

Sustainable Development in the Mediterranean

Report 2020

Transformations to achieve the
Sustainable Development Goals



SANTA CHIARA LAB
Università di Siena 1240



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*Transformations to achieve the
Sustainable Development Goals*



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This report has been prepared by the team of independent experts at SDSN Mediterranean, hosted by the University of Siena – Santa Chiara Lab. As a dedicated edition focused on Mediterranean countries, it is based on data and elaborations of the *Sustainable Development Report 2020*, prepared by the Bertelsmann Stiftung and the Sustainable Development Solution Network (SDSN) and published by Cambridge University Press.

Acknowledgements

The 2020 Report on *Sustainable Development in the Mediterranean* presents an overview of results achieved for 24 Mediterranean countries extracted from the *Sustainable Development Report 2020*. It was prepared by a team of experts of the University of Siena – Santa Chiara Lab, as the hosting institution of the Sustainable Development Solutions Network for the Mediterranean Area (SDSN-Mediterranean). The report was coordinated by Riccardo M. Pulselli under the direction of Angelo Riccaboni (SDSN Mediterranean) and the supervision of Jeffrey Sachs (SDSN). Lead writers are Riccardo M. Pulselli, Massimo Gigliotti, Simone Cresti, Angelo Riccaboni (SDSN Mediterranean) and Jeffrey Sachs (SDSN).

The *Mediterranean Countries Edition* is based on indices and indicators presented in the *Sustainable Development Report 2020* (Sachs et al. 2020) and partially replicates tables and figures with a specific focus on Mediterranean countries. Compared to the original document, it provides substantial integrations concerning the interpretation of results in the Med Area, their visualisation in the form of maps, and specific recommendations and policies for the implementation of Sustainable Development Goals (SDGs) referring to the Six Transformations Framework by Sachs et al. (2019).

Scope of the report is to facilitate the reading of the *Sustainable Development Report 2020* through the optic of Mediterranean countries in order to share knowledge on current trends towards SDGs and drive common action.



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Foreword

We are pleased to launch the second edition of the report on the *Sustainable Development in the Mediterranean - Transformations to achieve the Sustainable Development Goals*. It focuses on 24 Mediterranean countries hosting a population of over 520 million people to show the current level of achievement of the SDGs in the Mediterranean region.

The report builds on the *Sustainable Development Report 2020*, prepared jointly by the Bertelsmann Stiftung and the Sustainable Development Solutions Network (SDSN).

The SDG index, the indices per each SDG and the entire set of indicators are taken from the *Sustainable Development Report 2020*. Maps (one per each indicator) and additional raw data (when relevant) have been specifically produced to facilitate the understanding of current trends and drive common action in the Mediterranean area. This initiative has been undertaken by the *University of Siena - Santa Chiara Lab*, hosting institution of the *SDSN Mediterranean*, together with *SDSN*, to raise awareness on the SDGs and foster the implementation of transformation strategies.

In particular, these strategies should follow the Six Transformations Framework presented by Sachs et al. (2019). Statistical data has been therefore aggregated and interpreted with the aim of showing the current state and progress per each transformation: 1. Education, Gender and Inequality; 2. Health, Wellbeing and Demography; 3. Energy Decarbonisation and Sustainable Industry; 4. Sustainable Food, Land, Water and Oceans; 5. “Sustainable Cities and Communities”; 6. Harnessing the Digital Revolution for Sustainable Development. Given the complexity and wide range of topics, highly interconnected to each other, the report proposes an innovative operational methodology, starting from the aggregation and visual representation of indicators, to the identification of main challenges and the definition of policies to inform action addressed to governments, businesses and other stakeholders.

In the foreword of previous edition, co-authored with Jeffrey Sachs, we anticipated that the review process would have possibly become more systematic and been further improved by engaging thematic experts from centres of excellence in Southern Europe, Middle East and North Africa, to identify and share possible solutions according to their expertise. In line with it, in the 2020 edition, we started a cooperative work with 6 Mediterranean hubs, one per each transformation, called to propose suitable policies for the accomplishment of the six transformations.

This method makes the Mediterranean edition of the SDSN report more than a monitoring report, but rather a decision-support tool dealing with the six transformations and four geographical areas: Europe west, Europe east (Southern Europe), Middle East and North Africa (MENA).

