

WEC-MED ENERGY TRANSITION CHECKLIST

First release of the WEC Med cross-regional collaboration initiative

RELEASE

April 2024

COORDINATOR

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**WORLD
ENERGY
COUNCIL**

ABOUT THE PROJECT

Introduction

WEC - World Energy Council is the world's leading member-based energy network and the only truly global and impartial energy organisation. Since 1923, the Council has been engaging energy leaders all over the world to meet whole energy system challenges.

100 years from the time of the World Energy Council's creation, our focus on delivering energy for peace, people and planet is more relevant than ever.

At the core of our approach is our *Humanising Energy* vision, an agenda of impact that connects more energy for sustainable development AND climate change management through collaborative innovation, which is not only about new technologies, but promotes system-wide collaboration to unlock exponential growth opportunities and successfully manage energy transitions at all scales.

The true strength of the World Energy Council comes from its network of over 3,000 member organisations in around 90 countries.

Strengthening cross-regional collaboration in the Mediterranean

The Mediterranean region is at the crossroads of three continents and is a unique area with highly diverse energy systems and situations but also significant economic, (geo)political, social and cultural ties and interdependencies. In over a dozen countries across the Mediterranean region national Member Committees of the World Energy Council currently exist.

In this pivotal moment in time, there is more than ever a need to strengthen collaboration and benefit from the possibilities of the unique Council network to generate and share insights, best practices and know-how, and implement our Humanising Energy agenda together with peers across countries and regions.

For this reason, World Energy Council launched the *WEC Med cross-regional collaboration initiative*, coordinated by WEC Italy in collaboration with WEC General

Secretary, with Vice Chairs of Africa, Europe, the Gulf States and the Middle East, which aims to strengthen regional dialogue and cooperation in the Mediterranean basin. The initiative, through an annual working program characterized by monthly online and face-to-face meetings, gives participants the opportunity to come into direct contact, discuss and deepen issues at the heart of their respective energy agendas and collaborate on concrete projects that can promote development of the transition in the Area.

The main deliverable of the first year of work of the Initiative is the "*WEC MED Energy Transition Checklist*", a map of the energy agenda of the Area which highlights the challenges facing the Region in the medium-long term; a document developed thanks to the contribution of WEC Mediterranean national Committees and main stakeholders active in the process, including OMEC (former OME) - Organisation Méditerranéenne de l'Energie et du Climat, MEDREG, MEDTSO, WFP, Universities and IFIs.

The Initiative awarded at the World Energy Congress

The first release of the *Transition Checklist* has been presented on April 23, 2024 during the conference "*Energy Transition in the Mediterranean Area*", official side event of the *World Energy Congress* in Rotterdam.



The initiative showed all the potential of World Energy Council global network and the power of international dialogue to reach the common goals of a just transition.

For that reason, during the Congress of Rotterdam it has been awarded by World Energy Council community as WEC project of the year for the category "Championing strategic communities".



THE CHECKLIST

First release, April 2024

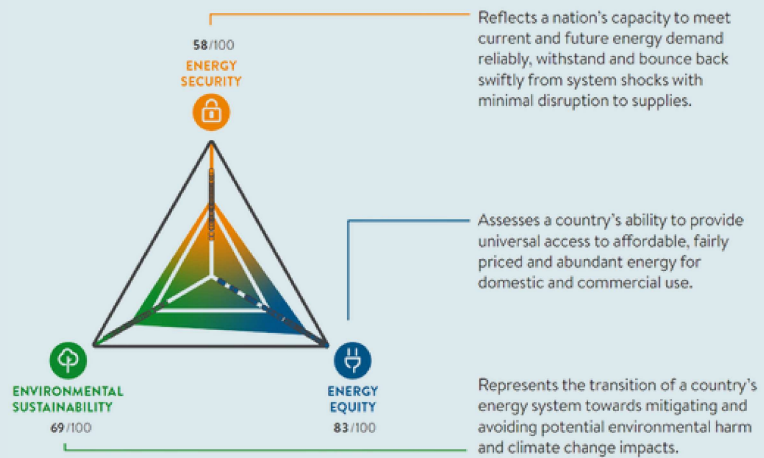
*With contributions from WEC Regional Vice Chairs, OMEC,
WEC Med Committees, Industry stakeholders*

Contribution from World Energy Council Regional Vice Chairs

The World Energy Trilemma Index

The *World Energy Trilemma Index*, developed by the World Energy Council, measures the sustainability of countries' energy systems by evaluating three key aspects:

- **Energy security:** stability and diversification of sources;
- **Energy equity:** accessibility at affordable prices;
- **Environmental sustainability:** impact and reduction of CO₂ emissions.



