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EBSOMED
ENHANCING BUSINESS SUPPORT ORGANISATIONS

Sector Strategic Paper

Industry outlook

Decarbonised Economy

The Euro-Mediterranean green transition: a road map to the decarbonisation of the med region

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Industry Outlook:

The Euro-Mediterranean Green Transition: A road map to the decarbonisation of the med region

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1. Introduction

The Mediterranean region (or Mediterranean Basin), a home to 7%of the world population, is particularly exposed to the effects of climate change.

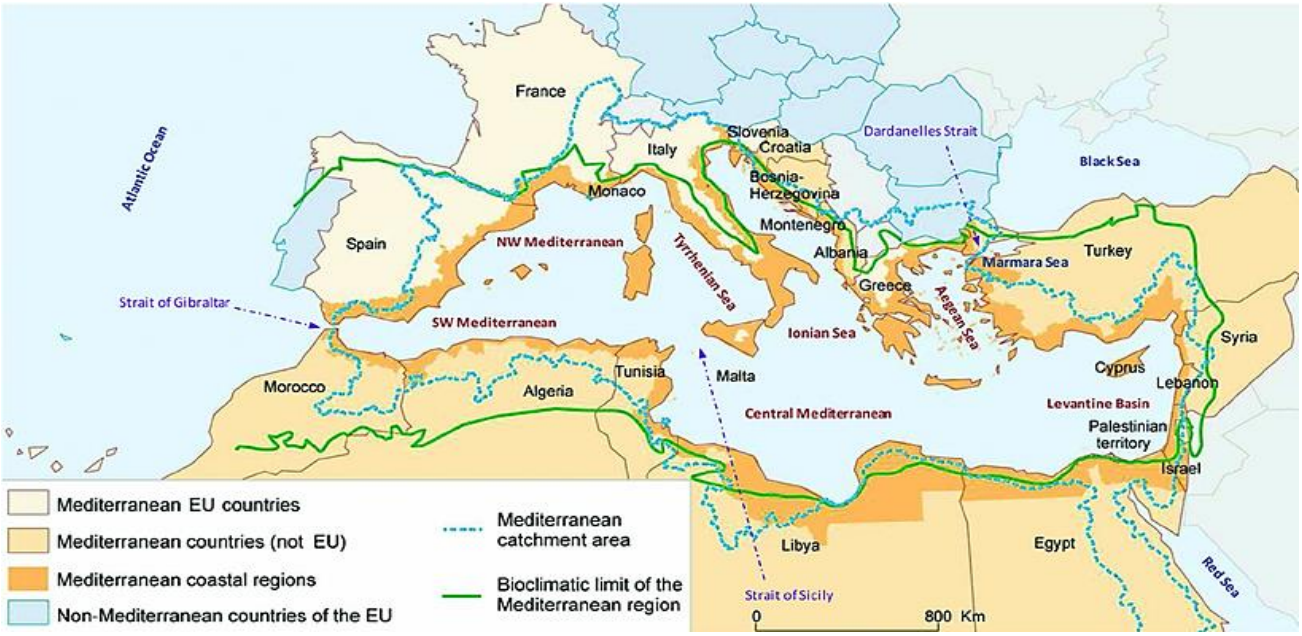

Figure 1. Mediterranean Basin. Source: https://www.researchgate.net/

Limiting the increase in global average temperature to 1.5°C, in line with the most ambitious objectives of the Paris Agreement[1], will require an unprecedented transformation of modern societies and profound emission reductions in all sectors of activity.

After the initial months of 2020, when health and economic issues were prioritised in response to the pandemic, a European movement has launched a pledge to promote a sustainability-focused recovery. It calls for the mobilisation of green investment packages to "prepare economies for tomorrow's world". Along the lines of sustainable development, it is known that renewable energies will be the driving force behind the pandemic.

It is an ambitious plan to fight climate change with 50 concrete measures for action and a big final goal: for Europe to reach carbon neutrality by 2050, decoupling economic growth from the use of the planet's resources, and to reduce emissions to at least 55%in the next 10 years (the previous target was 40%). To achieve this, a European Climate Law was proposed on 4 March 2020 that would help turn the political agreement into a legal obligation and a trigger for investment.

To overcome these challenges, the European Green Deal is Europe's new growth strategy, which will transform the Union into a modern, resource-efficient and competitive economy. The European Green Deal aims to make Europe climate neutral by 2050, boost the economy through green technology, create sustainable industry and transport, and cut pollution. Turning climate and environmental challenges into opportunities will make the transition just and inclusive for all.

[1] The Paris Agreement's central aim is to strengthen the global response to the threat of climate change by keeping the global temperature rise this century well below 2 degrees Celsius above pre-industrial levels and to pursue efforts to limit the temperature increase even further to 1.5 degrees Celsius. Additionally, the agreement aims to increase the ability of countries to deal with the impacts of climate change, and at making finance flows consistent with a low GHG emissions and climate-resilient pathway.

As Mediterranean Energy Perspectives (MEP to 2050)[2] goes to print the World, the Mediterranean region is still in the middle of a global crisis. The uncertainty about the medium to long term is even greater than usual, as behaviours of governments and consumers in a post-COVID-19 world are unknown. The 2020 economic contraction and steep fall in primary energy prices are caused by forces that are genuinely new to the modern energy sector. They are not the result of geopolitical, physical, or macro-economic disruptions. The tension between short-term financial imperatives and the longer-term need for investment and adaptation is unusually high under this pandemic. Moreover, COVID-19 has made even more apparent the duality of **economic growth and environmental sustainability**, reviving the importance of economic viability and comparative advantage — and the role of regional cooperation with close neighbours.

According to the "Global Carbon project", the COVID-19 pandemic has led to a 7%reduction of GHG emissions globally in 2020. It is the largest absolute drop in emissions ever recorded. The data on the fossil CO2 emissions reduction in the world in 2020: 12%in the US, 11%in the EU, 9%in India and 1.7%in China.

In this context, the renewable energy sector is recognised to be very highly scalable, especially in the Mediterranean region, due to the vast natural resources we have plus the easy logistics for exporting green energy to other countries.

Renewable energy technologies have shown a rapid acceleration of integration in the Mediterranean energy systems, particularly during the last ten years. In 2019, renewables accounted for 10%of the primary energy demand, and 28%of electricity generation. Hydropower contribution has remained constant over the years, with an annual output of about 25 Mtoe (2% of the energy demand). Conversely, non-hydro technologies have experienced a significant growth, from 66 Mtoe in 2010 to 105 Mtoe in 2019 (OME database). This picture is a result of profound changes at several levels: policy design, market transformation, technological progress, financial risk management tools. These elements altogether have created the right conditions for scaling up renewable energy projects across the Mediterranean and opening new and promising markets. Still, a closer look shows that progress is uneven both geographically and by sectors. Regarding the geographical distribution, North Mediterranean countries host the largest portion of renewable energy projects. With the only exception of Turkey, the share of renewable energy in the mix of South and East Mediterranean countries is below 6% against 13%in the North.

RE is a quite new industry and many efforts still need to be made in terms of "efficiency". For instance, Dr. Fatatoumi (ex-regional officer for the MENA region at IRENA), mentioned during the "9th MEDA Green & RE summit" in the MedaWeek Barcelona 2021, the need for "Energy efficiency".

This industry is needed for the transition to a sustainable economy, and it could generate many jobs and wealth. Yet, this topic is vital due to its importance in line with the green deal and other key efforts that the EU is making to materialise such changes in the region and beyond.

In this context, to relaunch and strengthen the strategic partnership between the European Union and its Southern Neighbourhood partners, the European Commission and the High Representative adopted on 9 February 2021 a joint communication proposing an ambitious and innovative new Agenda for the Mediterranean.

The new Agenda is based on the conviction that by working together and in a spirit of partnership, common challenges can be turned into opportunities, in the mutual interest of the EU and its Southern neighbours. It includes a dedicated Economic and Investment Plan to spur

[2] Mediterranean energy trends over the next 30 years under three different scenarios, as well as the impact of the global COVID-19 pandemic on energy transition in the region.

the long-term socio-economic recovery in the Southern Neighbourhood. Under the new EU's Neighbourhood, Development and International Cooperation Instrument (NDICI), up to €7 billion for the period 2021-2027 would be allocated to its implementation, which could mobilise up to €30 billion in private and public investment in the region in the next decade.

In this regard, the Mediterranean energy system must undergo a fundamental restructuring and reshaping to provide the necessary level of decarbonisation, which would create challenges but would also provide various opportunities.

To this end, this study aims to provide a comprehensive approach to the green transition in the Euro-Med area, with special emphasis on the renewable energy sector and the present and future opportunities for the development of public-private initiatives and business.

1.1 Objectives

This study has been developed by the Official Chamber of Commerce, Industry, Services and Navigation of Barcelona, as an affiliate member of the EBSOMED project, within the framework of this project, co-financed by the European Commission.

It aims to:

- Analyse existing initiatives and previous EUROMED invest strategic papers and propose recommendations for potential future ideas. Maximise business exchanges between experts and Business Support Organisations (BSOs).
- Explain and promote the Green Energy market development and the advances of becoming an exporter.
- Collect and share useful platforms working on renewable energies of other stakeholders.
- Increase the visibility of the sector and EBSOMED project at large.
- Recommend initiatives to cooperate on regional issues and provide the strategic lines of action within Renewable and Green Energies, determining the increase of their importance on the framework for new European initiatives and policies.
- Provide a complete study of the key sectors situation regarding Renewable Energy sources (solar power, wind power, hydro energy, etc.)
- Present investment opportunities for decarbonisation.
- Create a strategy based on existing and future business opportunities about the Renewable and Green Energies, oriented to the Mediterranean territories, both North and South shores.

1.2 EBSOMED Project

EBSOMED is a 4-year project (2018-2022), co-financed by the European Commission. The project aims to improve the management capacity, performance, and competitiveness of Mediterranean Business Support Organisations (BSOs) through enhanced services in compliance with quality standards. Also, it empowers the Mediterranean private sector stakeholders by developing business linkages and networks between Southern Neighbourhood BSOs and their EU counterparts.

The project will stimulate trade and investment flows by supporting the internationalisation of Mediterranean SMEs, increasing the Economic Regional Integration and boosting the Mediterranean business community by creating a sustainable hub for developing business partnerships and coordinating strategies in key sectors of common interest in the EuroMed region.

The objectives of EBSOMED are:

- Improve management capacity performance and competitiveness of Mediterranean Business Support Organisations (BSO) through enhanced services in compliance with quality standards;
- Empower Med private sector stakeholders by developing business linkages and networks between Southern Neighbourhood BSOs and EU counterparts, supporting them in seizing the financing services offered by Development and Finance Institutions (DFI);
- Stimulate trade and investment flows by supporting the internationalisation of Med SMEs;
- Increase Economic Regional Integration and boost the Med business community by creating a sustainable hub for developing business partnerships and coordinating strategies in key sectors of common interest in the Euro-med region to optimise the performance and competitiveness.

1.3 Methodology

The present study will carry out an exhaustive analysis of the green transition in the Mediterranean. Therefore, several sources of important value have been used: On the one hand, the information provided by institutions and official bodies that generate information, reports and papers about policies, initiatives, and projects on the green transition framework. Mainly, information from The Union for the Mediterranean (UfM), the European Commission (EU), the Association of the Mediterranean Chambers of Commerce and Industry (ASCAME) and official international and national sources under this study has been considered.

On the other hand, the information provided by Mediterranean Experts from the "Sector Alliance Committee " (SAC) during the EBSOMED meeting in the framework of the MedaWeek 2021 in Barcelona. The speakers of the Sector Alliance Committee were:

- **Prof. Marc Deschamps** | Vice President of Turritopsis, founding member of ECODA (European Governance Association) and GUBERNA (Belgian Governance Association) - Belgium
- **Emanuela Menichetti** | Director of Renewable Energy Division, Mediterranean Energy Observatory (OME)
- **Afailal Abdelatif** | President, Chamber of Commerce, Industry and Services of Tangiers-Tetouan-Al Hoceima
- **Marco Polverari** | Executive Director, The Mediterranean Renewable Energy Centre MEDRE
- **Dr. Cynthia Echave** | Project Coordinator and Senior Researcher, Euro-Mediterranean Economists Association – EMEA
- **Cyril Dewaleyne** | Program Manager for Energy and Climate Change, European Commission
- **Prof. Michael Scoullos** | Chairperson, MIO-ECSDE
- **Javier Abanades** |Project Manager of Offshore Renewable Projects, TYPSA

Also, the succeeding method has been followed to elaborate the Strategic Paper:

- Macro-analysis per sector, comparative advantage, assess the local environment and respective practises.
- Role and relation between the public and private sectors.
- Identify the current obstacles and challenges.
- Analysing risks and assessing external hindrances.
- A specific focus on the main programmes to support the decarbonisation of the region with special focus on funding opportunities.

Finally, the results obtained from the surveys carried out within the framework of the project have been considered, prioritising those aspects that have been considered as most relevant once the results have been analysed.

1.4 Green Transition

Tackling climate change is an increasingly urgent necessity, as everything points to the fact that by the year 2100 life as we know it will have changed radically because of rising global temperatures, rising sea levels and the melting of the poles.

In this framework, the 2030 Agenda for Sustainable Development, adopted by all United Nations Member States in 2015, provides a shared blueprint for peace and prosperity for people and the planet, now and into the future. At its heart are the 17 Sustainable Development Goals (SDGs), which are an urgent call for action by all countries - developed and developing - in a global partnership. They recognize that ending poverty and other deprivations must go hand-in-hand with strategies that improve health and education, reduce inequality, and spur economic growth – all while tackling climate change and working to preserve our oceans and forests.

Figure 2. Sustainable Development Goals (SDGs). Source: https://sdgs.un.org

Avoiding this scenario is in everyone's hands and the first step is to change the production and consumption model to a more sustainable one that leads to a positive environmental impact. The set of measures to carry out this change of economic model is known as the **green transition.**

For this purpose, the transition is the period between the present moment, where our way of life is unsustainable in the long term, and the moment when our activity does not endanger the health of the planet. Today, we are at the beginning of this transition, thanks to the action of governments, organisations, companies, and individuals who are taking steps to reach the goal of sustainability as quickly as possible.

Today, 192 Parties (191 countries plus the European Union) have joined the Paris Agreement. The Agreement includes commitments from all countries to reduce their emissions and work together to adapt to the impacts of climate change and calls on countries to strengthen their commitments over time.

As a curiosity, The United States and China recalled their Joint Statement Addressing the Climate Crisis of April 17th, 2021, under Biden's presidency.

The United States and China recall their firm commitment to work together and with other Parties to strengthen implementation of the Paris Agreement. The two sides also recall the Agreement's aim in accordance to hold the global average temperature increase to well below 2 degrees C and to pursue efforts to limit it to 1.5 degrees C. In that regard, they are committed to pursuing such efforts, including by taking enhanced climate actions that raise ambition in the 2020s in the context of the Paris Agreement, with the aim of keeping the above temperature limit within reach and cooperating to identify and address related challenges and opportunities.

1.5 The Green Deal & The New Agenda for the Mediterranean

The main European instrument that regulates the green transition in Europe and is taken as a reference at the international level is called **the Green Deal.**

The Green Deal lays out a set of principles to be adopted around the world and takes a collaborative approach to climate action. The Global Green New Deal coalition is a vital part of this work and is composed of political leaders, investors, businesses, labour unions, young people, civil society, and communities disproportionately impacted by the climate crisis and poverty. The Green Deal is, by nature, a holistic, intersectional approach to climate action, recognising that climate, social and economic justice can only be achieved together.

In the cities and communities, we build together, everyone will have the right to clean air, a living wage, good green jobs, protection from extreme weather, healthy local food, a safe place to live, and green spaces to enjoy – regardless of race, nationality, gender, sexual orientation, citizenship status, ability, or socio-economic status.

The European Commission helps EU Member States design and implement reforms that support the green transition and that contribute to achieving the goals of the European Green Deal. It also helps to design the necessary procedures in central and local administrations and establish the coordination structures that are needed for implementing green policies.

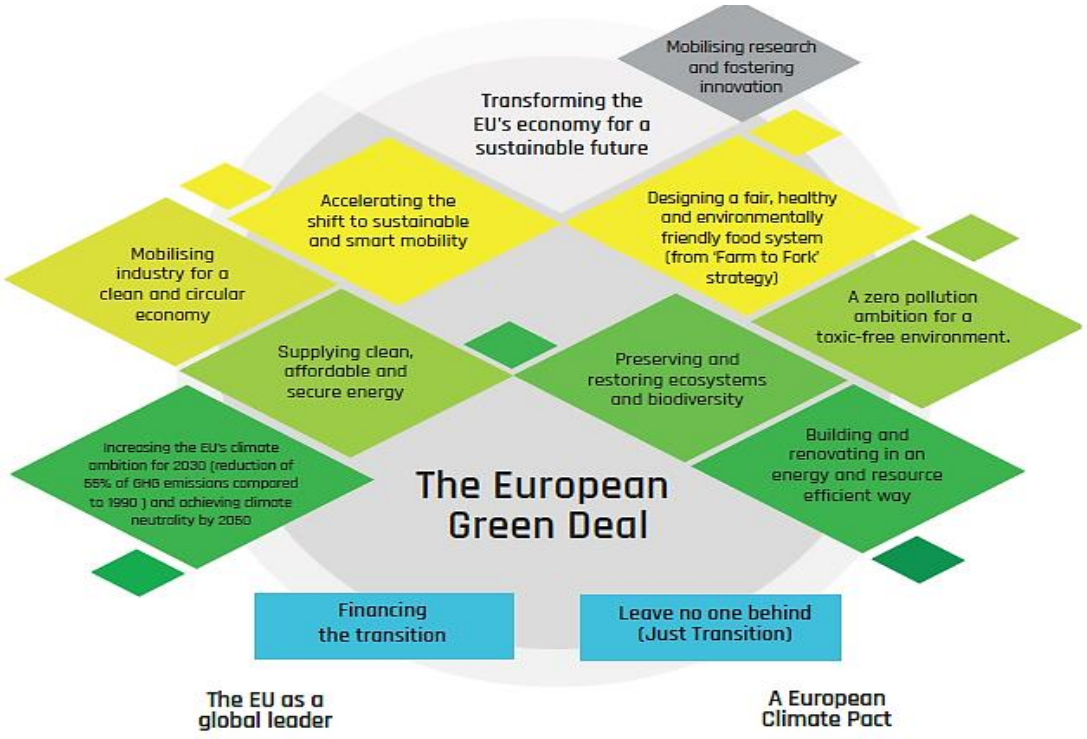

Figure 3. EU Green Deal Highlights. Source: Adapted from the European Commission.