The SDSN *Sustainable Development Report 2020* dedicates a consistent section to the sanitary emergency induced by the COVID 19. Sachs and co-authors analyse the real and potential negative impacts to the SDGs, besides its dramatic effects in terms of lives lost. The approach followed in the SDSN Report is suitable also to the Mediterranean context. Relevant damages can be expected in many of the monitored indicators and increasingly difficult challenges will relate with poverty rates, social and gender inequalities, educational systems, community building and international partnerships. Besides social and economic impacts, despite of temporary good effects on the environment recorded during the lock-down, a decreased attention to climate and environmental issues can be also expected. These alarming scenarios must be avoided and urgently handled by promoting the SDGs as the most promising wayout to rebuild a sustainable and healthy society, the only available plan.

The Mediterranean region in general presents high environmental, social and cultural challenges. Transnational partnerships, although complicated, are key to deal with them. To this aims, the SDGs analysis can be useful to identify common strategies and share best practices and policies, keeping in mind that gradual progress and policy changes are not enough and deep transformations are urgent. We have a very long way to go. Proactive behaviours by governments, businesses, citizens and all the stakeholders in the Mediterranean region to finally close the gap between rhetoric and action are needed. We hope that our focus on transformations supports such collective efforts.



Angelo Riccaboni
Director
Mediterranean
Sustainable
Development
Solutions Network



Jeffrey Sachs
Director
Sustainable
Development
Solutions Network

Executive Summary

The 2020 Report, *Sustainable Development in the Mediterranean*, presents the SDG Index and Dashboards for the 24 countries of the Mediterranean area, a complex environment, shared by three continents, seriously affected by global warming, being the most vulnerable to climate change in the world, after the Arctic (section 1). The scores, meant as general measures of the distance to SDG targets, have been reported per country and assessed in the four aggregated regions (values weighted by population) and in the all Mediterranean area (section 2).

As a result, given a general score of 73.5 of the Mediterranean area (meaning that SDG targets are achieved by 73.5%), the SDG index shows better performance in Europe West (78.5) and lower values in Europe East (74.8), North Africa (70.2) and Middle East (70.2). Nevertheless, the spillover index looks inversely proportional to the SDG index, since better performing countries tend to negatively impact on other countries (e.g. financial, trade, environmental issues), often compromising their efforts for improvements.

In order to unpack the SDG indices and properly understand results, this report presents a systematic methodology to represent and interpret any single indicator and provide a comprehensive current state picture of the Mediterranean area (section 3). To this regard, the Six Transformations proposed by Sachs et al. (2019) have been taken as the reference operative framework to inform and drive action. In particular, the SDSN indicators, made spatially explicit through dedicated maps, have been gathered based on their relevance for the monitoring and assessment of the six transformations and used to determine the main challenges to be faced per each transformation.

Once identified and briefly described, challenges became the basic reference for determining sets of policies addressed to various stakeholders to implement actions for improvement and increase the capacity of countries to accomplish the six transformations (section 4). At this stage, the SDSN Mediterranean has selected six reference institutions based on their expertise, one per each transformation. The six Mediterranean hubs shared information and cooperated to assemble the basic guidelines to foster concrete changes towards the SDGs.

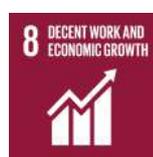
As for the Mediterranean overview, indices and disaggregated indicators provide a comprehensive information on the current state and trends towards the SDGs. In general, all the 24 Mediterranean countries are far from achieving the SDGs and must improve their performance.



Considering average incomes, almost 50 million people (12%) in the Med area are at risk of **#poverty**, including 27 million Europeans. This picture refers to the period before the pandemic crisis and can be supposed to dramatically worsen after the lockdown and the subsequent economics crisis.



#woman rights and opportunities for **#woman emancipation** must be improved, especially considering rates of scholarship, participation in labour force and policy (e.g. seats held by women in national parliaments: 37% in Europe; 18% in MENA).



The **#job market** looks stagnant. Unemployment rates are around 11% in average in MED, with homogeneity in the four regions. The number of NEET (youth not in employment, education or training) is increasing in OECD countries involving almost 20% of young people.



Wrong **#food habits** impact on health and the healthcare system. Obesity affects from 18 to 35% of the Mediterranean population (almost 95 million in total), namely 34 million people in Europe west, 34 million in North Africa and 24 million in the Middle East. **#sustainable agriculture** is among the most desirable practices to deploy with positive effects on social healthiness and the environment.