Mediterranean Energy Trilemma

A comparative analysis of the performance of the Mediterranean Region in the 2 periods 2020 and 2022 shows changes in the 3

indicators of the energy trilemma - energy security, environmental sustainability and energy equity.



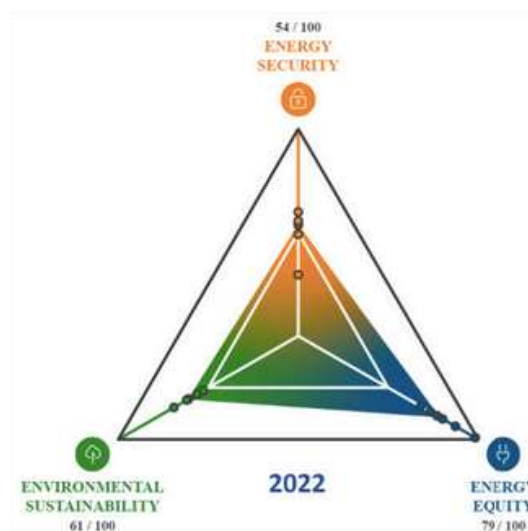
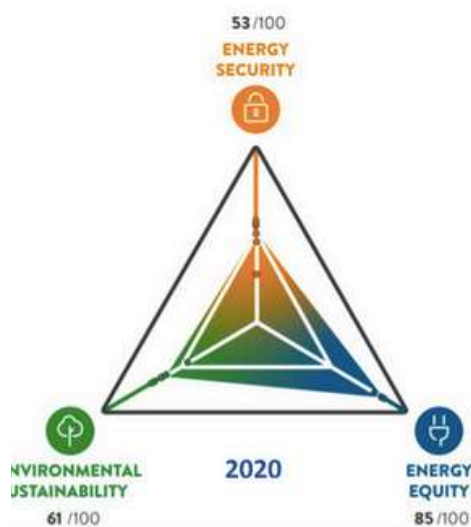
Figure 1. Mediterranean Regional Trilemma Cluster evolution 2020 to 2022 for Northern Mediterranean Countries.

The Northern Mediterranean countries recorded improvement in energy security from 58 percentage points in 2020 to 64 in 2022. This may be attributable to geo-politics, the Northern Mediterranean's and indeed Europe's response to the Russia/Ukraine war, which compelled Europe to quickly diversify its energy source.

On the other hand, environmental sustainability suffered in the North Mediterranean from actions to ensure energy security. From environmental sustainability score of 77 in 2020, it dropped to 75 in 2022. This is attributed to the return to the use of fossil fuels but could have been much greater should Europe not have significantly increased its share of renewable energy in the overall mix.

North Mediterranean countries also recorded lower energy equity scores in 2022 due to the global escalation of energy prices. Its performance fell from 92 to 90.

Figure 2. Mediterranean Regional Trilemma Cluster evolution 2020 to 2022 for Southern Mediterranean Countries.



Performance of Southern Mediterranean Countries was a bit different between 2020 and 2022. Although changes have been recorded, they are not as dramatic as observed in the North. For instance, energy security rose by just 1 point from 53 to 54 between 2020 and 2022.

This improvement is much lower than what the North recorded with 6 points over the same period.

This minimal change can be attributed to the region's heavy reliance on its own energy source especially fossil fuels, whose supply, the crisis in Russia/Ukraine did not affect.

On the other hand, energy equity or access suffered due to the global escalation of energy prices, even though these countries also provided energy subsidies to their population. Thus, the fall from 85 points in 2020 to 79 in 2022 on the energy equity index could have been much more pronounced if not for the subsidies provided by the states.