The European Green Deal focuses on 3 key principles for the clean energy transition, which will help reduce greenhouse gas emissions and enhance the quality of life of our citizens:

1. ensuring a secure and affordable EU energy supply
2. developing a fully integrated, interconnected and digitalised EU energy market
3. prioritising energy efficiency, improving the energy performance of our buildings and developing a power sector based largely on renewable sources

The Commission's main objectives to achieve this are:

- build interconnected energy systems and better integrated grids to support renewable energy sources
- promote innovative technologies and modern infrastructure
- boost energy efficiency and eco-design of products
- decarbonise the gas sector and promote smart integration across sectors
- empower consumers and help EU countries to tackle energy poverty
- promote EU energy standards and technologies at global level
- develop the full potential of Europe's offshore wind energy

On the other hand, twenty-five years ago the European Union and the Southern Mediterranean partners committed to turning the Mediterranean basin into an area of dialogue, exchange, and cooperation, guaranteeing peace, stability and prosperity. The 25th anniversary of the Barcelona Declaration reminds us that a strengthened Mediterranean partnership remains a strategic imperative for the European Union, as the challenges the region continues to face require a common response, especially ten years after the Arab Spring. By acting together, recognising our growing interdependence, and in a spirit of partnership, we will turn common challenges into opportunities, in our mutual interest.

To this end and within the framework of the European Neighbourhood Policy this Joint Communication proposes a new, ambitious, and innovative **Agenda for the Mediterranean**, drawing for the first time on the full EU toolbox and the ground-breaking opportunities of the twin green and digital transitions, to relaunch our cooperation and realise the untapped potential of our shared region. The perspective of the postCOVID-19 recovery offers a rare opportunity for Europe and the Mediterranean region to commit to a common and people-centred agenda and the actions necessary for its implementation.

The agenda dedicates the point Nº5 to the Green Transition: climate change resilience, energy, and environment. This document says that Europe and the Mediterranean region have interdependent, complementary, and converging energy interests based on the priorities of the green and fair transition and energy security. It further mentions that *"future cooperation will have to be adapted to partners' diverse endowment and needs and be focused on selected priority objectives: (i) massive deployment of renewable energy and clean hydrogen production, contributing to the aspiration to have at least 40 Gigawatts of electrolyser capacity in the EU Neighbourhood by 2030 ; (ii) a stronger interconnection of electricity systems; (iii) energy efficiency efforts and measures, with a focus on buildings and appliances ; (iv) policies to address fugitive methane emissions from fossil fuel production, transport and use, in line with the framework set in the EU methane strategy."*

2. The Mediterranean Framework. Strategic Lines, Key Institutions, Initiatives and Policies on Green Transition

The strategic lines that are making more efforts to help the adoption of renewable energies are the economic subsidies and the implementation of new technologies (see ANNEX II). However, to accelerate the green transition and develop new policies and initiatives, it is important that strategic lines such as flexible legislation/regulation of renewable energies.

In this respect, in the Mediterranean region, there are several institutions and initiatives that aim at promoting and accelerating the green transition. This section presents the main institutions and initiatives that develop and manage the projects with the greatest impact in this area.

2.1 Key Institutions

To lead the green transition, it is necessary to have a wide range of institutions that manage and define the policies and initiatives that lead to the appropriate action plans for each territory.

In this regard, the main institutions dedicated to the green transition in the Mediterranean Region are:

Table 1. Key institutions for the green transition in the Mediterranean area. Source: Own Source.

	Organisation	Description
ome Observatoire Méditerranéen de l'Energie	Observatoire Mediterranéen de l'Energie (OME)	OME is a gathering platform and a Think Tank of reference making energy an instrument for regional integration. Since its creation 30 years ago, OME has carried out regional studies on all energy topics through an original and unique cooperation between experts from member companies, OME Technical Committees and OME's permanent staff. OME is a pioneer in the organisation of high-level conferences, workshops and training on the various issues related to the energy sector in the Mediterranean countries. https://www.ome.org/
Union for the Mediterranean Union pour la Méditerranée الإتحاد من أجل المتوسط	Union for the Mediterranean (UfM)	The Union for the Mediterranean (hereafter referred to as UfM) is the unique intergovernmental EuroMediterranean organisation gathering all 28 countries of the European Union and the 15 countries of the South and the East of the Mediterranean. It is in charge of enhancing regional dialogue and cooperation amongst its Member States. It therefore plays a central role regarding the current evolutions in the region. https://ufmsecretariat.org/
MED ENER	Mediterranean Association of National Agencies for Energy Management (MEDENER)	MEDENER was created in Tunis in the form of an international non-profit organisation. Today, it brings together 12 national agencies from the northern and southern banks of the Mediterranean. Regarding future expansion, the organisation aims to eventually include other countries such as Turkey and Egypt. It is open to any national organisation that implements energy-related and environmental policies. https://www.medener.org/en/who-are-we/

RCREEE Regional Center for Renewable Energy and Energy Efficiency المركز الإقليمي للطاقة المتجددة وكفاءة الطاقة	Regional Centre for Renewable Energy and Energy Efficiency	The Regional Centre for Renewable Energy and Energy Efficiency (RCREEE) is an intergovernmental organisation with diplomatic status that aims to enable and increase the adoption of renewable energy and energy efficiency practises across pan-Arab countries. RCREEE is the official technical arm institution of both the League of Arab States – Energy Department and Arab Ministerial Council for Electricity (AMCE). https://www.rcreee.org/

2.2 Stakeholder Mapping

The following table sets out the main stakeholders in the framework of the green transition in the Mediterranean region countries:

Table 2. Stakeholders in the framework of the green deal in the Mediterranean Region. Source: Own Source.

Countries	Stakeholders
Albania	Ministry of Infrastructure and Energy The Energy Regulator Albanian Power Corporation The National Natural Resource Energy Transmission System Operator Albanian Investment Development Agency Trans Adriatic Pipeline Ayen As Energy
Algeria	Ministry of Energy Transition and Renewable Energies (METRE) Algerian Energy Company (AEC)
Bosnia and Herzegovina	Federal Ministry of Energy, Mining and Industry Elektroprivreda BiH (EPBiH) Elektroprivreda Republika Srpske (EPRS) Elektroprivreda Hrvatske Zajednice Herceg-Bosna (EPHZHB)
Bulgaria	Ministry of Energy Energy and Water Regulatory Commission Bulgarian Wind Energy Association Energy Efficiency and Renewable Sources Fund (EERSF) Bulgarian Energy Holding (BEH) National Electric Company (NEK) Electric System Operator (ESO)
Cyprus	Natural Gas Public Company (DEFA) Cyprus Energy Regulatory Authority (CERA) Ministry of Energy, Commerce, and Industry Cyprus Hydrocarbons Company (CHC)
Croatia	Ministry of Environmental Protection and Energy Croatian Electricity Company Croatian Electric Energy Transmission Operator Croatian Energy Regulatory Agency Croatian Energy Market Operator Energy Institute Hrvoje Pozar The Environmental Protection and Energy Efficiency Fund Renewable Energy Sources of Croatia
Egypt	Ministry of Electricity and Renewable Energy (MOERE) New and Renewable Energy Authority (NREA) Egyptian Electricity Holding Co. Egyptian Electricity Transmission Co
France	Total Energies

	EDF,electricity supplier Engie (formerly GDF – Gaz de France), gas supplier Ministry of Ecology, Sustainable Development and Energy Ademe (French Agency for Ecological Transition) French Council for Energy (member of the World Energy Council) French Renewable Energies Trade Association
Greece	Greek Ministry of Energy Public Power Corporation S.A.
Italy	Ministry of Ecological Transition Ente nazionale per l'energia elettrica (ENEL)
Jordan	Ministry of Energy and Mineral Resources (MEMR) Hanania Energy Kawar Energy (Kawar Group) PanMed Energy ArcSolar Renewable Energy Al-Asalah
Lebanon	Ministry of Energy and Water Lebanese Association for Sustainable Energy Lebanese Association for Energy Saving & for Environment Lebanese Solar Energy Society Eléctricité du Liban (EDL)
Libya	Ministry of Electricity and Renewable Energy Renewable Energy Authority of Libya
Morocco	Moroccan Ministry of Energy, Mining, and Sustainable Development National Office of Electricity and Water (ONEE) National Federation of Electricity and Renewable Energies (FENELEC) Research Institute for Solar Energy and New Energies (IRESEN) Solar Cluster Moroccan Agency for Solar Energy (MASEN) E-Tenders Moroccan Agency for Energy Efficiency (AMEE) Company for Energy Investments (SIE) Moroccan Office of Hydrocarbons and Mines (ONHYM)
Montenegro	Ministry of Economy Electrical Power Company of Montenegro (EPCG)
Serbia	Ministry of Mining and Energy Association Renewable Energy Sources of Serbia (RES Serbia)
Spain	Ministry for Ecological Transition (MITECO) National Commission for Markets and Competition (CNMC) Red Eléctrica de España, SA (REE) OMI-Polo Español SA (OMIE) Institute for Diversification and Energy Saving (IDAE) APPA, Renewable Energy Companies Association UNEF, Photovoltaic Energy Companies Association AEE, Spanish Wind Energy Association.
Syria	Ministry of Electricity
Tunisia	Ministry of Energy, Mines, and Energy Transition Tunisian Enterprise for Petroleum Activities (ETAP) Tunisia's state-owned gas and electricity company (STEG) National Agency for Energy Conservation (ANME)
Turkey	Ministry of Energy and Natural Resources (MENR) Turkish Electricity Transmission Corporation

2.3 National Plans & Policies. Legal framework

To meet the EU's energy and climate targets for 2030, the following Mediterranean countries establish a 10-year integrated national energy and climate plan (NECP) for the period from 2021 to 2030. On the other hand, all of them have policies to achieve their green transition goals:

Table 3. National energy and climate plans & policies. Mediterranean countries. Source: International Energy Agency (IEA).

Countries	Policies
Albania	Albanian National Strategy of Energy Albanian Law of Energy Efficiency 2005 Albania First Solar PV Auction (July 2018) National Energy Efficiency Action Plan 2010-2018
Algeria	Law 04-90 on Renewable Energy Promotion in the Framework of Sustainable Development Law No. 19-13 – Law governing hydrocarbon activities Renewable Energy and Energy Efficiency Development Plan 2011-2030
Bosnia and Herzegovina	Decision on the amount of the fee to encourage electricity generation from renewable energy sources and efficient co-generation, Republic of Srpska Decision on the amount of the feed-in prices and premiums for generation of electricity from RES and in efficient co-generation, Republic of Srpska Rule Book on incentives for generation of electricity from RES and efficient co-generation, Republic of Srpska Decree on generation and consumption of electricity from renewable sources and cogeneration in Republic of Srpska
Bulgaria	Purchase Subsidies Bulgaria Bulgarian Energy Efficiency Obligation Energy efficiency target declared by Bulgaria under the EU Directive (2012/27/EU)
Cyprus	Cyprus Recovery and Resilience plan Directive 2009/28/EC on the Promotion of Electricity Produced from Renewable Energy Sources Guidelines for the simplification of the permitting procedures for small decentralised and/or distributed electricity production Law on the Promotion of Renewable Energy and Energy Efficiency
Croatia	National Recovery and Resilience Plan EU Cohesion policy: Energy-efficiency heating system
Egypt	Egypt Renewable Energy Tenders (build-own-operate BOO contracts) Egypt Renewable Energy Law (Decree No 203/2014)
France	BPI France Innovation for SMEs - support for R&D Energy efficiency target declared by France under the EU Directive (2012/27/EU) EIB investments for climate action and clean energy, sustainable transport, communications
Greece	National recovery and sustainability plan (Greece 2.0)
Italy	Energy efficiency target declared by Italy under the EU Directive (2012/27/EU) National Recovery and Resilience Plan / M3C1: Rail network and secure roads EIB investments for climate action and clean energy, sustainable transport, communications Ecobonus: Subsidy for low-emission vehicles
Jordan	Jordan Renewable Energy & Energy Efficiency Fund (JREEEF) Renewable Energy & Energy Efficiency (Law No. 13)
Lebanon	National Renewable Action Plan of Lebanon (NREAP 2016-2020) Directive 2009/125/EC of the European Parliament and of the Council with regard to eco-design requirements for air conditioners and comfort fans

	EU No 626/2011 - labelling for ACs National Energy Efficiency and Renewable Energy Action (NEEREA)
Libya	Libya Renewable Energy Strategic Plan 2013-2025 Law No. 426 establishing the Renewable Energy Authority of Libya (REAOL)
Morocco	Morocco and Portugal agreement on green hydrogen development Morocco Renewable Energy Target 2030
Montenegro	Decree on Tariff Incentives for Renewable Energy and Efficient Cogeneration Regulatory framework for renewables Energy Law
Serbia	Bilateral Partnerships to Promote Renewable Energy and Energy Efficiency Decree on Incentive Measures for Privileged Energy Producers (Eco-scheme)
Spain	Recovery, transformation and resilience plan /Modernisation and digitalisation of the industrial fabric and SMEs, recuperation of tourism, and momentum for Spain as an enterprising nation EIB investments for climate action and clean energy, sustainable transport, communications Spain 2050 strategy: circular and carbon-neutral economy Long-term strategy for energy rehabilitation in the building sector
Syria	Law 23/2021 establishing the Renewable Energy Fund Law 03 on Energy Conservation
Tunisia	National Energy Efficiency and Renewable Energy Programme 2008-2011
Turkey	Extension of Renewable Energy Support Scheme (YEKDEM) Regulation on Renewable Energy Resource Zones Improving Energy Efficiency in Manufacturing Sector

2.4 Mediterranean and European Initiatives and Policies.

To carry out the required actions in terms of green transition, the above entities and organisations promote a series of initiatives and policies to influence the Mediterranean area.

The following table shows examples of the most relevant ones in the context of this document:

Table 4. Key initiatives and policies for the green transition in the Mediterranean area. Source: Own Source.

Organisation / Community	Initiatives & Policies	Description
Union for the Mediterranean (UfM)	UfM Ministerial Declaration on Energy	On 14 July, the European Commission adopted a set of proposals to make the EU's climate, energy, transport and taxation policies fit for reducing net greenhouse gas emissions by at least 55%by 2030, compared to 1990 levels. Achieving these emission reductions in the next decade is crucial to Europe becoming the world's first climate-neutral continent by 2050 and making the European Green Deal a reality. Benefits: - Fresh air, clean water, healthy soil and biodiversity - renovated, energy efficient buildings - healthy and affordable food - more public transport - cleaner energy and cutting-edge clean technological innovation - longer lasting products that can be repaired, recycled and reused - future-proof jobs and skills training for the transition

		- globally competitive and resilient industry Actions: - Climate, Energy, Agriculture, Industry, Environment and oceans, Transport, Finance and Regional Development and Research and Innovation. https://ufmsecretariat.org/wp-content/uploads/2021/06/3rd-UfM-Ministerial-Declaration-on-Energy-14-June-2021-1.pdf https://eeas.europa.eu/diplomatic-network/union-mediterranean-ufm/329/union-mediterranean-ufm_en
Interreg MED Renewable Energy community	Ecosystemic Transition Unit (ETU)	The Ecosystemic Transition Unit (ETU) is a multilevel governance model developed by the Interreg MED Renewable Energy community, acting as a roadmap for municipalities in rural and island areas to join the green energy transition, based on social innovation. Rural and island communities are particularly vulnerable to climate change, as many of their livelihoods (such as agriculture) depend on the environment. Building resilience and promoting renewable energy in these areas requires a particular approach, using the energy transition to generate jobs and revitalise rural areas.
European Commission	Next Generation EU	The EU's long-term budget, coupled with NextGenerationEU (NGEU), the temporary instrument designed to boost the recovery, will be the largest stimulus package ever financed in Europe. A total of €2.018 trillion in current prices will help rebuild a post-COVID-19 Europe. It will be a greener, more digital, and more resilient Europe. https://ec.europa.eu/info/strategy/recovery-plan-europe_en
	Clean Energy for all	A movement is building across the country to reject dirty fossil fuels and embrace clean energy. And in the absence of federal leadership, this movement's progress is taking hold in the states. "Clean Energy for All" is a grassroots campaign that is moving our country closer to 100 percent clean energy by 2050. https://www.cleanenergyforall.org/
	Strategy for Energy Systems Integration	Linking sectors will allow the optimisation of the energy system as a whole, rather than decarbonising and making separate efficiency gains in each sector independently. The new EU strategy will involve various existing and emerging technologies, processes and business models, such as ICT and digitalisation, solar grids and net metering and flexibility markets. https://ec.europa.eu/energy/topics/energy-system-integration/eu-strategy-energy-system-integration_en
	Renovation Wave	The European Commission has published its Renovation Wave Strategy to improve the energy performance of buildings. The Commission aims to at least double renovation rates in the next ten years and make sure renovations lead to higher energy and resource efficiency. This will enhance the quality of life for people living in and using the buildings, reduce Europe's greenhouse gas emissions, foster digitalisation and improve the reuse and recycling of materials. By 2030, 35 million buildings could be renovated and up to 160,000 additional green jobs created in the construction sector. https://ec.europa.eu/commission/presscorner/detail/en/IP_20_1835
	Circular Economy Action Plan	The EU's new circular action plan paves the way for a cleaner and more competitive Europe. The new action plan announces initiatives along the entire life cycle of products. It targets how products are designed, promotes

		circular economy processes, encourages sustainable consumption, and aims to ensure that waste is prevented and the resources used are kept in the EU economy for as long as possible. https://ec.europa.eu/environment/strategy/circular-economy-action-plan_es

2.5 Green Transition Goals. Mediterranean Energy Perspectives to 2050 (MEP to 2050)

The Mediterranean Energy Perspectives for 2050 defined by the OME set out three scenarios in which the Mediterranean energy system can develop until 2050 in all of the 26 member countries.