#water management is a crucial issue, also depending on the relevant effects of climate change in the Mediterranean area. Especially MENA countries, poor in water, risk to further compromise the access to basic drinking water and sanitation services, besides the risks for agriculture practices being farmers major users of water resources.



Regarding **#water quality**, basic services of wastewater treatment are performed in Europe West at 78%, in Middle East at 36%, in North Africa at 31% and in Eastern Europe only at 29%. This has also impacts on seawater quality, highlighted as a critical issue in the Mediterranean basin that needs to enlarge and enforce **#environmental protection** in marine and maritime areas.



#air quality in urban areas needs careful monitoring. In particular, the percentage of med population exposed to high rates of PM2.5 is high especially in the MENA countries. Values in Europe are lower but not negligible. Considering the high rate of urbanisation in Med (over 70% population lives in cities) and the related respiratory diseases (higher vulnerability to the COVID 19), this represents an urgent problem to handle.



The share of renewable energy and the quantity of carbon emission per unit of electricity are promising factors in Europe, although improvements are still needed. Nevertheless, investments towards **#sustainable energy** systems in MENA countries need a consistent acceleration. This is even more important considering the high vulnerability of the Mediterranean area to climate change.



Quality of Higher Education University is medium-high in Europe west and Middle East, with lower performance in Europe east and North Africa. Nevertheless, investments in **#R&I** should consistently increase, especially looking at the expenditures of countries in research activities: 1.6% in Europe west, 0.3% in Europe east, 1.9% in Middle East and 0.5% in North Africa.



Regarding the protection of marine environment, capture **#fisheries** are often based on unsustainable practices and need more stringent regulations and monitoring. Moreover, aquaculture can be an alternative solution, provided that it is sustainably performed. **#environmental protection** through protected areas (including freshwater and lands) is still insufficient and needs to be further enlarged; seawater quality also needs constant monitoring in all MED countries.



Mainly focusing on urban areas, but without neglecting rural areas, **#accessibility** to services such as public transport and **#waste** management must be improved in all the Mediterranean region. **#digital infrastructures** should also guarantee higher accessibility rates to internet (80% in Europe and only 57% in MENA).



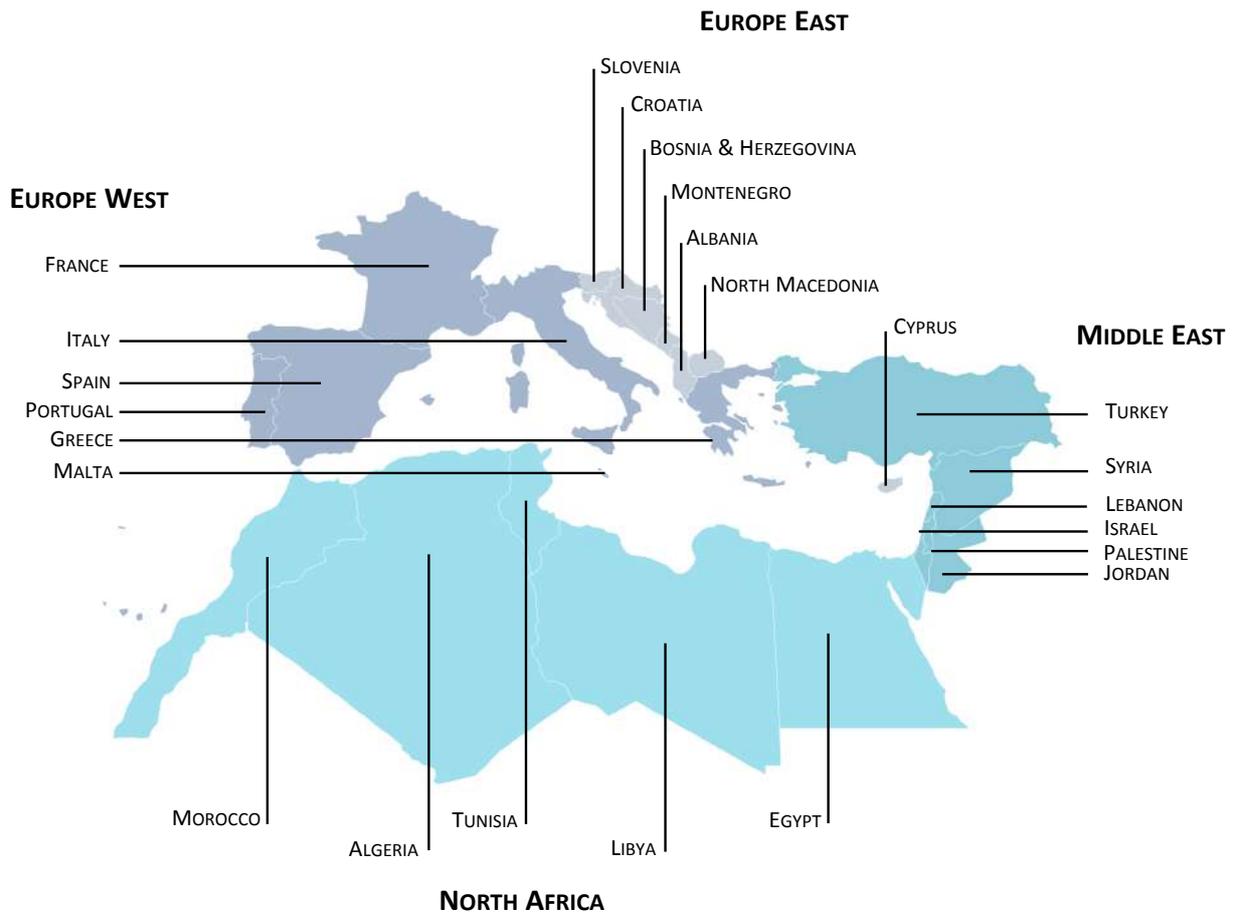
Among the forms of **#crime**, the perception of corruption is high in most of Mediterranean countries and **#press freedom** should be safeguarded in every country as essential factor of fairness and equality. High levels of inequality in **#wealth distribution** (family income) are recorded in the all Mediterranean area, with highest values in the Middle East. The **#weapon market**, especially concerning exports of conventional weapons, is prosperous in Europe west and need special attention.