Key take-aways from the comparative analysis:

▶ The crisis has showcased the resilience of both Northern and Southern Mediterranean countries albeit for different reasons. Diversification of supply sources is proven to be key to energy security.

▶ Diversification of sources of supply and technologies will require a strategic approach to the sourcing of raw materials as the shift becomes more pronounced toward minerals with rising Renewables and hydrogen technologies. Ensuring a more balanced sourcing of energy materials will be crucial to avoiding the previous experience of monopolies that can have devastating impacts. Diversification both in geographical source and energy type are critical.

▶ Energy efficiency was a key element of resiliency for both sides of the Mediterranean but can be further developed, specifically with industry.

▶ It is Important to note that in the case of the Southern Mediterranean Countries the concentration of energy sources has helped them with energy security improvement. The fact that they owned and controlled their energy made it possible for them to sustain energy equity in 2022 when Northern Mediterranean Countries and other rich nations were prepared to buy any available energy to cover their needs. If the Southern Mediterranean Countries had a large proportion of their energy coming from outside their region and given their relative poverty to the Northern Mediterranean Countries, they could have found it more difficult to compete with the richer regions in buying energy at prevailing global market prices.

▶ Further collaboration between southern and northern Mediterranean countries are developing around potential exports of lower carbon energy sources as they become more viable (REs and H2) which would be of significant economic and environmental interest to both zones.

Place-based approaches with different paces and different strategies for the southern and northern Mediterranean countries are essential to ensure the trilemma remains in balance in both zones which would of course secure an overall balance in the Mediterranean region. Eventually connecting the dots through the balance of the trilemma will help drive a faster, fairer and further reaching energy transition.

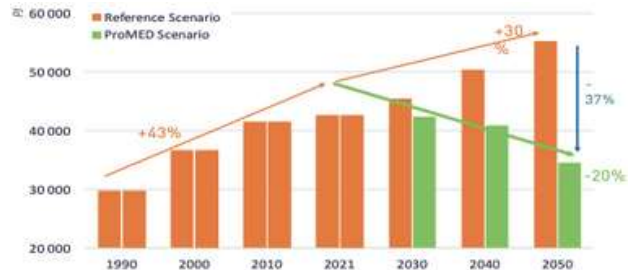
Contribution from OMEC

OMEC (formerly OME) organization promotes energy cooperation in the Mediterranean region. It brings together key players in the energy sector to address challenges such as energy security, resource access, and the transition to sustainable sources.

One of the most important programs in OMEC actions is the *Mediterranean Energy Perspectives (MEP)*, which provides long-term projections on the evolution of the energy system in the Mediterranean region. This analytical tool helps policymakers and industry operators make informed decisions to promote sustainable energy development in the Mediterranean.

Energy efficiency and renewables will be the major drivers of the reduction of energy related carbon emissions. However, to reach full decarbonisation, green gases and carbon capture technologies (CCS) will also be pivotal, especially in the industry.

Figure 2. Mediterranean Energy Demand.



Source: OMEC, 2024.

MEP2023 scenarios results

To mitigate further impacts on climate, CO2 emissions will need to reach net-zero around mid-century. For the Mediterranean region this means reducing carbon emissions nearly tenfold by 2050 (from 2000 Mt presently to under 300 Mt). The challenge ahead is significant for all Mediterranean countries, as current trends indicate a projected 19% increase in emissions by 2050 (63% in the South), while the goal is to reduce actual regional emissions by 89% within 2050 (Fig. 1).

Over the past 3 decades, energy demand increased by 43% and, under current trends, it would increase by 30% (with fulfilling unconditional NDCs Targets) to 2050.

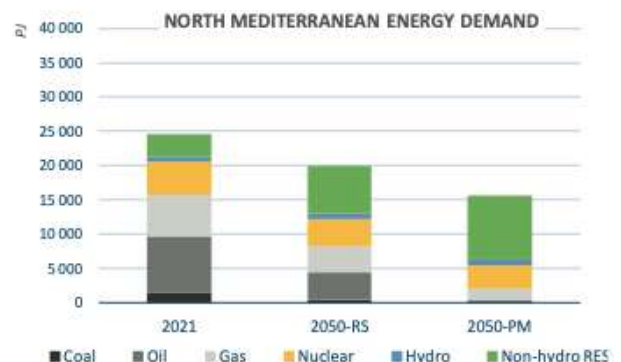
To achieve a net-zero carbon future by 2050, total Med energy demand should reduce by 20% from current levels - a big challenge considering the +130 million increase in population in the South coupled with a doubling of GDP prospects over the same horizon.