In this context, OME has redefined the Reference Scenario (RS) and a joint scenario developed together with UfM called ProMed (Near Zero Carbon).

To this end, the three scenarios that will be used to monitor the evolution of the Mediterranean energy system up to 2050 are as follows:

- **The Reference Scenario (RS)** considers past trends, current policies and ongoing projects. It incorporates Nationally Determined Contributions (NDCs) but assumes that international funding and other support will not be available. In this scenario, the increase in electricity demand will be met by traditional primary energy sources and others that will become available in the future.
- **The Proactive Scenario (PS)** is based on the implementation of strong energy efficiency programmes and further diversification of the energy mix based on the NDCs presented by each country. It assumes an increase in clean fuels and technologies replacing oil and coal in electricity generation capacity.
- **The ProMED Near Zero Carbon (PM)** foresees more ambitious measures for energy efficiency, significant technological development to further curb CO2 emissions, as well as further diversification of the energy mix, tailored to each country based on the experience gained from the extensive work of the three UfM platforms on gas, electricity, renewables and energy efficiency. It involves a substantial increase in renewables, especially in electricity generation, but also in end-use with increased storage and the introduction of hydrogen. It also implies a considerable increase in the renovation of building efficiency, especially in new buildings.

The scenarios described will be considered in the next points developed in the Strategic Paper, to define the conclusions to define the roadmap for the green transition in the Mediterranean area. According to the OME there will be an increasing difference between the North and South Mediterranean regarding the use of fossil energies and RE.

3. The renewable Energy Market in the Mediterranean

To provide a complete outlook, this section describes the current situation of the renewable energy market in the Mediterranean. In this respect, the following sources or types of renewable energy have been considered: Solar Thermal, Solar PV, Biomass and Waste, Geothermal and Hydroelectric.

The main data considered for the analysis come from the latest report of the *Observatoire Méditerranéen de L'energie "RENEWABLE ENERGY TECHNOLOGY DYNAMICS: A focus on power generation capacity evolution in Mediterranean countries".*

3.1 Global situation

To understand the current situation of renewable energies in the Mediterranean area, an analysis of the evolution of the situation of renewable energies in 2010, 2019 and the forecasts for 2030 has been carried out. In this sense, the parameters analysed are electricity generation and installed capacity for each year and for each side of the Mediterranean region.

The following table shows an overview of the evolution of renewable energies, taking as a reference the data for 2010 and 2019 respectively. On the other hand, the forecast for electricity generation in the Mediterranean area in 2030 is shown.

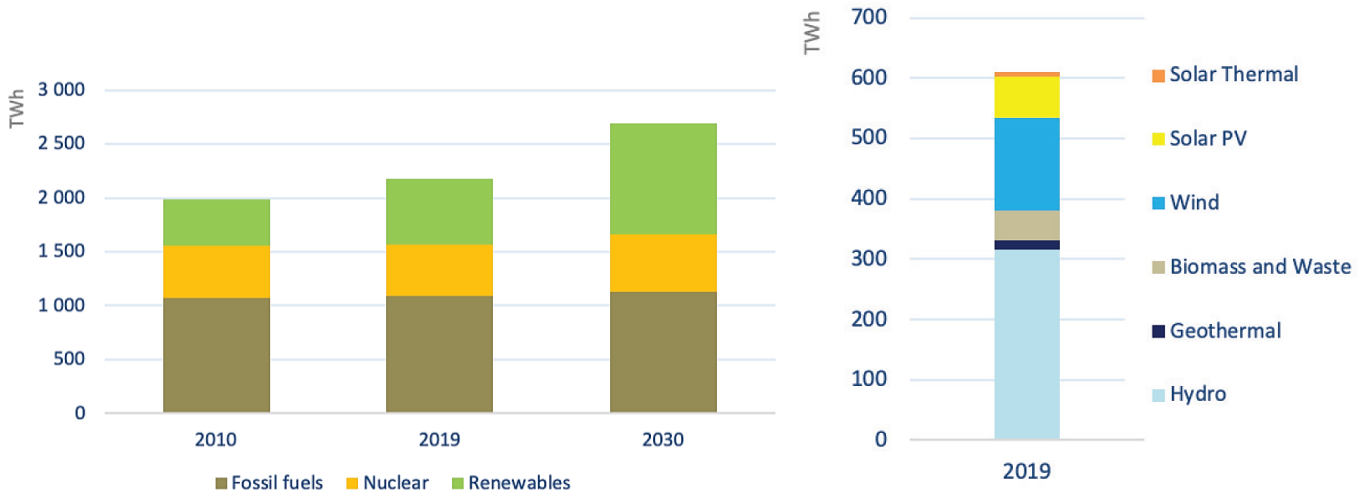

Figure 4. Mediterranean Electricity. Generation by type. Source: Observatoire Méditerranéen de L'Energie.

In 2019 electricity generation in the Mediterranean reached 2190 TWh, 10%more than in 2010. Of the electricity generation mix in 2019, renewable energies account for 28%while in the 2030 scenario, renewables would represent 41%of the generation mix.

On the other hand, if the power installed on the southern and northern sides of the Mediterranean is analysed separately, the data shown in the following graphs is obtained:

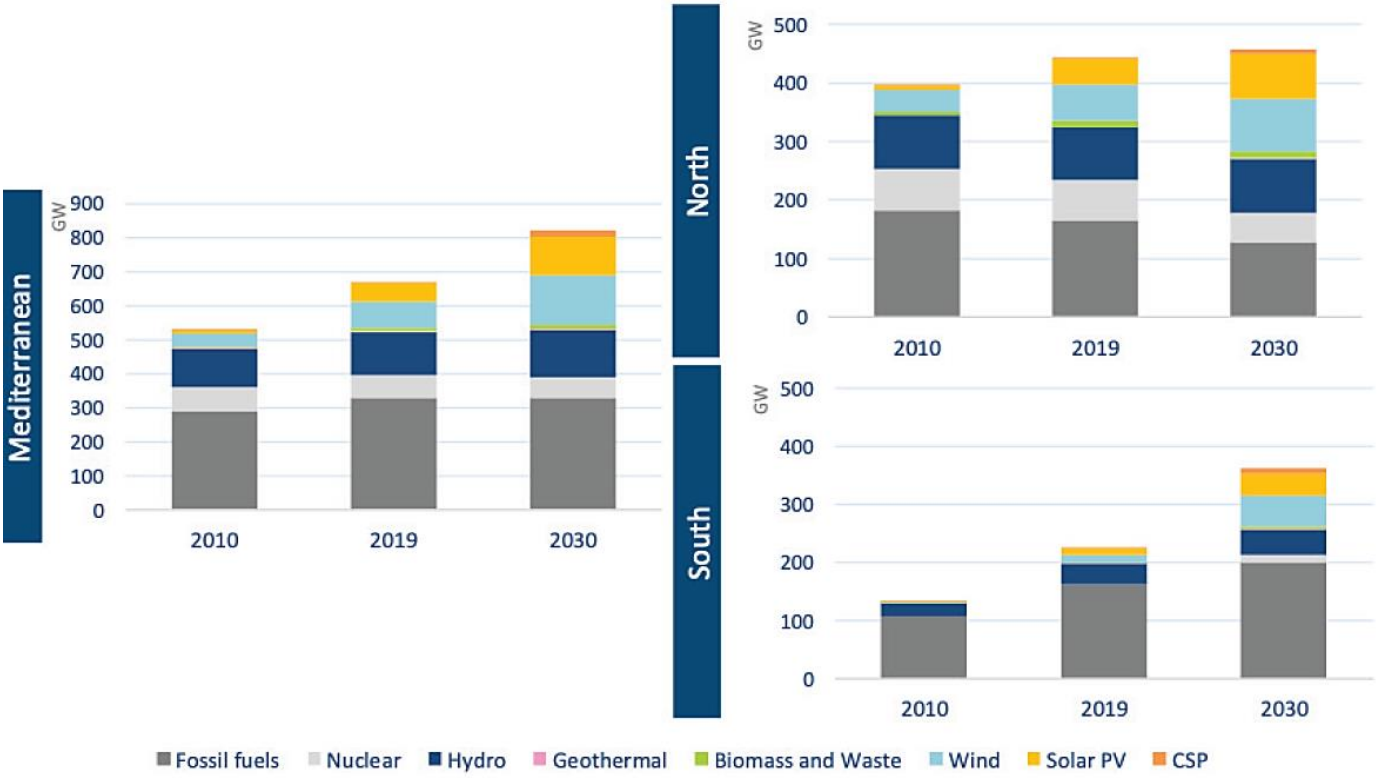

Figure 5. Mediterranean installed power capacity. Source: Observatoire Méditerranéen de L'Energie.

In terms of capacity, total installed power capacity in the Mediterranean stood at 670 GW in 2019, with 49% based on fossil fuels, 10% on nuclear power and 41% on renewable technologies.

Total installed capacity in the Mediterranean increased by 27% in the last decade and is expected to increase by 22% until 2030. Fossil fuel-based capacity has increased by 13% in the last decade and is expected to remain at the same level over the next ten years.

If we analyse the North and South Mediterranean data separately, while Northern Mediterranean countries are going to reduce the use of fossil energy, the consumption in the South Mediterranean countries will continue to increase. This will enlarge the breach between both shores regarding the consumption of fossil fuels.

Nuclear capacity has decreased by 2% in the last decade and is expected to decrease further by 10% until 2030. However, there is a slight increase of nuclear energy in the Southern Mediterranean countries until 2030.

Renewable energy capacity installations have seen a 63% increase since 2010 and are conservatively expected to increase by 57% until 2030. This increase in renewables-based capacity will be driven mainly by a doubling of installed wind and solar capacity. Unfortunately, if we analyse the North and South Mediterranean separately, the final weight of RE will be very different:

a) While in North Mediterranean countries, the wind and solar energies are expected to experience a significant increase, in the South Mediterranean countries the final weight of RE will be much less significant.

b) However, a positive aspect is that South Mediterranean countries, which were departing from very low levels of production on solar and wind energies, will also increase their installed capacity.

3.2 Wind

To analyse the evolution of wind energy, the 2018 and 2019 data on wind power capacity in GW have been considered.

In this sense, it is observed that in 2019 there was more than 75 GW of wind power capacity available in the Mediterranean region.

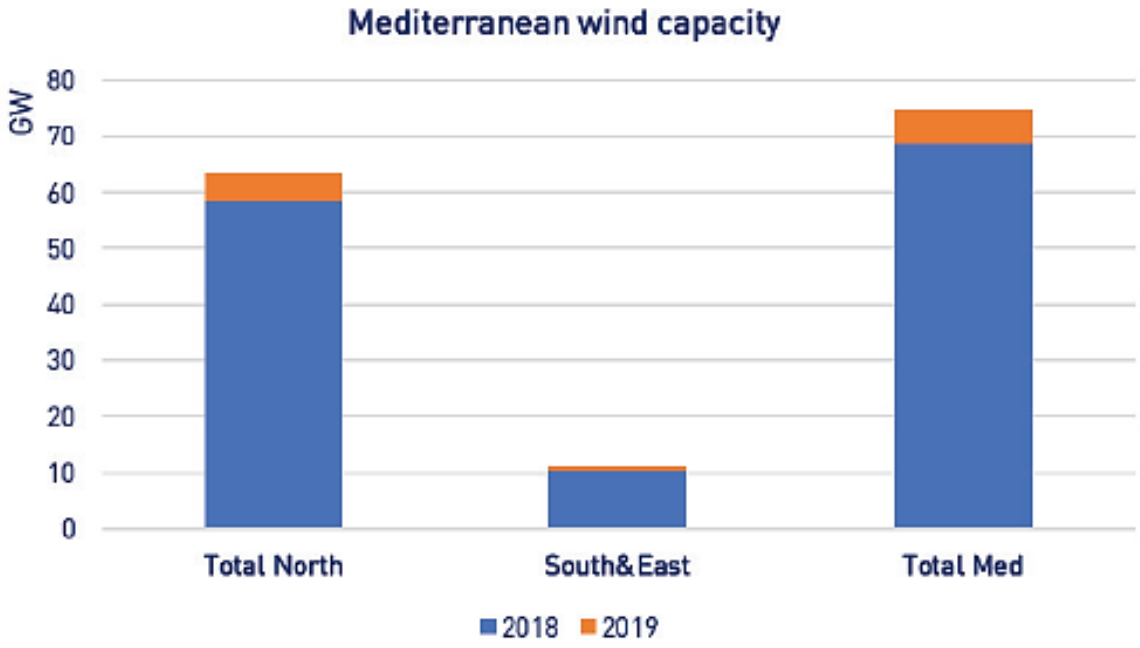

Figure 6. Mediterranean wind power capacity evolution (2018-2019). Source: Observatoire Méditerranéen de L'Energie.

As can be seen in the graph above, in 2019, there was already 75GW of accumulated wind power capacity in the Mediterranean. This figure represents 11% of the total wind power capacity worldwide, which means that the impact of this energy source in the Mediterranean area is greater than that of other renewable energies.

However, at market level, this energy source only has significant accumulated capacities in France, Italy and Spain (around 10GW).

The cumulative capacity on the northern side of the Mediterranean was 63 GW in 2019, where Spain dominates the market with approximately 26 GW of cumulative capacity.

As for the non-EU northern Mediterranean countries, Serbia, with 374 MW of cumulative capacity in 2019 and several other projects under development, holds almost two-thirds of the total capacity under development in this sub-region.

The largest wind capacity in the southern and eastern Mediterranean countries is in Turkey, with more than 8 GW at the end of 2019, followed by Egypt (1.4 GW) and Morocco (1.2 GW). Jordan had a cumulative capacity of almost 400 MW in 2019, while Tunisia less than 300 MW. All other countries had cumulative power capacity in 2019 in the range of 10-30 MW. In total, cumulative wind power capacity in the southern and eastern Mediterranean region is more than 11 GW, almost 6 times less than in the northern Mediterranean, and highly concentrated in Turkey. It is worth recalling that Turkey has established a target for wind of 20 GW by 2023. With current growth rates, the country is progressing well towards meeting the target.

On the other hand, other countries have proposed the following targets for increasing wind energy production:

a) Egypt: The official governmental target is 20.6 GW to be reached by 2035. This means that the wind power capacity in the country should scale up by 10 times the current levels in the next 15 years, with average annual additions of more than 1 GW/year. Such an ambitious plan can be reached only if the process is streamlined, project financing is secured and grid development and reinforcement is conducted to enable higher shares of renewables without impact.

b) Jordan: The country has set a target for wind of 800 MW by 2025. With an estimated capacity of 500 MW in 2020, Jordan is not far from reaching the objective.

c) Lebanon: A drastic market change is occurring in Lebanon, where in early 2018, three local companies signed power purchase agreements (PPAs) with Lebanon's Ministry of Energy and Water for the new three wind power plants worth 226 MW in Jabal Akroum in North Lebanon to be operational by 2020 (against 3 MW at the end of 2019). In addition, Lebanon launched a second-round wind Expressions of Interest (EoI) in January 2019. It seeks proposals for the construction of four wind farms, each between 50 and 100 MW capacity, with a total capacity of 200 MW-400 MW. Companies from 21 countries have taken part in Lebanon's EoI for this action.

d) Morocco: At the level of the 850 MW Integrated Wind Project (IWP) in Morocco, the 210 MW Midelt wind farm in the Tangier region was one of the first to be implemented and is operational since the end of 2020. Similarly, the Taza wind farm (150 MW), in the Fez-Meknes region, is also under development and the commissioning of the first 87 MW sector was expected by the end of 2021. Additional 800 MW should come in the next few years. Overall, while failing to meet the 2020 target of 2 GW, the country is expected to comply with the 2030 target of 5 GW if current technical barriers are promptly lifted.

e) Tunisia: For the country to fulfil the 2030 objective of 1755 MW from wind, the same rate of addition (about 100-150 MW/year) should be maintained during the next 10 years, where 80 MW and 220 MW projects are already on the pipe for 2024/2026 on the supervision of public work. A project is under development of repowering an existing power plant of 54 MW dating from 2000 to around 90 MW by 2026.

f) Algeria: Algeria has revised its targets for wind downwards, with an indicative capacity of 1 GW to be reached by 2030. For the time being, the only wind farm in the country is the 10 MW one in Adrar, Kabertene region, which has been operational since 2014. If the 2030 target is to be met, auctions should be launched soon for the sites already identified, where wind measurements have been already performed.

3.3 Solar Photovoltaic (PV)

As shown in the graph, in 2019 the total cumulative PV capacity in the Mediterranean region reached 56 GW.