The general overview on the Mediterranean area presented in this report is based on SDSN indices and indicators published in the *Sustainable Development Report 2020* (Sachs et al. 2020) and, although wide and articulated enough, is anyhow partial and not exhaustive. In some cases, indicators have been coupled with raw data allowing for a better interpretation of results but many details still miss and, sometimes, due to the complexity of the Mediterranean environment, can bring to contradictions and statistical weaknesses. The suggested framework looks useful to understand the current situations regarding the SDG targets and it demonstrated to be an effective method to share information and let a group of Mediterranean hubs cooperate for the identification of concrete strategies and policies to be promoted among governments, communities and other stakeholders. A general roadmap emerging from this cooperative analysis is finally reported (session 5).

1. Overview of the Mediterranean Context

The Mediterranean Sea identifies a unique area shared by three different continents. The 24 countries analysed - divided into four macro-areas: Western Europe, Eastern Europe, Middle East, North Africa – show many differences from the cultural, religious, social and economic viewpoints. Countries have various spatial dimensions, their own history, traditions and peculiarities, and also different approaches in the global network; they are deeply interconnected through the sea, nowadays scene of socio-political compromises, human migrations, trade and energy exchanges.

Figure 1 | Mediterranean countries aggregated in the four regional areas.



In addition to the 21 countries directly facing the Mediterranean Sea, Portugal, North Macedonia and Jordan have been included considering their geo-political influence in the Mediterranean area. The population of the 24 countries has more than doubled since 1960 (+114%), and host nowadays more than 500 million people, with different growth trends in the four macro-areas: +33% in South Europe and +250% in the Middle East and North Africa (MENA). In the decade 2008-2018 the Mediterranean population has increased by 11%, with rates of over 2% in Western Europe, almost 18% in Middle East and 20% in North Africa, and a decrease of 3% in Eastern Europe. The population currently living in urban areas is on average 70%; this follows a growing depopulation of the rural areas. Urbanization has increased by 38% since 1990, while employment in the agricultural sector has decreased by 44% (World Bank data).

The Mediterranean area is a climate hotspot, where temperatures have already increased by 1.5 C°, while the world average increase is 1.1 C°. The warming effect in the Mediterranean is now more intense than in most of the world, with increasing risks associated to climate change (Cramer et al. 2018; MedECC 2019). Projections indicate that temperature could rise up to 2.2 C° in 2040 and 3.8 C° in 2100, besides a progressive reduction in precipitation (-10% in European countries and -30% in the Middle East and North Africa). At the same time, extreme rainfall events, heat waves and droughts may be 10-20% more intense and frequent, thus threatening water supply of millions of people.