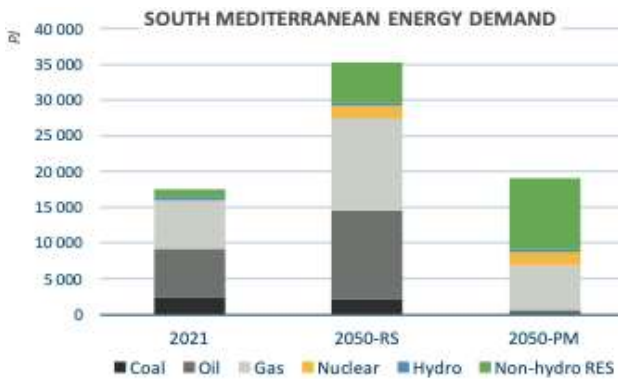
Figure 1. Mediterranean CO2 Emissions.



Source: OMEC, 2024.

Figure 3. Mediterranean Energy demand by fuel & region.





Source: OMEC, 2024.

The energy landscape is quite contrasted across the two shores. In the North, energy demand is already declining due to both implemented energy efficiency measures and decreasing population trends. On the other hand, in the South, energy demand is rapidly increasing alongside population and economic growth. To achieve carbon neutrality by 2050, the North Mediterranean will need to further reduce energy demand by 37%, while the South should limit the increase in demand to under 6% from current levels.

It is not just the level of demand that needs to be brought down, but also the fuel mix that needs to change drastically. At present, fossil fuels account for 75% of the energy mix.

Renewables, although fast increasing, stand at only 13% of the total Mediterranean energy demand. In 2030, even if all NDCs are reached, fossil fuels will still account for 71% of the mix due to the inertia of transport and industry demand that cannot be hastily displaced. In a net-zero carbon future, by 2050, the energy mix will need to be 59% renewables (65% in the North and 54% in the South), 15% nuclear and 26% fossil (23% for gas alone - the least carbon intensive fossil fuel). Gas will thus still play a role in the net-zero future chiefly in power generation and industry (Fig. 3).

The change in the mix and the decrease in energy demand overall will be driven substantially by the electrification of most end-uses with electricity accounting for 59% of total final consumption by 2050 compared to 22% currently. The main hurdles and the biggest challenges will be the displacement of heavy fossil-fuel use in both transport and industry sectors to electricity and biofuels.

Today, the Mediterranean stands at the crossroad of multiple crises. The energy crisis is exposing the dangers of high energy dependence levels of the region on fossil fuels. Under current trends, Mediterranean energy imports would only increase to reach around 18 000 PJ in 2050 - a 12% increase from current levels.

A net-zero carbon future in the Mediterranean would lessen fossil fuel dependence (Fig. 4). By 2030, fossil fuel imports would be more than halved, and the region would become a net exporter, driven by increasing exports in the South Mediterranean.

Figure 4. Mediterranean Energy dependence



Source: OMEC, 2024.

Amidst the escalating political risks fuelled by the ongoing conflicts in the Euro-Mediterranean region, the Mediterranean countries have a duty to maintain dialogue and constructively promote regional

cooperation to mitigate the impact on the security of energy supply and thus address the current instability without succumbing to the persistent centrifugal forces. By developing gas fields, solar and wind projects, by collaborating on energy infrastructure projects with regional partners, and by jointly promoting innovation and human capabilities, while tapping the energy efficiency huge potential, an ambitious and just-Mediterranean energy strategy can create a win-win situation where cooperation benefits all parties involved contributing to combatting the global challenge of climate change.

The Mediterranean region offers unique opportunities to build an energy model adapted to the challenges of the energy transition. To implement the projects needed to achieve carbon neutrality in the region by 2050, the investments required are significant and will mobilize substantial resources, between 4 and 7 trillion euros, depending on the scenario. This corresponds to average investments of €140-250 billion per year.