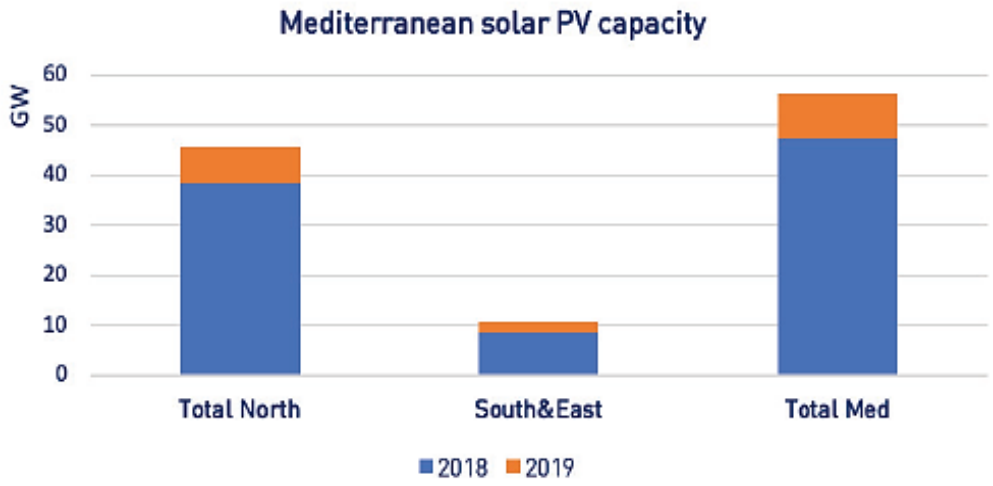

Figure 7. Mediterranean solar PV power capacity evolution (2018 – 2019). Source: Observatoire Méditerranéen de L'Energie.

Analysing the evolution of renewable energy sources, solar photovoltaic energy has experienced the most relevant progression of renewable energies. This progress is in the south-eastern Mediterranean. However, 80%of the capacity is concentrated in the northern Mediterranean countries, especially in France, Spain and Italy, which account for more than 70%of the total capacity.

Italy is the largest PV market across the Mediterranean, with over 20 GW installed at the end of 2019 and more than 21 GW at the end of March 2020.

France and Spain have both a market size of around 10 GW. However, the French plans are more ambitious than the Spanish ones, with an objective of 44.5 GW to be reached by 2030 according to the French NECP, against approximately 37 GW included in the Spanish plan.

On the other hand, in the southern and eastern Mediterranean, more than half of the 11 GW of capacity is concentrated in Turkey, and Egypt, Israel and Jordan.

The fourth largest solar PV market in the Mediterranean is Turkey, with a total capacity of almost 6 GW by the end of 2019. Other southern and eastern Mediterranean countries currently showing good progress are Morocco, Tunisia and Algeria:

Below is some data from the increase PV power capacity on the countries of the South-East:

a) Algeria: In May 2020, the Ministry of Energy announced the launching of an ambitious solar project worth 4 GW to the horizon 2024, called Tafouk1, with an estimated investment of USD 3.6 bn. This should accelerate the energy transition in the country and help reach the target of 18 GW from renewable energy technologies by 2030.
b) Morocco: The kingdom has embarked on a series of tenders which would allow solar PV capacity to grow very fast. In a few years Morocco could join the group of the 1 GW market size Mediterranean countries, thus giving a good impulse towards meeting the 2030 target.
c) Tunisia: Is also set to rapidly expand its market towards the 1 GW market size in a few years' time. In fact, the various auctions to be held under the authorisation and concession scheme sum up to more than 1 GW. The country has fixed a target of over 2 GW for solar PV by 2030 under public and private investments.

In the Balkan countries the total size of the market is relatively small (60 MW) but is expected to increase rapidly in the coming years, with more than 0.5 GW currently under development.

3.4 Concentrated Solar Power (CSP)

As detailed in the graph below, compared to wind and solar PV the cumulative installed capacity of CSP technologies is still limited in the Mediterranean region, at just over 3 GW in 2019. However, this represents approximately half of the total global CSP capacity.

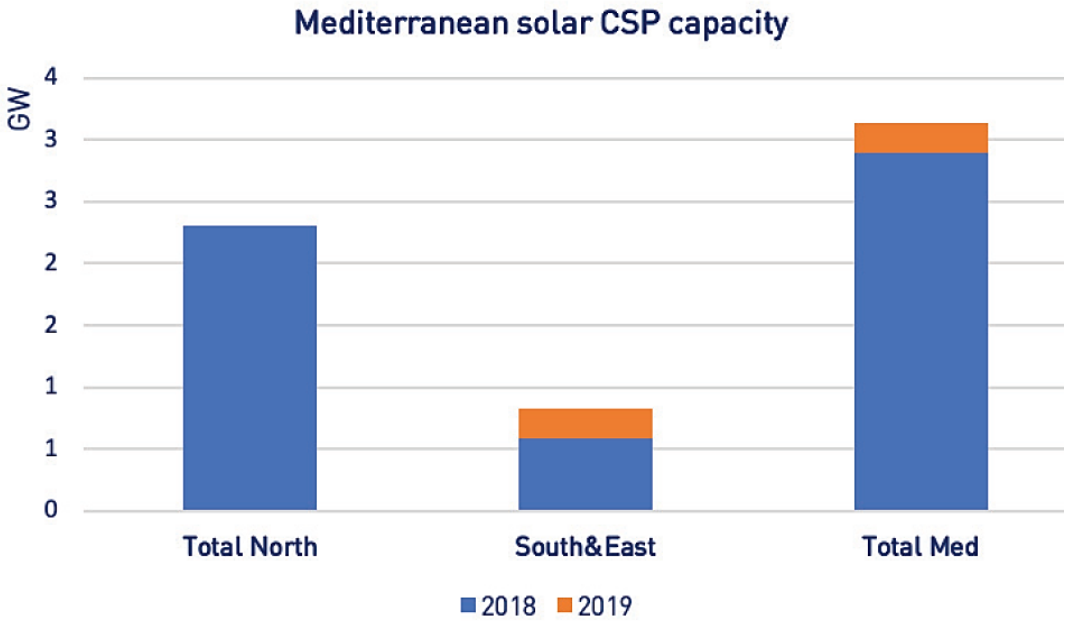

Figure 8. Mediterranean solar CSP power capacity (2018-2019). Source: Observatoire Méditerranéen de L'Energie.

It is important to note that, thanks to excellent direct normal irradiation (DNI) conditions and space availability, this technology is most competitive on the southern shore of the Mediterranean.

In this context, Morocco is by far the leading market for CSP technologies in the southern and eastern Mediterranean, followed by Israel. After commissioning the Integrated Solar Combined Cycle (ISCC) power plant at Ain Beni Mathar in 2010, Morocco inaugurated its first CSP plant in Ouarzazate in 2016. Since then it has been continuing to promote this technology with the second and third Ouarzazate solar projects entering operation in 2018 and the first phase of the Noor Midelt expected to be commissioned by 2022. Overall, Morocco should double current installed capacity by 2030.

On the other hand, Egypt was another pioneer in promoting CSP, and is moving ahead with the implementation of its renewable energy plan which aims to reach 700 MW of CSP by 2027. The Integrated Solar Combined Cycle (ISCC) power plant in Kuraymat including a solar component of 20 MW entered in operation in 2011. The country is now moving ahead in the implementation of its renewable energy plan, which aims at reaching 700 MW of CSP by 2027. An agreement between EETC and IFC as a consultant to conduct the auction mechanism for 200 MW PV has been signed to develop a first solar complex in the West Nile province. Overall, according to the upcoming projects and announced programmes, Egypt should not be far from reaching 1 GW solar CSP capacity by 2030, thus becoming a regional market leader together with Morocco and Israel.

Like Egypt, Algeria has set an ambitious target of reaching 22 GW of renewable energy by 2030, of which 2 GW comes from large-scale CSP projects.

Although on a much smaller scale compared to Morocco, Israel and Egypt, CSP market development is also expected by 2030 in Jordan, Lebanon, Tunisia and Turkey. For instance, the

development of the first Concentrated Solar Power (CSP) Plant in Lebanon will be in the Hermel region. The project will have a capacity of at least 50 MW with 7.5 hours of storage. The availability of more cost-effective technologies and the possibility of project financing will be key to ensure a wider diffusion of solar thermal power in the southern and eastern Mediterranean region.

In the northern Mediterranean solar CSP capacity in 2019 was 2.3 GW, most of it in Spain. The country aims to maintain its leadership with a target of doubling installed capacity by 2025 and tripling it by 2030, as set out in the NECP.

Italy also has the ambition to develop 250 MW by 2025 and 880 MW by 2030, according to the national solar thermal plan. However, the actual implementation of the projects is encountering several problems due to administrative and financial barriers.

On the other hand, Greece's National Solar Energy Plan includes a 70 MW project, which will bring the total cumulative solar thermal power capacity to more than 8 GW by 2030 in the northern Mediterranean.

3.5 Hydropower

Hydropower is the most important and exploited renewable energy technology in the Mediterranean contributing on average 1%of primary energy and around 13-15%of electricity generation each year.

As shown in the graph below, the total installed capacity in 2019 amounted to more than 116 GW and is comparable to the sum of wind and solar PV capacity.

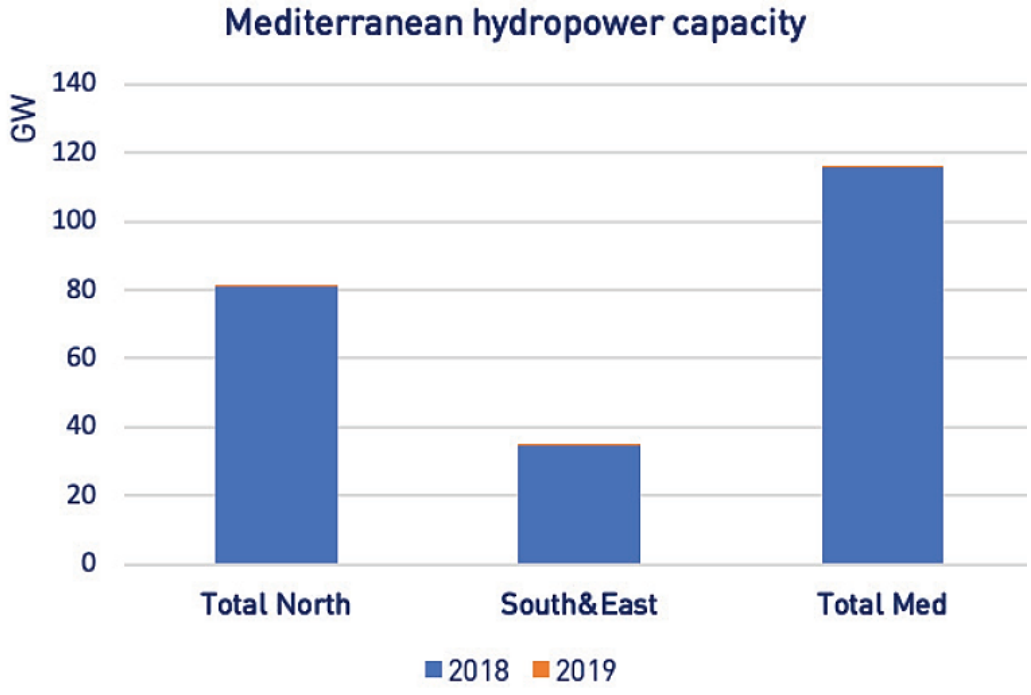

Figure 9. Mediterranean hydropower capacity evolution (2018-2019). Source: Observatoire Méditerranéen de L'Energie.

In terms of evolution or progression, hydropower only experienced 1%growth compared to 2018 (corresponding to the increase in capacity in Italy and Turkey).

Globally, Mediterranean hydropower capacity represents 9%of total capacity worldwide. In geographical terms, 70%of this capacity is in the northern EU Mediterranean countries, with almost 74 GW in 2019. In contrast, total capacity in the southern and eastern Mediterranean in 2019 was around 35 GW.

Hydropower capacity in the European area is concentrated in only five countries: France, Italy, Spain, Portugal and Greece. However, the largest market for hydropower technology is Turkey, with more than 28 GW of cumulative installed capacity at the end of 2019, and ambitious plans to further expand this capacity. The country has an objective to reach 34 GW by 2023. Although this objective is hard to meet in three years' time, Turkey will, nonetheless, maintain its leadership as the largest hydropower market in the Mediterranean region to the horizon 2030.

The second largest market leader is France, whose cumulative capacity at the end of 2019 was more than 24 GW. Other countries with cumulative hydropower capacity above 10 GW are Italy and Spain, with almost 19 GW and almost 17 GW, respectively, at the end of 2019.

In the 2020-2030 period, a capacity increase of less than 15%is expected in the region, with France, Portugal and Morocco being the main players. The latter plans to increase its hydropower capacity by almost 1.5 GW in the next ten years.

Morocco envisages to increase its hydropower capacity by almost 1.5 GW over the next ten years. Whilst the accomplishment of such a target looks quite ambitious, more than 200 sites have been identified, which would be suitable for micro-hydropower plants, according to ONEE.

Apart from Morocco, in the southern and eastern Mediterranean region hydropower is not expected to increase much, due to lower resource availability. Comparatively speaking, the highest ambitions are displayed by Tunisia and Lebanon. The former intends to expand hydro capacities by 400 MW to 600 MW in 2028 through a pumped storage hydropower plant. Additionally, ongoing studies are assessing the potential for refurbishment of existing plants of 65 MW size using hybrid solutions combined with floating solar PV. Lebanon has the aim to reach 600 MW of installed capacity by 2030, with a net increase of more than 300 MW.

The Balkan region is also being considered with increased attention by international hydropower investors. The energy mix of most Balkan countries already relies heavily on hydropower, but the development potential is still very high, thanks to the abundance of resources.

Another remarkable fact is that 436 hydropower plants are planned to be built in Albania by 2025.

Considering the targets set by national governments for 2030, hydropower should increase by 23%in the southern and eastern Mediterranean compared to 6%in the North.

3.6 Geothermal

Among the renewable energy technologies investigated for power generation, geothermal is the least developed in the Mediterranean region.

Its cumulative installed capacity was 2.4 GW in 2019, up 9%compared to 2018 (see graph below). However, it accounts for 17%of total geothermal capacity worldwide, a comparatively higher share than other renewable energy technologies such as wind and solar PV.

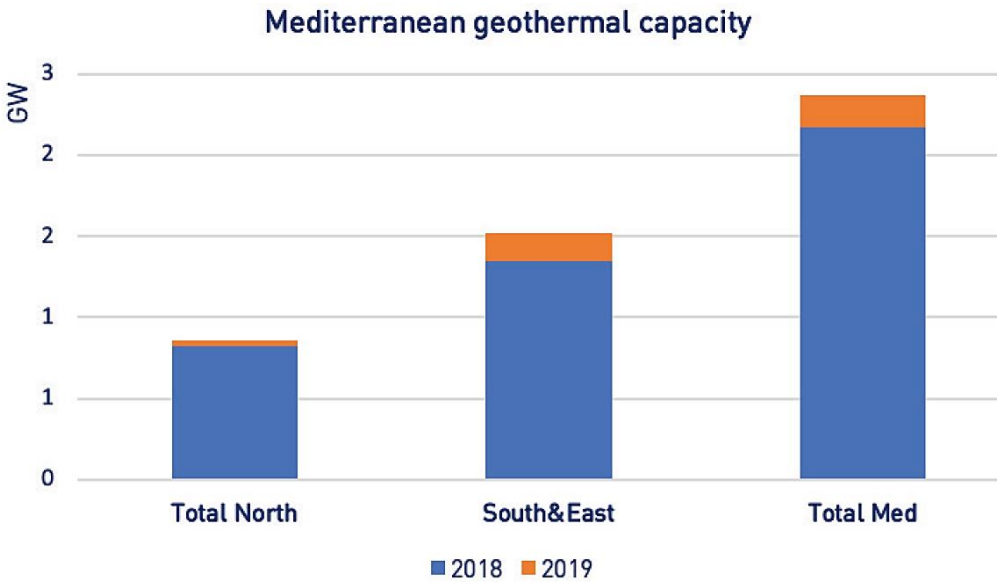

Figure 10. Mediterranean geothermal power capacity evolution (2018-2019). Source: Observatoire Méditerranéen de L'Energie.

The leading role in the development of geothermal energy is played by Italy (with one third of the total capacity in the Mediterranean) and Turkey (with 64%). The rest is made up of very small capacities in Croatia, France and Portugal. No other Mediterranean country, neither in the North nor in the South and East, has installed geothermal energy capacity to date.

This technology has been exploited rather for direct energy uses (heating buildings or water) for example in the Balkans and in some southern Mediterranean countries.

While geothermal development has been rather stable in Italy, Turkey has witnessed a real technological boom, which has made the country a major player in the Mediterranean region.

Moreover, in terms of future development, Turkey's ambitions seem to be much higher than Italy's. Turkey aims to reach a cumulative geothermal capacity of 4 GW by 2030, more than 2.5 times the current levels. It is worth highlighting that the 2023 objective for geothermal technology was 1 GW and has been reached ahead of schedule. However, the Mediterranean EU country has been a major player in this field for many years. The EU Mediterranean country aims to reach a capacity of 950 MW by 2030, according to the Italian NECP.

While development is unclear in the non-EU northern Mediterranean countries, some southern and eastern Mediterranean countries have published targets for geothermal technology. Both Algeria and Lebanon should add 15 MW by 2030.

Overall, cumulative geothermal capacity in the Mediterranean should more than double between 2019 and 2030 to reach more than 5 GW, especially due to the above-mentioned in Turkey.