Due to climate change and increased consumption, freshwater reserves are expected to decrease by 2% to 15% in the Mediterranean region. The risk of damaging water resources is among the highest in the world. The current situation of the Mediterranean population is classified as "poor in water" with less than 1,000 m³/year per capita; nevertheless, water availability in some locations, such as South-eastern Spain and North Africa, is further decreasing and could fall into a condition of "water scarcity" (below 500 m³/year per capita), affecting around 250 million people in 2040. Water availability is a crucial issue that risks to cause political instability, new conflicts, increased migration, and crisis in the agricultural sector (irrigation represents 50-90% of the demand for water in the Mediterranean countries).

The surface temperature of the Mediterranean has been increasing by 0.4 C ° every 10 years between 1985 and 2006 (+0.3 C ° in the western part and +0.5 C ° in the eastern part of the basin). Projections to 2100 indicate a possible increase from +1.8 to +3.5 C ° in seawater temperature compared to the 1961-1990 average, with a consequent rise in sea level which is already taking place in a progressive and worrying way: from 0.7 mm/year in 1945-2000, and 1.1 mm/year in 1970-2006, to 3 mm/year recorded in 2006-2019. This also affects marine currents with ecological decompensation. Risks due to sea level rise include the saline intrusion near the deltas of the most important Mediterranean river basins (Nile, Ebro, Rodano and Po) and the loss of important agricultural areas.

Food security and the internal production capacity, compared to imports, are directly influenced by increasing water scarcity and soil degradation, both medium-long term effects of climate change. Saladini et al. (2018) presented a comprehensive diagnosis of the Water-Energy-Food Nexus in the Mediterranean region and pointed attention to the alarming trends towards food imbalance (e.g. import of cereals), scarcity of water resources (70% of which is used for agriculture) and the increased demand for energy for the extraction, treatment and supply of water, especially in some MENA countries.

The Mediterranean Sea is subject to overfishing. Estimates indicate that only 50% of the current fish-stock will be available by 2050, while fishing activity will decrease by at least 20% on the southern Mediterranean coast in the coming years. Aquaculture is currently the source of 50% of commercialized fish and plays an important role in the economy of some coastal communities, with an increase of 112% by 2030 compared to 2010 values in European Mediterranean countries.

2. The 2020 SDG Index and Dashboards

The SDG Index tracks country performance towards the SDGs. All 17 goals are weighted equally in the Index and the score signifies a country's position between the worst (0) and the best or target (100) outcomes. Table 1 shows the SDG Index and world rank for 24 Mediterranean countries, classified according to region and income group. As a comprehensive system, hosting 520 million people, the Mediterranean region has an average index score of 73.5, hypothetically corresponding to the 50th position of the world rank. This suggests that the Mediterranean region is on average over 73% of the way to the fully achievement of the 17 SDGs comprehensively.

Among the 24 Mediterranean Countries, most of European countries perform well on the Index score. Among the four Mediterranean regions, values of mean index (weighted by population) are variable, being 78.5 (ideally corresponding to the world rank 18) in Europe West, 74.8 in Europe East (world rank 38), 70.2 in North Africa and the Middle East (world rank 72).

However, even European countries at the top of the list perform significantly below the maximum score of 100 and need significant improvements. Libya and Palestine are not included in the SDG index list being most of data unavailable; nevertheless, they are both included in the discussion concerning the indicators.

Values of the Spillover Index have been also reported in the table. They measure transboundary impacts generated by one country on others, which may in turn undermine the other countries' capacities to achieve the SDGs. The assessment refers to statistics on financial spillovers (e.g., financial secrecy, profit shifting), environmental and social impacts embodied into trade and consumption (e.g., imported CO₂ emissions, imported biodiversity threats, accidents at work embodied into trade), and security/development cooperation (ODA, weapons exports). Index score ranges from 0 (poor performance, i.e., significant negative spillovers) to 100 (good performance, i.e., no significant negative spillovers). It is clear how the spillover index scores are often inversely proportional to the SDG index. In other words, impacts of countries in Europe West, with higher income and negative spillover effects, are partially imposed upon other countries and risk to compromise their performance and chances for improvement.

Table 1 | SDG Index, Global rank and Spillover index (values of aggregated regions are weighted per population).