Investments in energy efficiency are expected to more than double (from €1.4 to €3.6 trillion) in all sectors and near tripling in the industry sector. Energy supply investments stand between €2.4 trillion in the Reference and €3.1 trillion in the ProMED Scenario - a 31% increase but their destination is also quite different. There is a much stronger emphasis on renewables in the ProMED Scenario where investment in renewable energy would account for 45% of energy supply investments and for 20% of total investment.

In this context, enabling frameworks are essential to achieve climate goals while ensuring energy security. Governments have a critical role to play in providing clear policy direction to reaffirm their commitment to transitioning energy systems.

Investors need a stable regulatory environment that provides certainty and predictability for investments. Given the scale of energy projects, international financing often plays a pivotal role, involving multilateral development banks, export credit agencies, sovereign wealth funds and private investors. Access to finance is indeed a necessary condition for the successful implementation of such investments, especially those in renewable capacity, which often require significant up-front capital. Regional cooperation has a crucial role to play. Not only between North and South, but also within countries in the South, to foster the creation of a regional energy integration and interdependence that would enable the exploitation of existing cross-borders complementarities for overall regional energy security and sustainability.

Contribution from WEC MED Committees

In light of its strategic position and the remarkable energy potential, the Mediterranean region can play an active role in the energy transition path, setting an example of virtuous and effective cooperation.

Most of the parts involved are still in the process of defining and/or updating their energy transition pathways, including carbon neutrality commitments, renewable energy and energy efficiency targets; these are generally embedded into comprehensive strategies aimed at guiding deep transformations of the national systems not only in the energy production sector but also in the transport and residential fields.

At the same time, all the national systems in the region will need to ensure the security of supply and an adequate energy access throughout the whole transition period by making sure that while updating their energy mixes, they do not neglect the social aspect of this process and their paths of economic growth. Carbon neutrality should be reached through optimal cost coupling between supply and demand, whilst minimising decarbonisation costs for the society. The latter is a particularly sensitive point, since it calls into question the public acceptance of the energy transition and requires adequate efforts in ensuring that there is sufficient human capital (especially in terms of skills and reskilling), to preserve the economic growth and socio-economic development during the transition.

This creates ample room for political, regulatory, and economic regional collaboration, building on the opportunities embedded in the respective national transition pathways and local specificities, supporting the development of a “resource-efficient” economy (circular economy, critical materials, water-energy-food nexus etc.).

The awareness of population, investors and decision makers should be dramatically increased through dissemination activities and campaigns, like organizing National Sustainable Energy Investment Roundtables to put together relevant stakeholders (IFIs, banks, authorities, private sector), Universities, regional and international organizations, creating networks to activate investments and replicate best practices.

Mutually beneficial regional cooperation patterns can emerge building on joint efforts to address the common challenges while promoting industrialization synergies across sectors and circular economies. Governance related aspects and implementation remain crucial for successful solutions to be provided to the common challenges of the energy transition. The definition of comprehensive strategies for the Mediterranean region will have to address at the same time the future role of hydrocarbons and renewables, the development of strategic sectors such as critical raw materials, water management, low carbon fuels (including hydrogen) and industrial decarbonization technologies, while ensuring that adequate infrastructural development, upgrading and interconnection can secure sufficient network capacity and flexibility, including to accommodate a progressive renewable energy expansion, and market build-up and integration for enhanced diversification and energy security. This will require the involvement of several Ministries, competent authorities, and national/transnational agencies with the assumption of clear responsibilities, effective institutional build-up and policy enforcement.

Ultimately, a shared vision for a regional transition pathway, in line with the economic growth and industrial policy ambitions of the countries involved, will lead to a faster and more substantial mobilization of private and

public funding for their realization, while innovative schemes to improve access to finance and to mobilise financial support should be further investigated and promoted. This will require the definition of clear policy and regulatory frameworks, adequate to cope with the technological advancements and capable of promoting mutually beneficial cooperation schemes in a wide number of areas, ranging from renewable energy and low carbon fuels development to energy efficiency, new interconnections, and the creation of regional hubs.

Coordinated actions in this direction can lead to a gradual north-south/east-west market development and integration that could maximize the economic potential of the whole region.