3.7 Useful Platforms Working on Renewable Energies

In this section, a few platforms working in the Mediterranean area are described to capitalise and maximise the efforts of different stakeholders, as well as to promote CDD among different stakeholders:

Table 5. Useful platforms working on renewable energies in the Mediterranean Region. Source: Own Source.

Platform	Description
World Energy Council	The World Energy Council, founded in 1923, is the world's leading multi-energy organisation, its mission being "To promote the sustainable provision and use of energy for the greatest benefit of all". The World Energy Council is the leading impartial network of leaders and practitioners promoting an affordable, stable and environmentally sensitive energy system for the greatest benefit of all. It is the UN-accredited global energy body representing the entire energy spectrum, with over 3000 member organisations located in more than 90 countries and drawn from governments, private and state-owned corporations, academia, NGOs and energy-related stakeholders. The World Energy Council informs global, regional and national energy strategies by organising high-level events, publishing authoritative studies and working through its wide network of members to facilitate global energy policy dialogue. https://www.worldenergy.org/
RE-Source	The RE-Source Platform is Europe's leading forum for corporate renewable energy sourcing. Through its wide-ranging and innovative Buyers Toolkit and popular annual event for energy buyers and sellers, RE-Source seeks to remove barriers for corporations to renewable energy procurement in support of Europe's climate and energy goals. *https://resource-platform.eu/*
International Renewable Energy Agency (IRENA)	The International Renewable Energy Agency (IRENA) is an intergovernmental organisation that supports countries in their transition to a sustainable energy future, and serves as the principal platform for international cooperation, a centre of excellence, and a repository of policy, technology, resource, and financial knowledge on renewable energy https://www.irena.org/aboutirena
European Technology & Innovation Platform on Wind Energy (ETIPWind)	ETIPWind provides a public platform to wind energy stakeholders to identify common Research & Innovation (R&I) priorities and to foster breakthrough innovations in the sector. Its recommendations highlight the pivotal role of wind energy in the clean energy transition. They inform policymakers on how to maintain Europe's global leadership in wind energy technology so that wind delivers on the EU's Climate and Energy objectives. As such, the platform is key in supporting the implementation of the Integrated SET-Plan. https://etipwind.eu/

4 Key challenges.

The analysis of the current progress towards the decarbonisation of the Mediterranean region highlights a series of challenges and key aspects to achieve the objectives for 2050.

In this respect, to work in the right direction and with the right intensity, countries must implement measures and strategies to maximise trade exchanges and build alliances to cooperate between the different sides of the Mediterranean.

This section provides an overview of the current scenario compared to the different scenarios of the Mediterranean Energy Perspectives (MEP) to 2050 to define the main opportunities and actors in the decarbonisation process.

4.1 Scenario Analysis. MEP to 2050

To determine the main challenges in the green transition of the Mediterranean area, the current scenario has been analysed in terms of the Reference Scenario and the ProMed Scenario defined by the MEP to 2050, compared with the situation in the year 2018.

For this purpose, the following graph provided by Dr. Emanuela MENICHETTI in the presentation made by the Mediterranean Experts from the "Sector Alliance Committee" (SAC) during the EBSOMED meeting in the framework of the MedaWeek 2021 in Barcelona has been used.

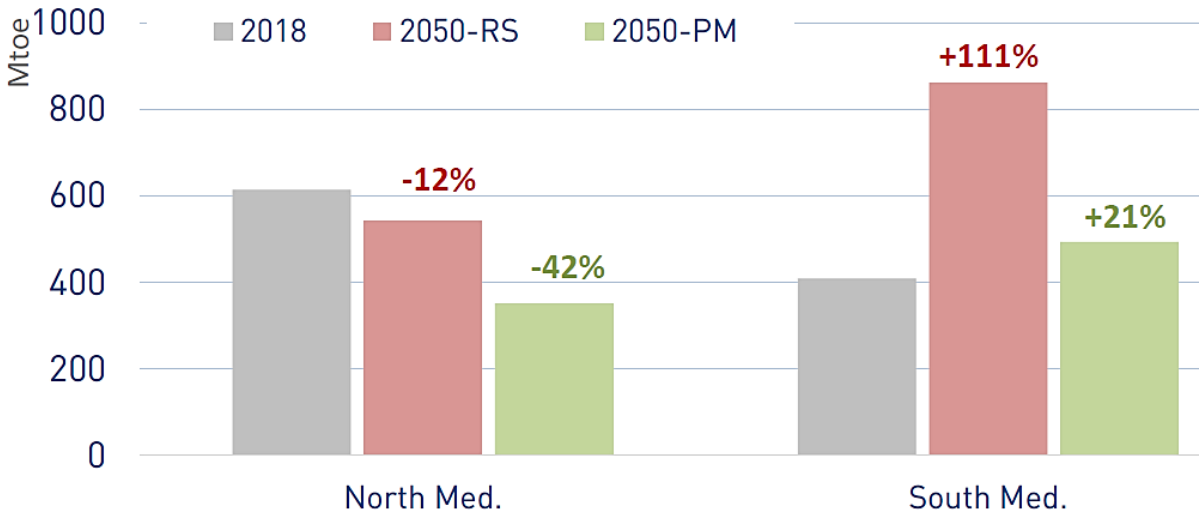

Figure 11. Mtoe analysis in the Mediterranean Region (2018, 2050 RS & PM Scenarios). Source: EBSOMED Sector Alliance Committee. Dr. Emanuela MENICHETTI (OME).

Analysing the graph above, to achieve a just green transition in the Mediterranean area, the southern region must make a great effort to increase the amount of energy produced (Mtoe[3]). In this respect, for a fair green transition, energy generation should be increased by 111%under the reference scenario (RS) and by 21%under the ProMed scenario (PM).

[3] Mtoe is an acronym that stands for million or mega tonnes of oil equivalent. The unit quantifies the amount of energy released when burning one mega tonne of crude oil.

On the other hand, energy demand and emission trends differ drastically in the two scenarios, with less than one third of fossil fuels in the energy mix (343 Mtoe) and 740 MtCO2 by 2050 in ProMed.

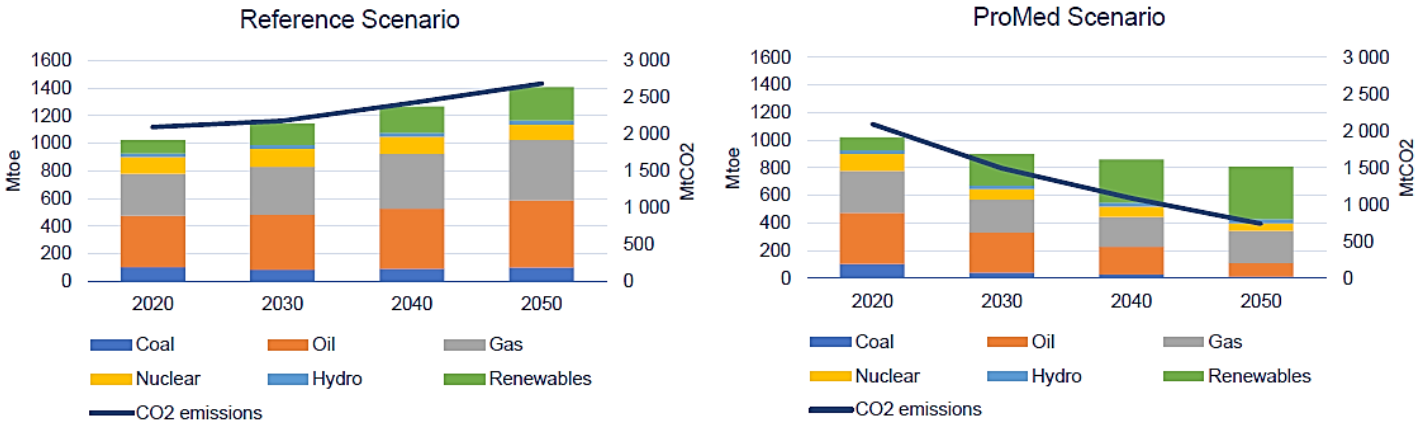

Figure 12. Mtoe vs MCO2. Reference Scenario (RS) and ProMED Scenario (PM). Source: EBSOMED Sector Alliance Committee. Dr. Emanuela MENICHETTI (OME).

Therefore, the effects of EU strategies at Euro-Mediterranean level (e.g. hydrogen strategy, carbon neutrality) should be duly analysed in order to assess within what horizon carbon neutrality in the Mediterranean can be achieved with current policies and how to accelerate it further.

The following chart details The Renewable Energy Target (RET) scheme that encourages the additional generation of electricity from renewable sources to reduce greenhouse gas emissions in the electricity sector.

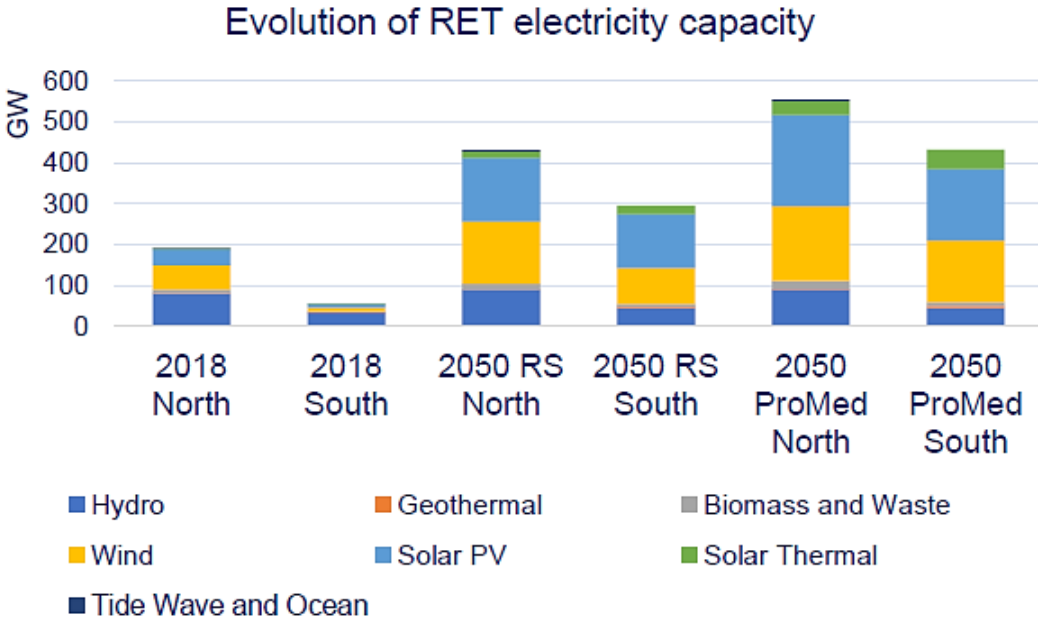

Figure 13. Evolution of RET electricity capacity. Source: EBSOMED Sector Alliance Committee. Dr. Emanuela MENICHETTI (OME).

Analysing the CO2 emissions in the current situation against the MEPs to 2050, the following graph is obtained for the north and south side of the Mediterranean:

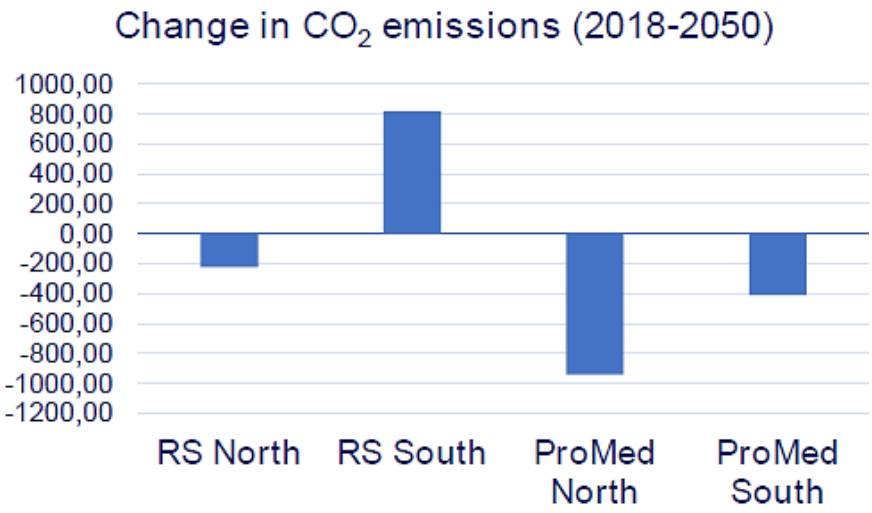

Figure 14. Change in CO2 emissions (2018 – 2050). Source: EBSOMED Sector Alliance Committee. Dr. Emanuela MENICHETTI (OME).

This graph shows how emissions should be drastically reduced on the north side in the ProMed Scenario (PM), as well as slightly on the north side (RS) and on the south side (PM). Finally, also in relation to the previous graph, according to the reference scenario (RS) emissions should be increased by 800 MCO2 on the south side.

While in the Northern Mediterranean region there is a decrease in fossil fuel consumption, as shown in Figure 5 in the Southern region there is an increase in fossil fuel consumption. This perfectly explains why in the RS an increase of 800MCO2 is forecast for the southern zone, which, if this trend continues, will make it difficult to decarbonise the region by 2050.

4.2 Present Opportunities and Actors in the Investment Scenario of the Decarbonisation

Following the results obtained from the surveys carried out within the framework of the project, the opportunities and actors present in the scenario of decarbonisation in the Mediterranean area have been defined.

In this respect, the following graph shows the main obstacles and challenges identified by the 16 Chambers of Commerce that participated in the survey:

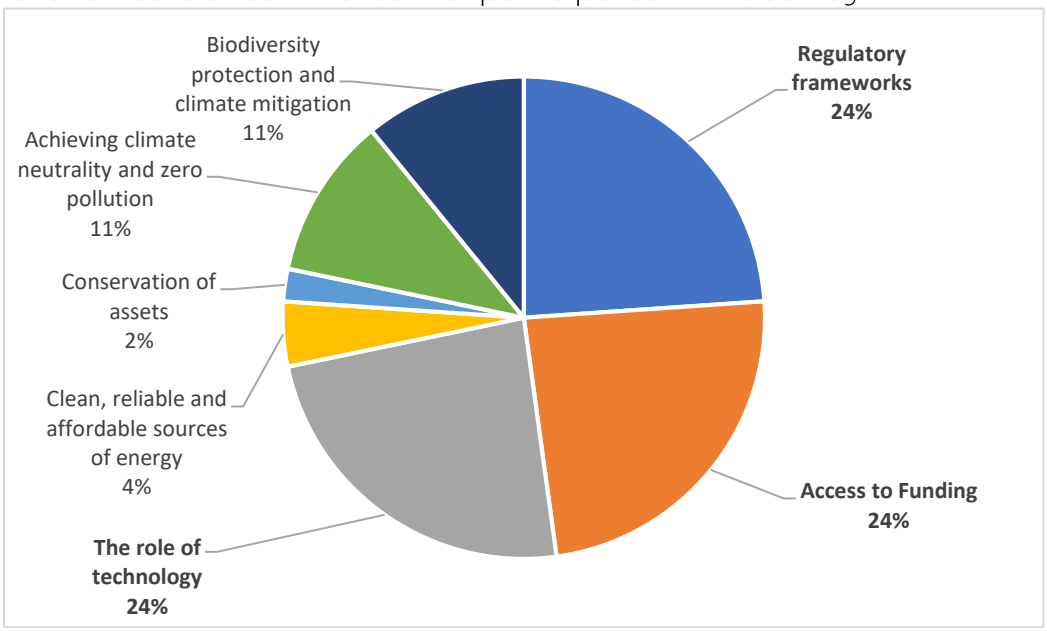

Figure 15. Main obstacles and challenges for the decarbonisation of the Mediterranean Region. Source: Own Source.

On the other hand, based on the results of the survey, the main drivers of decarbonisation in the Mediterranean area have also been identified:

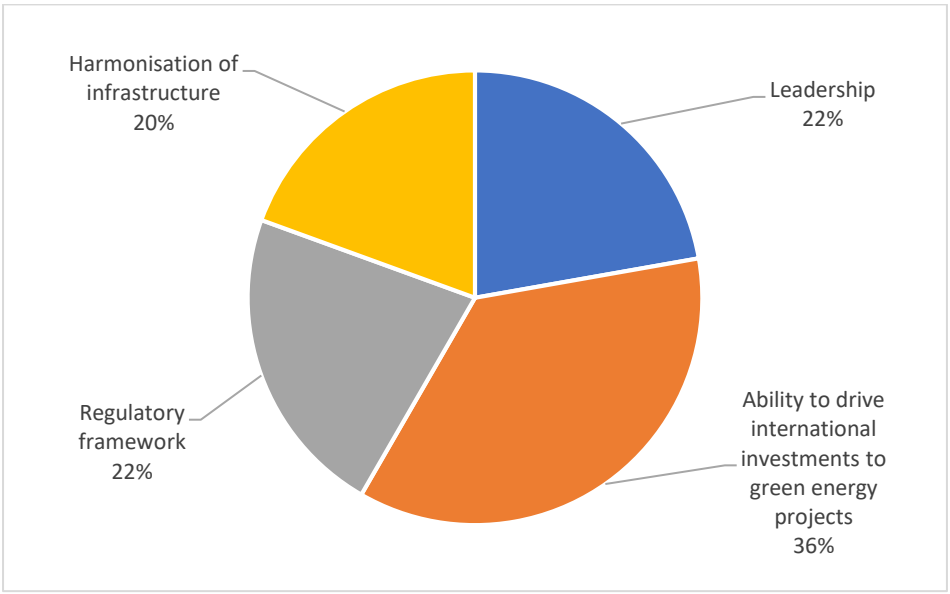

Figure 16. Main drivers of decarbonisation in the Mediterranean area. Source. Own Source.

