNEP/MAP, Athens, 2015.
- ^{lv} Van der Hal N., Ariel A., Angel D. (2017) Exceptionally high abundances of microplastics in the oligotrophic Israeli Mediterranean coastal waters. *Mar Pollut Bull.*, 116(1-2):151-155. doi: 10.1016/j.marpolbul.2016.12.052.
- ^{lvi} Plan Bleu rough estimate. Information currently in the process of being updated based on WHO data.
- ^{lvii} Modifiable environmental factors include pollution of air, water, or soil with chemical or biological agents; UV and ionizing radiation; noise, electromagnetic fields; occupational risks; built environments, including housing, land use patterns, roads; agricultural methods, irrigation schemes; man-made climate change, ecosystem change; behavior related to the availability of safe water and sanitation facilities, such as washing hands, and contaminating food with unsafe water or unclean hands.
- ^{lviii} WHO Global Health Observatory, 2012
- ^{lix} WHO Global Health Observatory, 2012
- ^{lx} Mean annual concentration of fine suspended particles of less than 2.5 microns in diameters, Global Health Observatory data repository
- ^{lxi} Evidence to be further substantiated.
- ^{lxii} SOFI 2018
- ^{lxiii} To be further substantiated
- ^{lxiv} Becker et al. 2012
- ^{lxv} Ramirez et al. 2018
- ^{lxvi} Satta et al., 2015
- ^{lxvii} Data from the World Bank
- ^{lxviii} Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization (linked to the Convention on Biological Diversity) (2014)
- ^{lxix} Minamata Convention on Mercury (2017)
- ^{lxx} UNECE Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters (2001), and Protocol on Pollutant Release and Transfer Registers (2009)
- ^{lxxi} Convention on Environmental Impact Assessment in a Transboundary Context (1997)
- ^{lxxii} Algeria, Egypt, France, Israel, Morocco, Spain and Turkey
- ^{lxxiii} Algeria, Croatia, France, Israel, Malta, Montenegro, Spain
- ^{lxxiv} Spain, France, Italy, Algeria, Israel, Tunisia
- ^{lxxv} Convention on Biological Diversity COP 5, CBD 2000
- ^{lxxvi} Decision IG.17/6; 2008
- ^{lxxvii} Global Reservoirs and Dams Database
- ^{lxxviii} Safely managed = improved water source, located/accessible on premises, available when needed, and free from contamination (Source: WHO/UNICEF JMP for Water Supply, Sanitation and Hygiene, WDI)
- ^{lxxix} WHO/UNICEF Joint Monitoring Programme for Water Supply, Sanitation and Hygiene (2017)
- ^{lxxx} Unstats and WHO/UNICEF Joint Monitoring Programme for Water Supply, Sanitation and Hygiene, 2017
- ^{lxxxi} Mediterranean countries excluding Turkey, Syrian Arab Republic, Palestine, Egypt, Libya and Algeria
- ^{lxxxii} Mediterranean countries except Monaco, Montenegro and Syrian Arab Republic
- ^{lxxxiii} EEA, Quality of European bathing water in 2017
- ^{lxxxiv} REMPEC, 2014
- ^{lxxxv} Citizens' Network for the Observation of Marine Biodiversity

^{lxxxvi} Coralligenous based Indicators to evaluate and monitor the "Good Environmental Status" of the Mediterranean coastal waters

^{lxxxvii} Idea from the Steering Committee meeting, to be further substantiated in the report.

^{lxxxviii} Prepared by REMPEC and two other studies commissioned by the European Commission and France

^{lxxxix} Recommendation by the Steering Committee meeting to be further substantiated in the SoED 2019 report.

^{xc} Source to be mentioned.

^{xci} European Commission, in IPEMED 2019 Reuse of treated wastewater in the Mediterranean

^{xcii} UNEP, FAO, IMO, UNDP, IUCN, GRID-Arendal (2012)