Contribution from WEC MED Industry stakeholders

The Energy industries clearly play a crucial role in the transition process to the World Energy Trilemma paradigm. They are the actors of the technological and economic transition to the decarbonization goals. The intense debate that involved a wide range of companies (oil & gas, power companies, REN companies, infrastructure companies, engineering & construction companies) making evidence of several aspects that affect the endeavouring task to achieve the goals fixed by the international agreements on climate.

The geographical, social, economic, and geopolitical conditions the countries involved are facing and will need to handle, confirm different perspectives among the countries and even inside the countries. These different conditions will appeal for pragmatic and non-ideological approach from all the policy makers that have the responsibility to define the regulation, standards, incentives that will shape the framework in which the industrial sector will act and will take investment decisions.

The efforts in terms of clear strategies and their implementation are and will be essential to achieve the sustainability goals. In particular, some actions deserve to be highlighted as vital to boost the transition. The development of infrastructures must be part of consistent programs to favour economic cooperation between the two sides of the Mediterranean Sea. To obtain win-win solutions, the investments in infrastructures can not answer to just one side needs of this Community.

Priorities in security of supply from the North Mediterranean countries must be considered important as well as the access to affordable energy of a significant part of the of the Southern part of the Mediterranean Sea.

At the same time, the development of Renewable energies in most favourable countries to develop them (solar, wind, bio-fuel feedstock production) offers a win-win solution to boost the transition including high technology solutions (i.e.: Hydrogen production, Ammonia vector, CCUS, digitalization of the energy system).

To promote such major change, the industrial sector has to cooperate with policy makers, International Financial Institutions, Development Aid Agencies, as the transformation requested to the industries require much higher capital expenditures that only a common effort could mobilize.

All these efforts will need an important engagement in the capacity building of new competences, more educational and training initiatives to reduce the knowledge divide between industrialized countries and developing countries.

The high level of technological content of the energy sector, the lack of specific knowledge of the alternative energy drivers production and distribution ask for long term programs of education especially in countries that have to cope with major effort to innovate their energy and economic systems. The success and the speed with which we will progress on this area will define the degree of success or failure of the overall transition. Knowledge is also a driver for social acceptability by societies of both the sides of Mediterranean. Past experiences in new energy developments, showed how important is the social acceptability of the change to achieve the goals of a transition that is ambitious and challenging.

Some critical issues involve the technological transition:

- ▶ Challenges to the supply chain
- ▶ Variability of critical materials and minerals
- ▶ The higher risk that non-mature technologies that are not regulated yet, as the hydrocarbons will still have relevant markets for ten - twenty years
- ▶ Regarding the CCS technology, the storage potential for CO₂ in the Mediterranean needs to be considered.
- ▶ Such questions are all difficulties that must find viable and sustainable solutions starting with clear regulation, that still need to be fixed. This is particularly a top priority considering the magnitude and the timing of investment needed in renewable energies and energy efficiency.

CONCLUSIONS

The rich analysis, debate, and common vision achieved by all the stakeholders of the WEC - MED Transition Checklist paradigm, drove to some conclusion that highlight the challenges and the opportunities the transition offer to us.

In particular, **challenges** like:

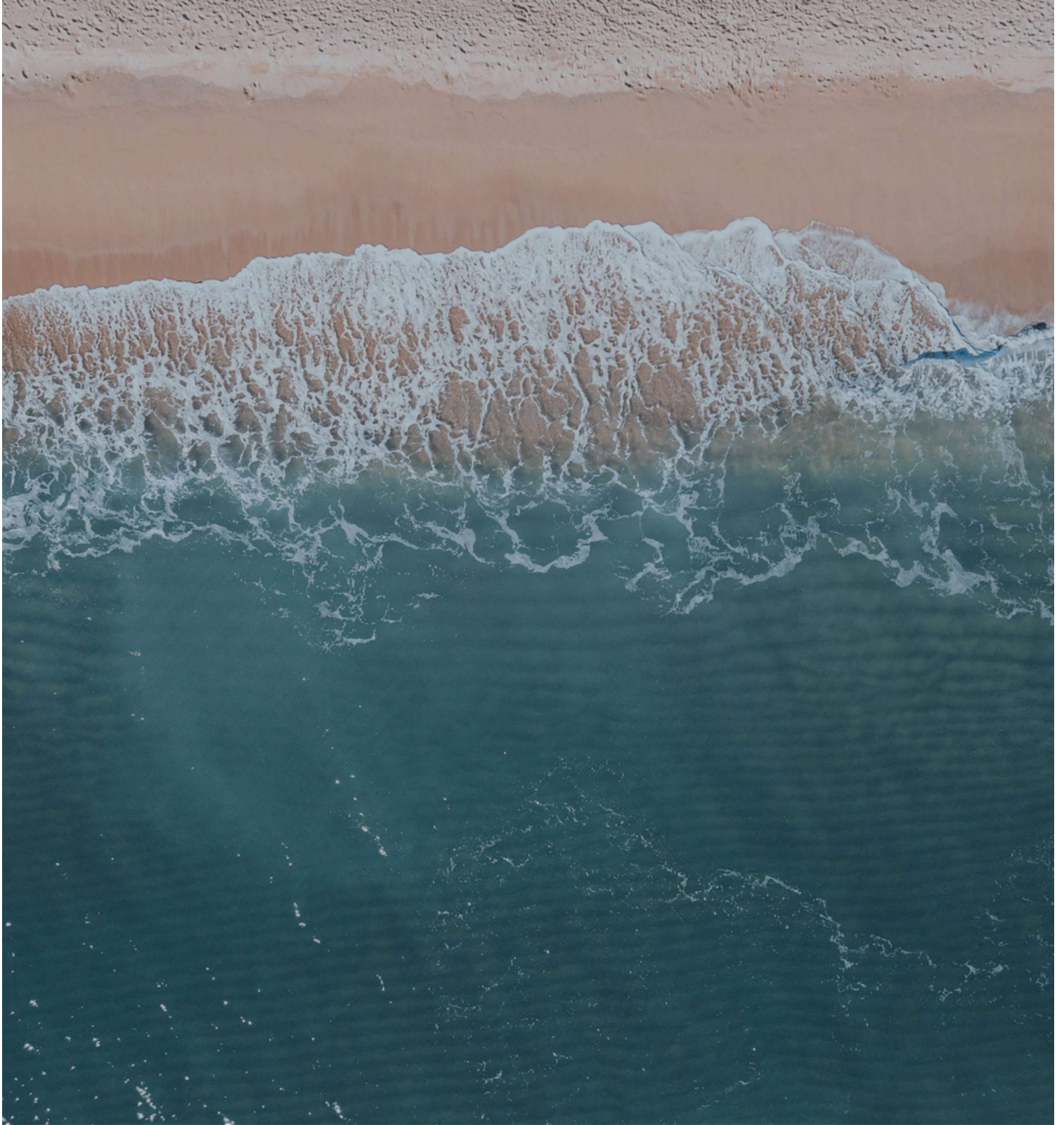
- ▶ Defining common and clear goals
- ▶ Diversifying sources and geographical areas while considering the security
- ▶ Addressing energy poverty
- ▶ Pursuing and preserving a technology neutrality approach
- ▶ Accompanying the transition towards decarbonization with robust public finances and innovative schemes for financial support and investments, especially in countries heavily relying on hydrocarbons
- ▶ Pursuing energy taxation models consistent at the same time with climate goals and with sound public finances
- ▶ Ensuring socio-economic acceptability of deep transformation
- ▶ Creating a permanent link between Education, Training and Capacity Building actions extended to Regulation, Standards, & Certification with simplification efforts

- ▶ Developing and reinforcing interconnections & digitalization.

All these challenges come with corresponding opportunities to be seized in the Transition towards a more sustainable and inclusive model.

In fact, sharing visions and routes to the decarbonization of our Mediterranean area, that is more and more strategic, is the only way to reach the decarbonization goals.

Cooperation and ambition are the two pillars to drive faster the transition. This has to be done through clear consistent policies enforcement, engaging on new economy paradigm (i.e.: circular economy), sharing the best practices and creating synergies among sectors that are necessarily involved in the overall process: Energy, Agriculture, Transports, Industry, ICT-Digitalization. The peculiarities of each country of our community have to be considered in order to avoid a misperception of potential and effective strengths for a successful transition.



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