Having defined the challenges and drivers in the decarbonisation process, the following points set out the financing opportunities and current technologies and trends to achieve the targets set for 2050.

4.3 Trends and Opportunities to Export Green Energy

Green energies place export operations in a new paradigm. In this context, green hydrogen is set to play a leading role in the energy transition. Currently, green hydrogen accounts for less than 1%of total hydrogen production. However, the global demand for green hydrogen and its applications are expected to increase exponentially over the next 20 years, so this renewable energy source will play an important role in the energy transition. The utilities of green hydrogen include its use as a fuel, as well as its industrial and domestic use.

4.3.1 Green Hydrogen

This technology is based on the generation of hydrogen — a universal, light and highly reactive fuel — through a chemical process known as electrolysis. This method uses an electrical current to separate the hydrogen from the oxygen in water. If this electricity is obtained from renewable sources we will, therefore, produce energy without emitting carbon dioxide into the atmosphere.

This method of obtaining green hydrogen would save the 830 million tonnes of CO2 that are emitted annually when this gas is produced using fossil fuels. Likewise, replacing all grey hydrogen in the world would require 3,000 TWh/year from new renewables - equivalent to the current demand of Europe. However, there are some questions about the viability of green hydrogen because of its high production cost; reasonable doubts that will disappear as the decarbonisation of the earth progresses and, consequently, the generation of renewable energy becomes cheaper.

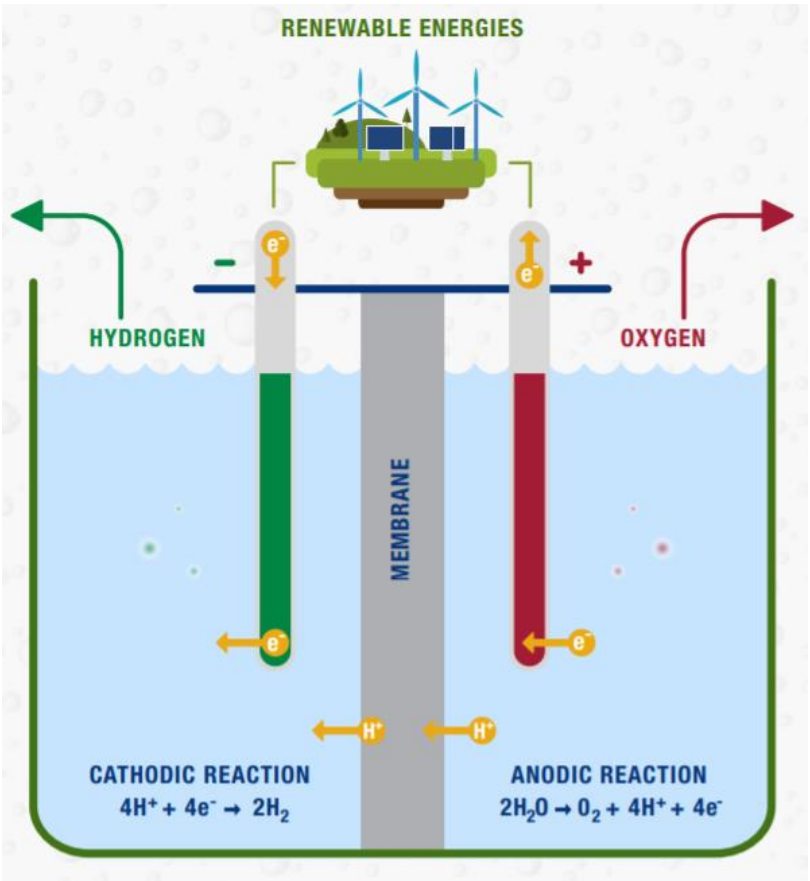

Figure 17. Green hydrogen production. Source: U.S. Department of Energy and Wood Mackenzie.

This energy source has pros and cons that we must be aware of. Below some of its most important advantages:

- 100 %sustainable: green hydrogen does not emit polluting gases either during combustion or during production.
- Storable: hydrogen is easy to store, which allows it to be used subsequently for other purposes and at times other than immediately after its production.
- Versatile: green hydrogen can be transformed into electricity or synthetic gas and used for domestic, commercial, industrial or mobility purposes.
- Transportable: it can be mixed with natural gas at ratios of up to 20 %and travel through the same gas pipes and infrastructure - increasing this percentage would require changing different elements in the existing gas networks to make them compatible.

However, green hydrogen also has negative aspects that should be borne in mind:

- High cost: energy from renewable sources, which are key to generating green hydrogen through electrolysis, is more expensive to generate, which in turn makes hydrogen more expensive to obtain.
- High energy consumption: the production of hydrogen in general and green hydrogen requires more energy than other fuels.
- Safety issues: hydrogen is a highly volatile and flammable element and extensive safety measures are therefore required to prevent leakage and explosions.

It is not surprising, therefore, that green hydrogen is arousing great interest among governments, companies, investors and consumers. This momentum needs to be matched by institutional support and considerable infrastructure development to handle hydrogen production, transport and use.

4.3.2 Overview of Green Energy Production and Export Opportunities

Although green hydrogen represents one of the main opportunities for the export of green energy, the potential of each country in the Mediterranean area must be considered to identify the export of other types of energy as a tool for the decarbonisation of the region. To this regard, in this section the situation of each country in the Mediterranean region in terms of green energy production is presented to identify export opportunities.

To quantify the potential of each country, a score has been established based on the current situation in terms of production, export and import of renewable energies.

Table 6. Overview of green energy production and export opportunities in the North Mediterranean Region countries. Source: International Energy Agency (IEA). Rating: Own source.

North Med opportunities to produce and export green energy		
Country	Situation	Rating (1-10)[4]

[4] This ratio has been established by the Barcelona Chamber of Commerce, taking into account the green energy generation and export possibilities of the countries analysed and the data shown in the graphs provided by the OME.

Albania	The total installed generation capacity has increased over the last few years because of new private investments in hydro power plants and more recently in small solar farms. In 2020, total installed capacity increased by 231 MW, for a total of 2,506 MW, of which 1,448 MW are state owned (1,350 MW hydro and 98 MW thermal), with the remainder private. During 2018-2020 several investments in small solar farms were finalised, increasing solar generation capacity to 21 MW. The government has granted preliminary approval for several wind farms.	3
Bosnia and Herzegovina	Electric power generation is a key sector of economic activity in Bosnia and Herzegovina. Electric power is primarily generated in thermal and hydro power plants, and the country is a net exporter of electrical energy. Bosnia and Herzegovina has significant renewable energy potential, particularly in hydropower and wind power capacity. Hydropower provided 44 percent of the country's total electricity production in 2019 and there is room for additional growth. Recently, solar and wind power plants have emerged but remain a small percentage of the overall energy mix at less than 2 percent. Bosnia and Herzegovina is in the process of developing a National Energy Climate Plan (NECP) in line with EU regulations to address energy efficiency, renewables, greenhouse gas emissions reductions, interconnections, and research and innovation. An approved NECP with a clearly laid out decarbonisation strategy is reportedly necessary for Bosnia and Herzegovina to have further access to EU financing in the energy sector.	7
Bulgaria	Solar power plants accounted for 1.1 GW at the end of 2020 while wind farms had 700 MW in total. The installed capacity for renewables is about 1.8 MW, which is about 20%of all installed capacity for electricity production in the country. Over the next four years, wind farms of 700 MW, solar parks of 1.6 GW and 219 MW in biomass capacity will be installed and thus Bulgaria will increase the installed capacity of renewables from 1.8 GW to 4.3 GW by 2024. According to Bulgaria's National Energy and Climate Plan (NECP), the country plans to increase the share of renewables in gross final consumption of energy from 21.4%in 2020 to 27.9%in 2030.	4
Croatia	Croatia has excellent potential for the development of renewable energy resources. Currently, the country covers 28,02%of the gross final energy consumption by renewable energy. Hydropower is the dominant renewable source at this moment; significant funds have been invested in the production of electrical energy from wind power, and solar power has the most significant potential for growth in the upcoming years. Incentives for further development of renewable energy resources are abundant. Croatia still imports about half of its energy consumption, and it could save significant funds by increasing the production of renewable energy. The estimated technical potential of solar power plants in Croatia is 5,303 MW, with an estimated production of 6,364 GWh of electrical energy annually. Croatian regions Istria and Dalmatia have 30%and 40%more insolation compared to the German city Munich, creating 30 to 40%earlier return on investment. Additionally, the EU Green Deal will further support and partially fund the development of renewables in Croatia.	8
France	Renewable energies have been growing steadily in the last few years in France to reach 11.7%of primary energy consumption and 25.3%of gross final energy consumption in 2019. In absolute levels among the EU Member States, France is the largest producer of hydroelectricity and the second largest of biofuels.	8

	€2 billion is the amount that the French government will invest on hydrogen until 2022 as part of France's recovery plan.	
Greece	Greece has been seeking greater energy independence and is seeking to become an energy exporter for the Balkan area. According to Eurostat data, Greece exceeded its 2020 EU set target for electricity produced by renewable energy sources in 2019. As reported by the Greek Ministry of energy, Greece's current electricity production from renewable energy sources (RES) amounts to 10.38 GW. The country will need another 9 GW by 2030 to achieve the goal of 35% share in final consumption and 60%in electricity from renewable energy sources.	9
Italy	Italy ranks third in Europe for both renewable power consumption and electrical and thermal power production from renewable resources. In 2020, total installed power from renewables amounted to 56GW. This included 21.5 GW of solar power, 19 GW of hydroelectric, 10.8 GW of wind, 4.1 GW of bioenergy, and 0.8 GW of geothermal. In 2020, power generated from renewables in Italy amounted to 119.4 TWh, with an increase in power generated from photovoltaics (+8.2%) and hydroelectric plants (+5%), and a decrease from wind (-4.43%). Italy added 785 MW of renewable capacity in 2020 including 625 MW of solar photovoltaics, 85 MW of wind, 66 MW of hydro electrical, and 8 MW of bioenergy.	8
Montenegro	The majority of electricity in Montenegro is produced at the Pljevlja coal-fired Thermal Power Plant, and the Perucica and Piva Hydropower Plants. Montenegro has the potential to develop additional hydro power plants given its abundance of rivers and streams as well as solar and wind energy plants. Montenegro only uses approximately 20%of its hydro potential. To fully develop this sector, Montenegro will need to upgrade its transmission and distribution network.	2
Spain	Spain's investment in energy, climate, and transportation research and innovation will increase considerably in the coming years. Spain's 2050 objective for national climate neutrality calls for renewables to provide 100%of electricity and 97%of the total energy mix. The country's energy policies are centred on massive deployment of renewable energy, energy efficiency, electrification and renewable hydrogen. Renewable hydrogen will be key for Spain's decarbonisation plans and to increase renewable electricity and gases. The country's target is to install four gigawatts of hydrogen electrolysis capacity by 2030.	8
Turkey	Turkey, with an electric power generation capacity of approximately 98,000 MW, is Europe's sixth largest electricity market. Approximately 52%of Turkey's electric power generation capacity comes from renewable energy power plants, including hydroelectric, wind, solar, geothermal, and biomass power plants, making Turkey the 5th largest generator of renewable energy in Europe and the 12th largest in the world.	9
Serbia	In Serbia, the National Renewable Energy Action Plan set targets of renewable energy sources use until 2020, as well as the pathway to achieve them. Among other things, it enhances investments towards the development of renewables.	2

Table 7. Overview of green energy production and export opportunities in the South & East Mediterranean Region countries. Source: International Energy Agency (IEA)

South and east Med opportunities to produce and export green energy		
Country	Situation	Rating (1-10)
Algeria	Despite its significant renewable resources, renewable energy has played a small role in Algeria's energy mix. For decades, Algeria used its hydrocarbon resources to supply ever-growing domestic energy demand. Due to its need to export (rather than burn) dwindling hydrocarbons, the country must now reconsider the role of renewables. Experts predict that unless Algeria adds significant renewable resources to its power generation mix by 2035, it will need to forego hydrocarbon export revenues to supply domestic power demand. Because oil and gas exports generate 95%of the country's hard currency revenues, support up to 40%of national economic activity, and undergird a vast social welfare system, politicians are increasingly motivated to develop renewable resources.	1
Cyprus	Currently the island is powered almost exclusively by heavy fuel oil and limited renewable energy sources. The government is making efforts to import natural gas as part of its strategy to meet EU Green Deal goals and to avoid significant EU carbon emission penalties.	2
Egypt	Egypt possesses an abundance of land, sunny weather and high wind speeds making it a prime location for renewable energy projects. According to the Wind and Solar Atlas, the East and West Nile areas have the potential to produce around 31,150 MW of wind power and 52,300 MW of solar. Egypt intends to increase the supply of electricity generated from renewable sources to 20%by 2022 and 42%by 2035, with wind providing 14% hydro power 2% photovoltaic (PV) 22 percent, and concentrating solar power (CSP) 3 percent by 2035.	5
Jordan	Jordan is one of the leading countries in the Middle East and North Africa (MENA) region in renewable energy (RE) adoption and clean energy growth. Roughly 20%of the electricity grid is powered by solar or wind energy. By the end of 2030, 48.5%of the country's electricity generation would come from local energy sources (which currently stands at 15%) Jordan has long-term potential for additional renewable energy, enjoying an average of 316 sunny days per year, having wind speeds ranging between 7 and 8.5 m/s, and having large desert areas with a low population.	6
Lebanon	The government of Lebanon launched the "National Energy Efficiency and Renewable Energy Action" in 2010 a mechanism dedicated to the financing of green energy projects in the country. Private sector entities can apply for subsidised loans for any type of environmentally friendly projects.	2
Libya	In 2013, the Libyan government launched the Renewable Energy Strategic 2013-2025 Plan, which aims to achieve a 7%renewable energy contribution to the electric energy mix by 2020 and 10%by 2025. This will come from wind, Concentrated Solar Power, solar PV and solar heat.	3

Morocco	Morocco's energy sector depends heavily on imported hydrocarbons. Currently, the country imports approximately 90%of its energy needs. The Government of Morocco seeks to increase security of supply by reducing dependence on energy imports, including through the increase of renewable sources for electricity production. Due to its high renewable energy potential, in both solar and wind, and its geographical location between Europe and the rest of Africa Morocco plans to be a leader in the production of green fuels for domestic use and export through the production of green hydrogen.	5
Tunisia	Tunisia mostly relies on gas imports to meet its primary energy needs: almost 97%of its electricity generation came from gas in 2016. However, energy policy puts the emphasis on renewable energy. Electricity generation from wind power has strongly increased since 2014.	2
Syria	The 2009 Syrian Law on Energy Conservation aims to fulfil the sustainable development requirements of the country and deploy various renewable energy applications. Private and public institutions must commit to energy efficiency practises, use renewables and high energy- efficiency equipment.	2

4.3.3 Largest Green Energy Markets across the Mediterranean

The following charts prepared by the OME identify the main markets in terms of green energy for the Mediterranean

countries in 2019:

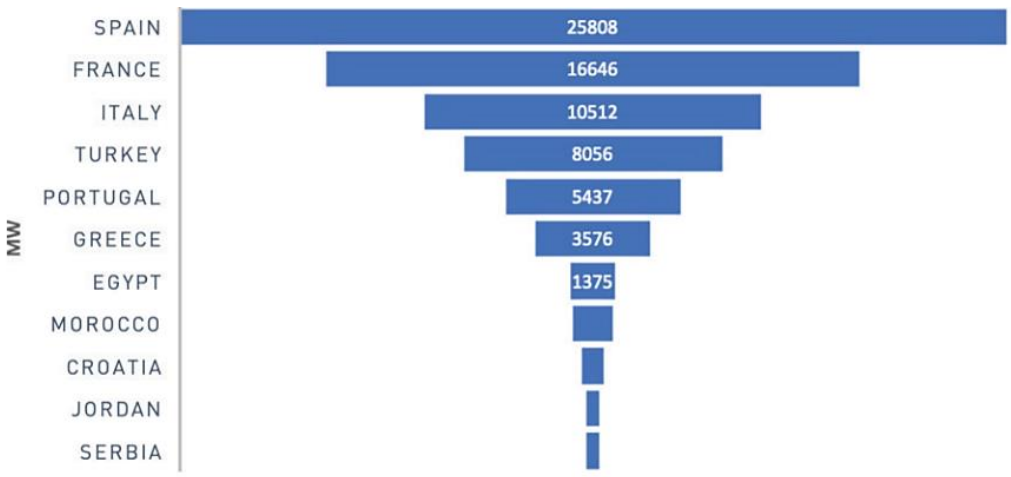

Figure 18. Ten largest wind Markets across the Mediterranean in 2019. Source: OME database, WindEurope, GWEC, IRENA and national data.

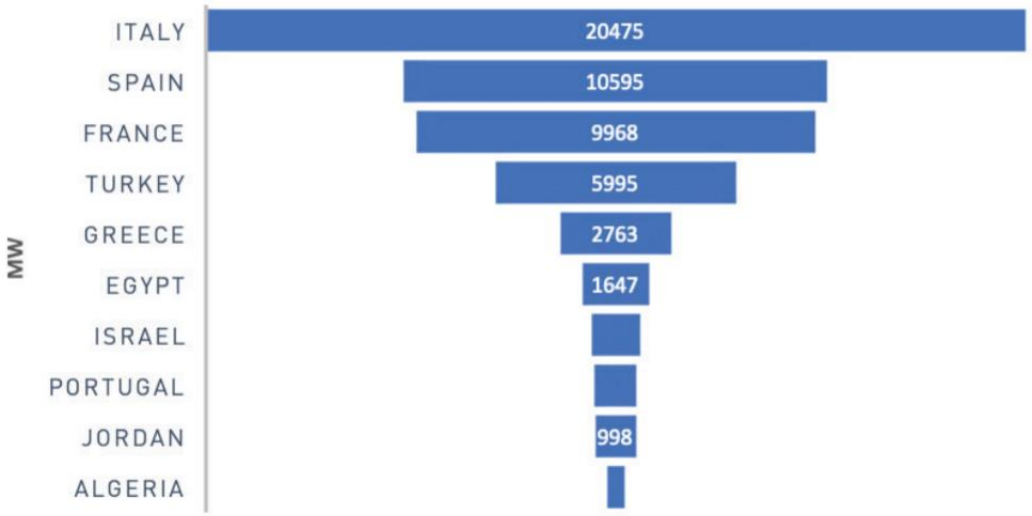

Figure 19. Ten largest Solar PV markets across the Mediterranean in 2019. Source: OME database, SolarPower Europe, MESIA, IRENA and national data.

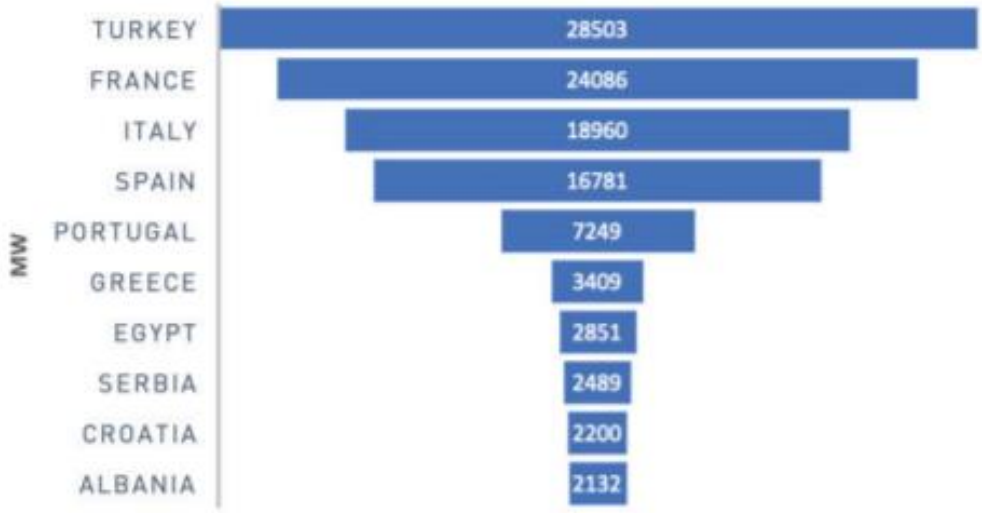

Figure 20. Ten largest hydropower markets across the Mediterranean in 2019. Source: OME database.

4.3.4 Potential to generate and export green energy

Based on the previous analysis, the following graph has been drawn up to show that the northern side (green) of the Mediterranean has a greater potential for the generation and export of green energy, while the south and east side (blue) needs to accelerate green energy generation policies.

This situation shows that there are real opportunities for exporting green energy to neighbouring countries, given that countries such as Greece, Italy, France, Spain, and Turkey have the means to do so. However, political barriers are present in all these countries, so establishing a common regulatory framework could accelerate and facilitate the green transition in these countries.

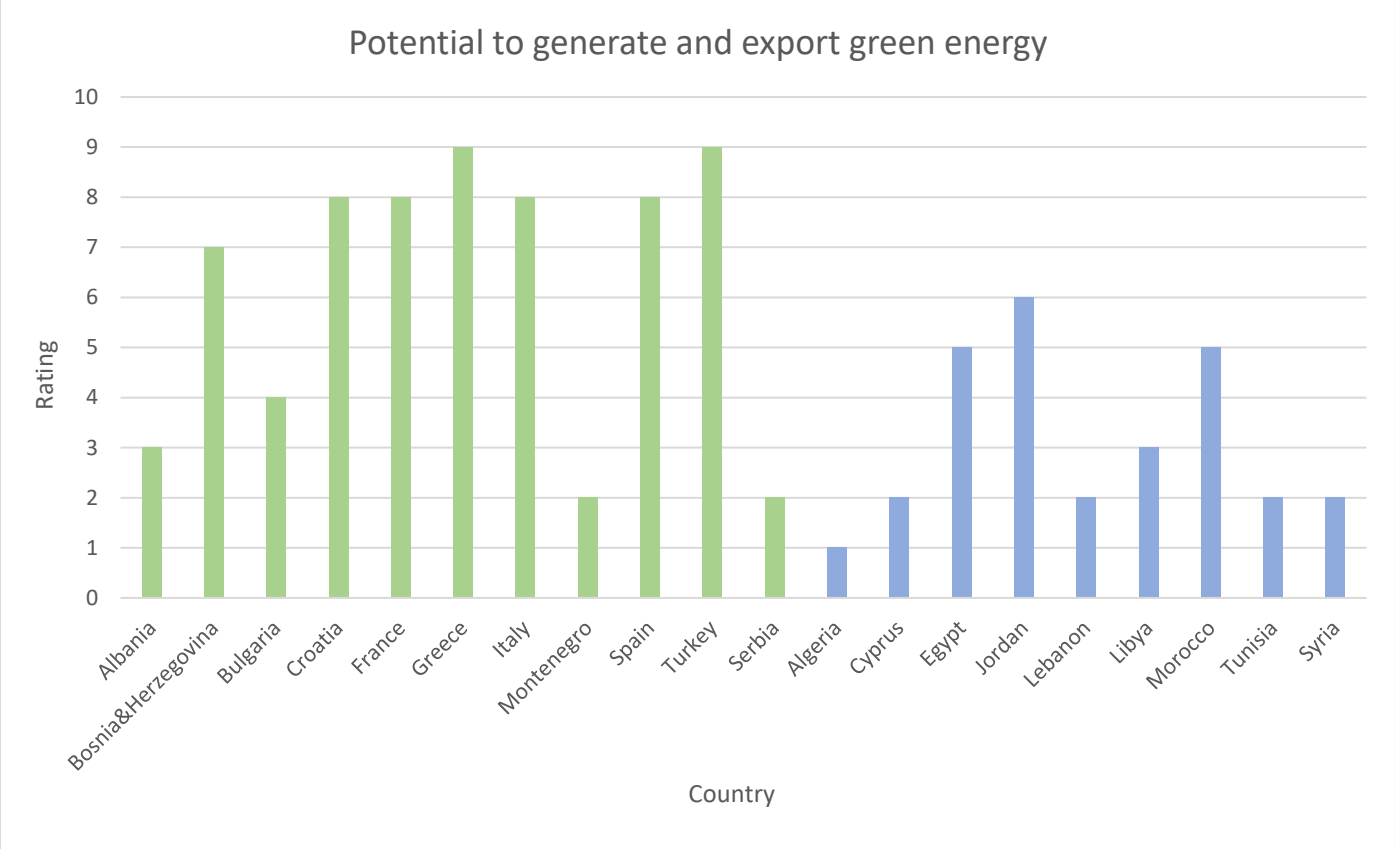

Figure 21. Potential to generate and export green energy (North vs South & East). Source: Own Source.

4.4 Funding Initiatives and Programs

This section presents the main initiatives at European level to finance new strategies and actions in the framework of the green transition (Table 8). On the other hand, the main programmes that allow companies to access public funding to carry out their projects are presented (Table 9).

Table 8. European Funding initiatives on green transition. Source: European Commission

Funding initiatives	Description	Economic Amount
The Recovery and Resilience Facility (RRF)	This plan ensures that at least 37%of the funding available under the RRF is dedicated to green and climate policies. Member States have allocated almost 40%of the spending in their recovery and resilience plans to green measures, exceeding this target. The RRF also provides additional funding for social investments to support reskilling and upskilling and promotes critical structural reforms to enable the green transition. https://ec.europa.eu/info/business-economy-euro/recovery-coronavirus/recovery-and-resilience-facility_en	€723.8 billion
The proposal for a Social Climate Fund	Arising from the revenues of a new emission trading system for buildings and road transport, would mobilise €72.2 billion to address the impacts of emissions trading in road transport and buildings on vulnerable households, micro-enterprises and transport users. The Social Climate Fund can finance temporary direct income support for vulnerable	€72 billion

	households and help citizens to finance investments in energy efficiency, new heating and cooling systems, and cleaner mobility. https://ec.europa.eu/clima/eu-action/european-green-deal/delivering-european-green-deal/social-climate-fund_en	
The Just Transition Mechanism	Including the Just Transition Fund, provides targeted support to alleviate the socio-economic impact of the green transition in the most affected regions. https://ec.europa.eu/info/strategy/priorities-2019-2024/european-green-deal/finance-and-green-deal/just-transition-mechanism_en	€55 billion
The European Social Fund Plus	Is the EU's main instrument for investing in people, including green skills development, green entrepreneurship, search assistance for green jobs, job creation in green sectors, social inclusion of people impacted by the transition, and occupational safety and health. https://ec.europa.eu/esf/main.jsp?catId=62&langId=en	€99 billion

Table 9. European Funding programs on green transition. Source: European Commission.

Funding Programmes	Description
LIFE Clean Energy Transition sub-programme	The LIFE Clean Energy Transition sub-programme has a budget of nearly EUR 1 billion over the period of 2021-2027 and aims at facilitating the transition towards an energy-efficient, renewable energy-based, climate-neutral and -resilient economy by funding coordination and support actions (Other Action Grants) across Europe.
InvestEU Fund	The InvestEU Fund is expected to mobilise more than €372 billion of public and private investment through an EU budget guarantee of €26.2 billion that backs the investment of financial partners such as the European Investment Bank (EIB) Group and others.
Interreg Europe	Interreg Europe will co-finance up to 85%of project activities that the entities carry out in partnership with other policy organisations based in different countries in Europe.

On the other hand, green bonds (from the European Investment Bank) enable capital-raising and investment for new and existing projects with environmental benefits. The Green Bond Principles (GBP) seek to support issuers in financing environmentally sound and sustainable projects that foster a net-zero emissions economy and protect the environment. GBP-aligned issuance should provide transparent green credentials alongside an investment opportunity. By recommending that issuers report on the use of Green Bond proceeds, the GBP promotes a step change in transparency that facilitates the tracking of funds to environmental projects, while simultaneously aiming to improve insight into their estimated impact.

Finally, it is important to note that the International Monetary Fund (IMF) assists countries hit by crises by providing them financial support to create breathing room as they implement adjustment policies to restore economic stability and growth. It also provides precautionary financing to help prevent and insure against crises. The IMF's lending toolkit is continuously refined to meet countries' changing needs.

4.5 Business Opportunities Between both North and South Shores of the Mediterranean. Cooperation on Regional Issues

For the development of this point, the analysis and the recommendations of Prof. Michael Scoullos (Chairperson, MIO-ECSDE) member of the Sector Alliance Committee (SAC) during the EBSOMED meeting in the framework of MedaWeek 2021 in Barcelona have been considered.

On the other hand, the aspects considered most relevant in the survey carried out by ASCAME to the different Chambers of Commerce in the Mediterranean area have also been considered, by way of highlighting the following points:

- Ability to drive international investments to green energy projects.
- Leadership.
- Harmonisation of infrastructure
- Regulatory Framework

Civil society and senior environmental NGOs working closely with research centres are essential to address the recent climate and energy crisis. To do so, they must foster regional cooperation and push for policies to reach decarbonisation targets by 2050.

The transition from fossil fuels, currently expected to remain the dominant component of the energy mix until 2040 in the Mediterranean, to the massive development of renewable energy sources is increasingly seen as a necessary but critical pathway to decarbonisation with the potential to enable social, political and economic structural change in the region.

The year 2021 has been marked by ambitious political commitments by many Mediterranean countries to integrate biodiversity into national agendas and sectoral policies. European Environment Ministers, including Mediterranean Ministers, have committed to designate 30%of European land and seas for protected areas to safeguard biodiversity with 10% absolute conservation, in the framework of the EU Biodiversity Strategy until 2030.

During the SAC session (EBSOMED), Dr. Scoullos commented the "need to minimize the take of lands". He calculated that green transition could take an additional 6%of land. This process will not be easy. Green movements will debate among the massive RE usage and the land/forestry preservation. We should be cautious and foresee a slower deployment of massive RE.

At the same time, strengthening the development of renewable energies is a top priority, and has found new impetus through the Union for the Mediterranean Declarations on Clean Energy Transition and Environment and Climate Action, as well as the Athens Declaration on Climate Change and the Environment in the Mediterranean during the 8th Summit of the Southern Countries of the European Union. The European Green Deal, the COVID-19 recovery packages and the EU's "Renewed Partnership with the Southern Neighbourhood" create opportunities to mobilise significant financial resources for energy cooperation.

To this end, to effectively enable the green energy pathway in the Mediterranean, the following recommendations may help:

- *Strengthen inclusive and participatory governance for a just transition.*

  Residents' perceptions of the impacts of energy developments are often not discussed and remain poorly considered, particularly in potential hotspots such as protected areas in the Mediterranean. At this point, it should be clear to the energy sector that, in principle, most organisations wish to see a dramatic increase in renewable energy development, but not at any price.

  To this end, both commercial and national/regional stakeholders on the one hand, and local communities on the other hand, must be systematically informed by the sector, but also by the authorities, starting from the project planning phase, the regulatory framework and the concrete socio-economic (e.g. improved job creation and regional development) and environmental (e.g. climate change mitigation) returns of the project.

This inclusive and participatory process will probably entail a "new green political agreement" at local level, with local stakeholders, mainly civil society, on the amount of land that massive renewable energy deployment will take from local communities. Because the usage of land for energy purposes has always been a very sensitive issue with green movements in the past, complex bargaining negotiations need to be foreseen.

Civil society is a strategic actor in this process, therefore raising public awareness of energy issues in very sensitive areas for biodiversity and creating citizen engagement during the implementation phase, will be a necessity.

In this respect, the environmental assessments in very sensitive areas from a biodiversity point of view, will become a major political issue.

- *Mediterranean supra-regional cooperation for energy projects is feasible and beneficial.*

To achieve energy deployment objectives most efficiently, both in terms of cost and land and sea use, international collaboration will be key with more joint projects between Mediterranean countries, provided there is sufficient political will to make it happen. Despite the clear and abundant benefits of such cooperation and a supportive EU policy framework, few Mediterranean countries have embarked on cross-border renewable energy projects.

- *Regional cooperation on such projects will also improve the monitoring and treatment of the impacts of energy infrastructure on biodiversity and minimise the knowledge gap.*

The development of infrastructures for the production, storage and transport of green energy to Europe could boost economic cooperation in the Mediterranean and offer a new opportunity for the eastern and southern Mediterranean to become a major energy supplier to the European market. What is lacking, however, is the necessary infrastructure, especially regarding the problem of cable interconnection (which is not without pressure on biodiversity), the regulatory framework regarding local biodiversity, as well as the capital for the realisation of ambitious renewable energy projects. These are the areas where the EU's contribution is relevant.

4.6 EBSOMED's contribution to the green transition in the Mediterranean region

The EBSOMED project is an opportunity and a key tool in the green transition in the Mediterranean region.

In the context analysed in this study, the EBSOMED project's lines of action are perfectly aligned with the need for collaboration and cooperation through actions that facilitate the countries' strategies and channel them towards projects with a notable impact on the region.

At this respect, the lines of action of the project are presented, through which many of the actions necessary to contribute to the green transition can be channelled:

MED Business Support Organisations (BSOs) Capacity Building - Strengthening capacities of public and private intermediary organisations

- BSOs' Management Academies: Regional executive training programmes for BSO Managers
- Support to Project Development
- Labelling Southern BSOs' Services

- Exchange Programmes for BSOs' executives
- Technical Assistance Missions for Economic Development Agencies
- Employers' Thematic Committees (Vocational Training; Women and Youth Empowerment; Education and R&D)

MED Link - Linking Economic Actors in the region

- The Business Country Desks Platform (BCD) will play the role of catalyst for a better development of partnerships and North-South as well as South-South exchanges
- Joint activities involving banking and non-banking donors to support the International Cooperation and their sustainability strategies

MED Cooperation - Support bilateral and multilateral corporations' integrated actions

- Business Matchmaking Fora (Intra-Mediterranean High-Level Panels on key sectors, value chains and cross-cutting challenges, B2B (Business to Business) and C2C (Customer to Customer) Regional Meetings)
- Intra-Mediterranean Cross-sectorial Strategies and Action Plans

MED Promotion - Sustainable partnerships and dissemination of best practices and Success Stories

- EU Med Roadshows focused on Northern and Central Europe
- EU Med Roadshows in the Southern Mediterranean Countries with a focus on Access to Finance and Women Entrepreneurship
- Regional Campaigns for the Promotion of EBSOMED Project

4.7 Recommendations and Conclusions

Having analysed the above points, the next objective is to define a strategy for future initiatives and actions to be implemented in the Mediterranean area to contribute to and accelerate the green transition. For this reason, this section sets out a series of recommendations at different levels together with the role that EBSOMED can play in the green transition in the Mediterranean area.

The following paragraphs introduce recommendations that can be implemented to improve renewable energy penetration in the region:

- **Definition, implementation and enforcement of renewable energy national strategies and action plans.** The existence of a RE strategy and a well-defined action plan is crucial to the implementation of a renewable energy market: Strategies and action plans are extremely useful as they set targets, are technology-focused, and pave the way to the establishment of the renewable energy market by identifying effective policies and measures. These plans should be updated and adapted on a regular basis.
- **Assign responsibilities for the implementation of action plans.** Each country should identify a sole institution to be responsible for the execution of the action plans. These responsibilities should be clear to avoid impasses in the implementation of the measures.
- **Establish an effective regulatory framework.** As described before, most of the countries have not in place effective regulatory frameworks to promote RE and private sector investments. The implementation of policies facilitates the dissemination of the use of new technologies.
- **Define a national plan for renewable energy equipment manufacturing.** The existence of a national strategy for RE component manufacturing is key to help the countries reach their targets.

- **Create more financial incentives.** The lack of financial incentives is one of the main barriers to the dissemination of RE technologies. The countries should, therefore, provide alternatives to invest in these technologies, such as low-interest loans and net-metering mechanisms, credit lines and fiscal benefits. Different types of incentives are more appropriate for certain economic sectors, and this should be taken into consideration.
- **Energy prices reform.** Although efforts have been made to reduce energy subsidies, energy prices are still low, thus hindering RE development in the region. Reforming the structure of energy prices is crucial since the higher the local energy prices, the higher are the values of the energy savings and, therefore, the easier it is to finance investments (shorter payback periods with high energy prices).
- **Invest in research and development.** The countries should implement R&D programmes to ensure the existence of a competitive RE sector.
- **Capacity development.** Training and capacity building is essential to the development of a market for RES. The countries should therefore invest in training programmes and in knowledge and experience exchange, at the regional and international level, to improve knowledge in these areas.
- **Raise awareness/Develop studies on renewable energy benefits.** The lack of awareness on RE technologies and their benefits is an obstacle to their dissemination in the region. It is therefore necessary to develop awareness-raising campaigns to help develop the local RE market. These campaigns should include information on the potential of RES in the region to demonstrate their positive impacts in the economy of the countries.
- **Raise public awareness and create the necessary political will** among all stakeholders to carry the deployment of massive renewable energy to ensure the green transition. The political discussion on the amount and location of lands to be taken by this process could be slower than expected and presumably require a lot of bargaining power. Therefore, countries should be ready to carry out complex political negotiation processes at national and local level and the need to build up a wide political and social consensus.
- **Network improvement.** Grid reinforcement, interconnection and the creation of a regional electricity market will also contribute to the promotion of RES in the region. Energy storage is also a solution to increase RE grid integration. In countries very advanced in RE like the Netherlands or Norway it already shows that grid reinforcement is extremely necessary but required costs would be so extensive that other solutions need to be considered.

5 Conclusion

The confluence of the COVID-19 and climate crises have increased the relevance of the energy transition, as a unique opportunity to "build back better." This is also visible in Euro-Mediterranean energy relations, heralding a change of paradigm, which places the energy transition and climate change at the centre of post pandemic recovery strategies. These shared policy goals open new spaces of cooperation compared to previous EUROMED energy relations, which often hinged on the idea of market integration as an end, rather than as an instrument for sustainable development. However, a "policy paradigm" encompasses not only the goals, but also the type of instruments needed to attain them. In that regard, the sources of divergence remain paramount. If the new instruments of the European Green Deal diplomacy concentrate exclusively on opening new markets for European businesses and keeping up the EU's position in the global green tech race, Euro-Mediterranean cooperation in the green transition could become hostage to the same criticism of EU-centrism as previous initiatives. At the same time, if the energy transition in the southern Mediterranean countries is not accompanied by wider political reforms, the abundance of renewable energy resources could end up replicating the economic and democratic pitfalls of hydrocarbon-based rentier states. In sum, while the green transition offers a new positive agenda for Euro-Mediterranean relations, it does not yet amount to the paradigm shift required for effecting a just energy transition.

For all these reasons, the following conclusions should be considered to define the action plan leading to a just green transition in the Mediterranean area:

- ✓ Current policies will not be enough for the Mediterranean to curb its energy demand and reach carbon neutrality in the 2050 horizon.
- ✓ In addition to climate change mitigation, energy transition would turn the Mediterranean into a net energy exporter by 2050 and foster job creation.
- ✓ Regional analysis is of utmost importance to identify win-win solutions and achieve the goals in a more cost-efficient way.
- ✓ The European Green Deal represents a reference model for neighbouring countries but only a Euro Mediterranean Green Deal can instil the needed step change.
- ✓ The New Agenda for the Mediterranean is a very relevant step forward towards strengthened regional cooperation. The Economic and Investment Plan can mobilise investments in low carbon technologies in the Mediterranean.
- ✓ Dialogue and cooperation between policy and industry stakeholders is necessary to ensure a just and fair transition on both shores, which requires strong integration between the conventional and non-conventional energy sectors.

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ANNEX I. Survey Questions

Question 1: What are the strategic lines in which your country or region is making more efforts in order to help the adoption of renewable energies?

- Economic Subsidies
- Taxation of products with high level carbon emission
- Implementation of new technologies (IoT, Data Science, AI, etc.)
- Ease of regulation
- Other

Question 2: In your opinion, at a more technical level. What are the most important current obstacles and challenges for the decarbonisation of the Mediterranean region?

- Regulatory frameworks
- Access to Funding
- The role of technology
- Clean, reliable and affordable sources of energy
- Conservation of assets
- Achieving climate neutrality and zero pollution
- Biodiversity protection and climate mitigation

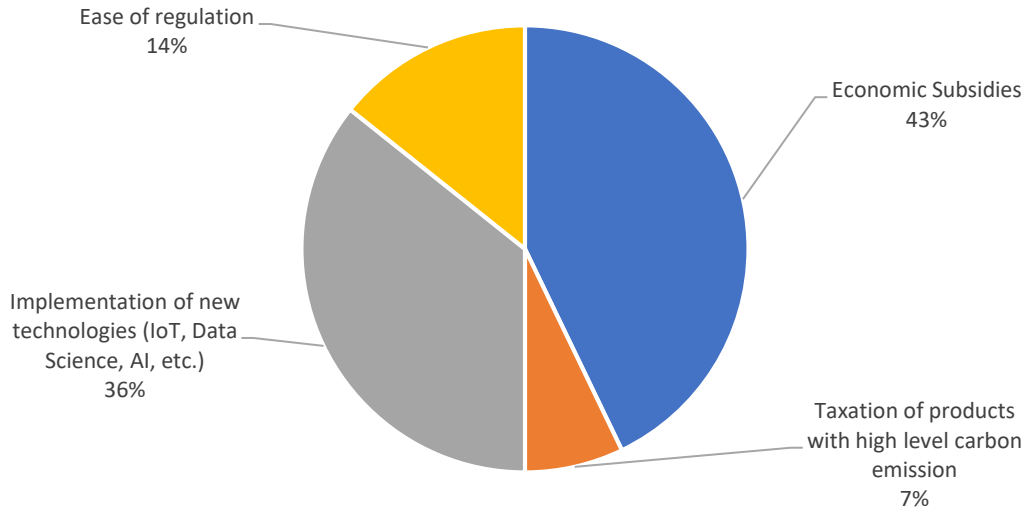
Question 3: What and who could be the main drivers of decarbonisation?

- Leadership
- Ability to drive international investments to green energy projects
- Regulatory framework
- Harmonisation of infrastructure

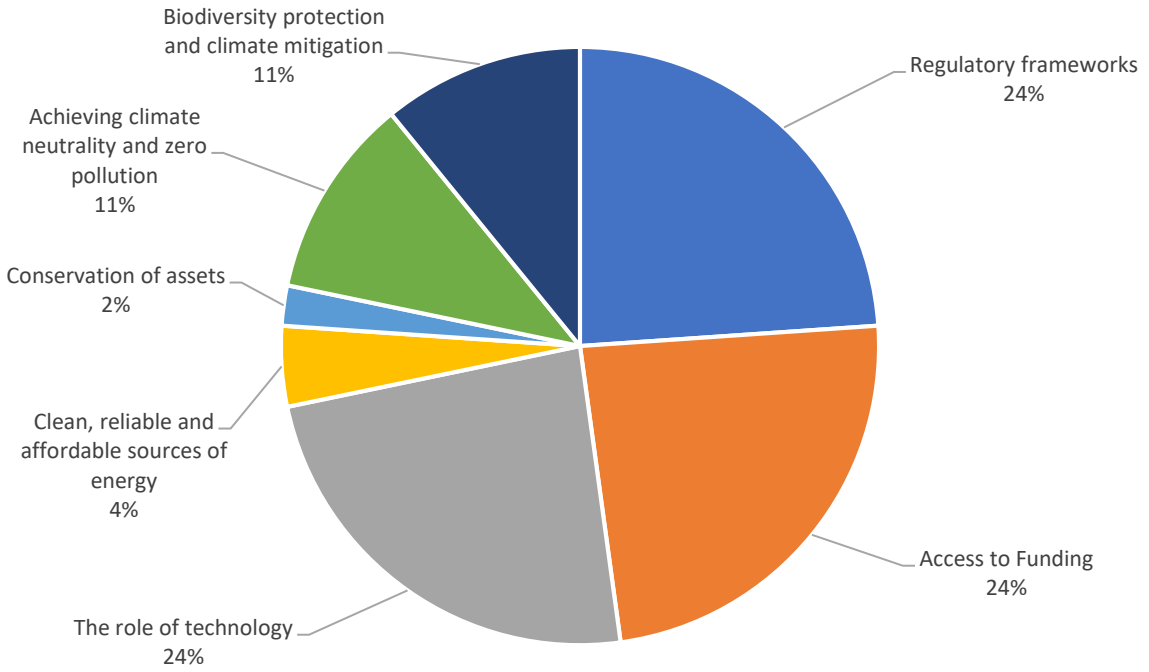
Question 4: In your opinion, what are the most feasible and effective ways to make this change?

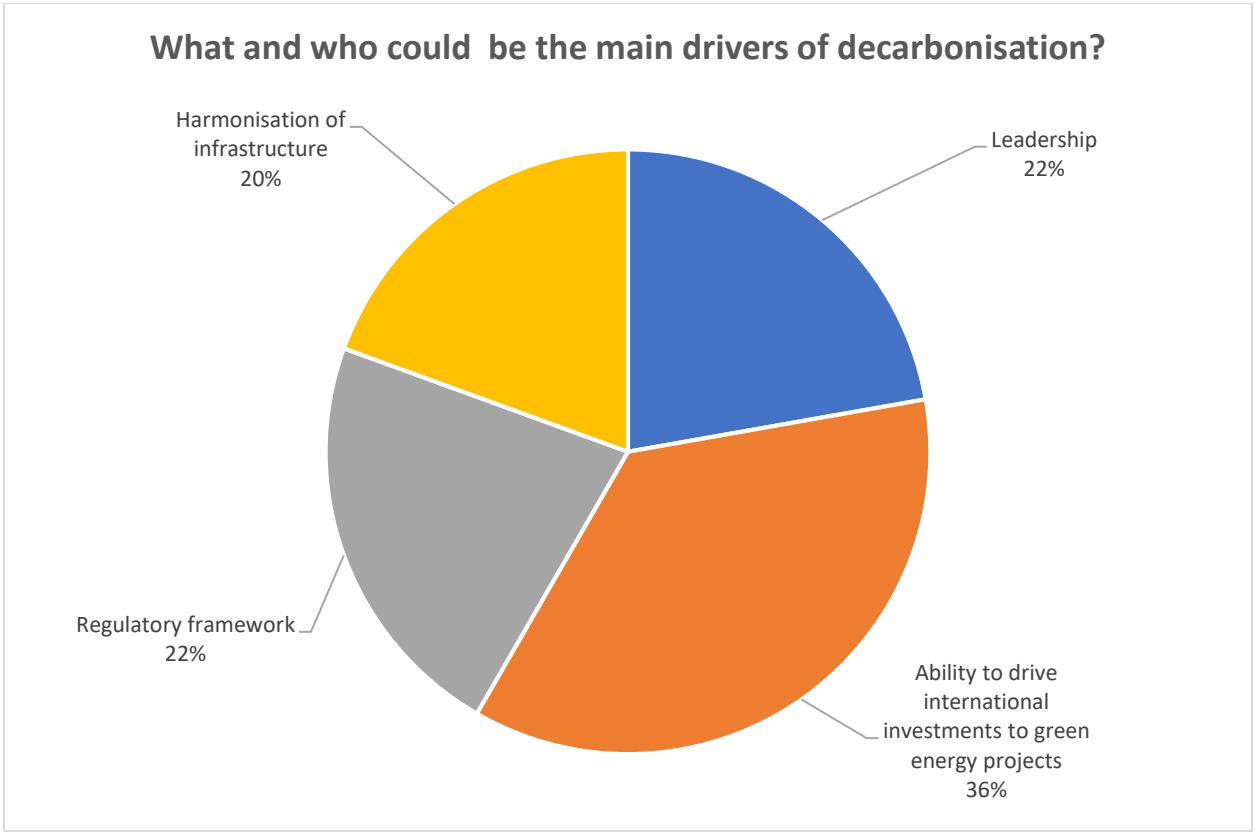
- Create a Focus Group to attract and connect investors, private companies, and governments to connect and talk about these issues.
- Write reports to spread knowledge and put pressure on policy makers (lobby).
- More Euro-Mediterranean Cooperation Projects.
- Create a special Fund to support a fair transition.
- Promote climate transition and sustainability by a framework, which will support the technological and industrial transition.

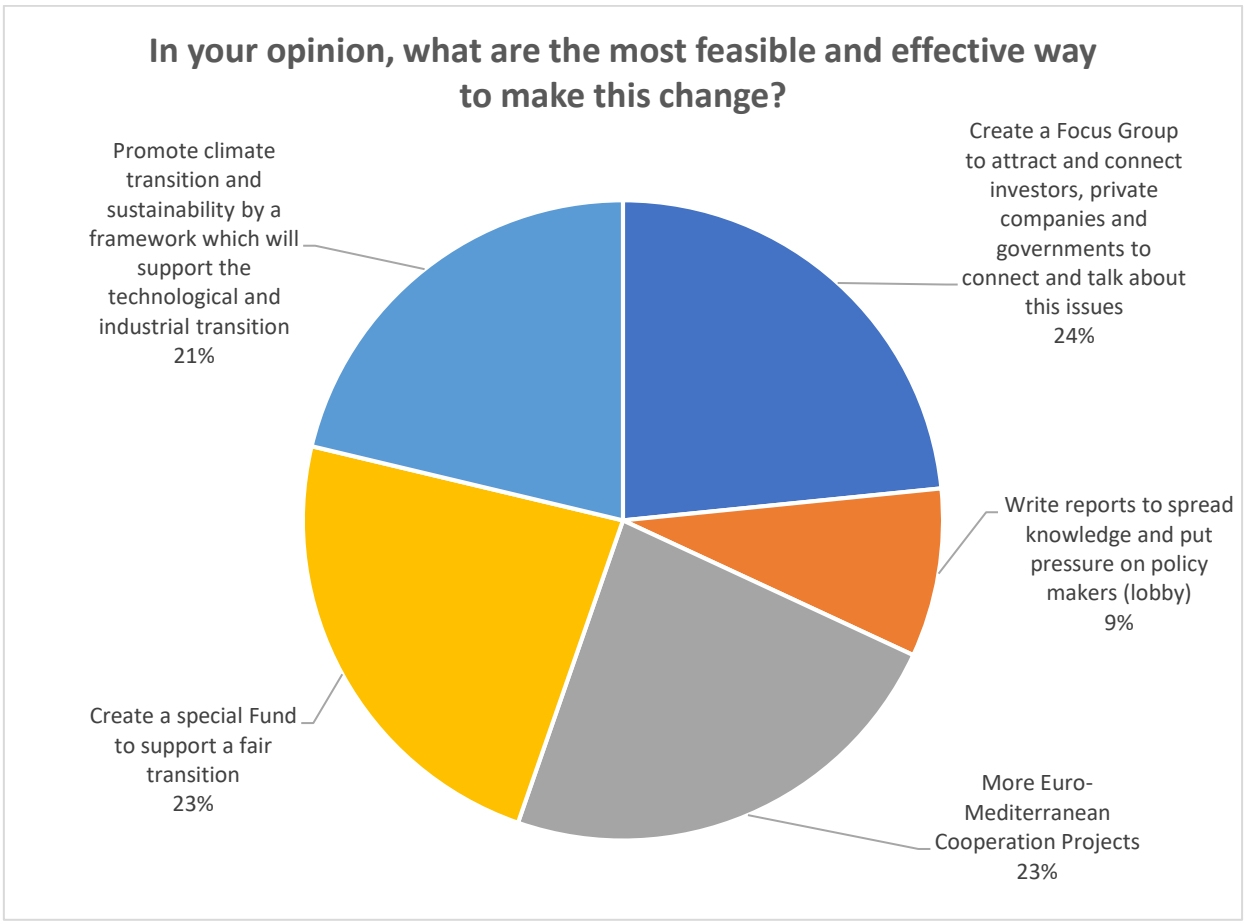
What are the strategic lines in which your country or region is making more efforts in order to help the adoption of renewable energies?



In your opinion, at a more technical level. What are the most important current obstacles and challenges for the decarbonisation of the Mediterranean region?




What and who could be the main drivers of decarbonisation?
Harmonisation of infrastructure 20%
Leadership 22%
Regulatory framework 22%
Ability to drive international investments to green energy projects 36%


In your opinion, what are the most feasible and effective way to make this change?
Promote climate transition and sustainability by a framework which will support the technological and industrial transition 21%
Create a Focus Group to attract and connect investors, private companies and governments to connect and talk about this issues 24%
Write reports to spread knowledge and put pressure on policy makers (lobby) 9%
Create a special Fund to support a fair transition 23%
More Euro-Mediterranean Cooperation Projects 23%

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ECODA - European Governance Association

GUBERNA- Belgian Governance Association

Turritopsis

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TYPSA Group - Técnica y Proyectos S.A.

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