Countries & regions		Income group	Population	SDG INDEX score	Global rank	Spillover index
France	E west	HIC	65,273,512	81.1	4	51.1
Greece	E west	HIC	10,423,056	74.3	43	69.4
Italy	E west	HIC	60,461,828	77.0	30	69.0
Malta	E west	HIC	441,539	76.0	32	56.3
Portugal	E west	HIC	10,196,707	77.6	25	66.7
Spain	E west	HIC	46,754,783	78.1	22	61.3
EUROPE West	E west	—	193,551,425	78.5	18	61.0
Albania	E east	UMIC	2,877,800	70.8	68	94.3
Bosnia and Herzegovina	E east	UMIC	3,280,815	73.5	50	95.8
Croatia	E east	HIC	4,105,268	78.4	19	83.1
Cyprus	E east	HIC	1,207,361	75.2	34	59.9
Montenegro	E east	UMIC	628,062	70.2	72	68.9
North Macedonia	E east	UMIC	2,083,380	71.4	62	93.8
Slovenia	E east	HIC	2,078,932	79.8	12	66.4
EUROPE East	E east	—	16,261,618	74.8	38	84.6
SOUTHERN EUROPE	E	—	209,813,043	78.2	20	62.8
Israel	ME	HIC	8,655,541	74.6	40	66.7
Jordan	ME	UMIC	10,203,140	68.1	89	89.2
Lebanon	ME	UMIC	6,825,442	66.7	95	78.8
Palestine	ME	—	6,825,442	—	—	—
Syria	ME	LIC	—	59.3	126	98.4
Turkey	ME	UMIC	84,339,067	70.3	70	93.3
MIDDLE EAST	ME	—	116,848,632	70.2	72	89.9
Algeria	NA	UMIC	43,851,043	72.3	56	97.4
Egypt	NA	LMIC	102,334,403	68.8	83	98.5
Libya	NA	—	—	—	—	—
Morocco	NA	LMIC	36,910,558	71.3	64	98.1
Tunisia	NA	LMIC	11,818,618	71.4	63	94.2
NORTH AFRICA	NA	—	194,914,622	70.2	72	97.9
ME & NA	MENA	—	311,763,254	70.2	72	95.0
MEDITERRANEAN AREA	MED	—	521,576,297	73.5	50	81.9

2.1 The SDG Dashboards

The SDG dashboards visually highlight strengths and weaknesses of each country on the 17 SDGs. The graphic representation is based on a four colours scale, from green to yellow, orange and red. The SDG indices are based on the set of indicators of each goal that are the same for all countries, except for a few additional data available for the OECD countries only. Nevertheless, colours represented in dashboards do not refer to an average but depends on the two worst indicators under each goal (this is the reason why traffic lights do not exactly match with index values).

The SDG Dashboards for the Mediterranean region have been composed by assembling the results per each of the 24 countries. Despite minor changes occurred in the set of indicators and assessment methods with respect to the 2019 edition, Figure 2 and 3 show both the 2019 and 2020 values, combined with the SDG index scores. For comparison, black arrows in the 2020 dashboard of Figure 2 show increased or decreased results compared to 2019.

The SDG indices, displayed in dashboards, show that the road to achieve the 17 goals of the 2030 Agenda is still long. In general, the dashboards allow for highlighting the magnitude of the challenges to be faced and help raise awareness on the urgent need for action. Nevertheless, since indices and dashboards result from aggregated parameters, they do not provide exhaustive information for making choices. Hotspots and needs cannot be easily determined based on the score of the SDG index and the indices per each goal. A backward disaggregation into source variables is necessary for a proper understanding of current dynamics. Moreover, specific thresholds should be set considering local instead of global conditions in order to provide more reliable and site-specific evaluations (for example, the poverty line should relate to each specific country instead of setting a world-based threshold).

Aiming at understanding the factors that can determine real changes in a country's performance, indices should be investigated through their component indicators and the data sources underlying the indicators. The desired outcome of monitoring the SDGs is to be able to indicate the road to take, anticipating possible actuation scenarios, estimating the effects of a series of possible actions and judging the degree of penetration these actions need to have in order to make progress towards the goal, namely, a transition from a red light situation to an orange, yellow then green light situation.

The following section provides a new representation of the SDG dashboard through a sequence of maps, one per each indicator, of 24 Mediterranean countries. Each indicator has been analysed and interpreted to determine the state of the art in the Mediterranean region and try to plan possible scenarios of improvement towards the achievement of the SDGs.

Figure 2 | Compared 2019-2020 SDG Dashboards for Mediterranean countries

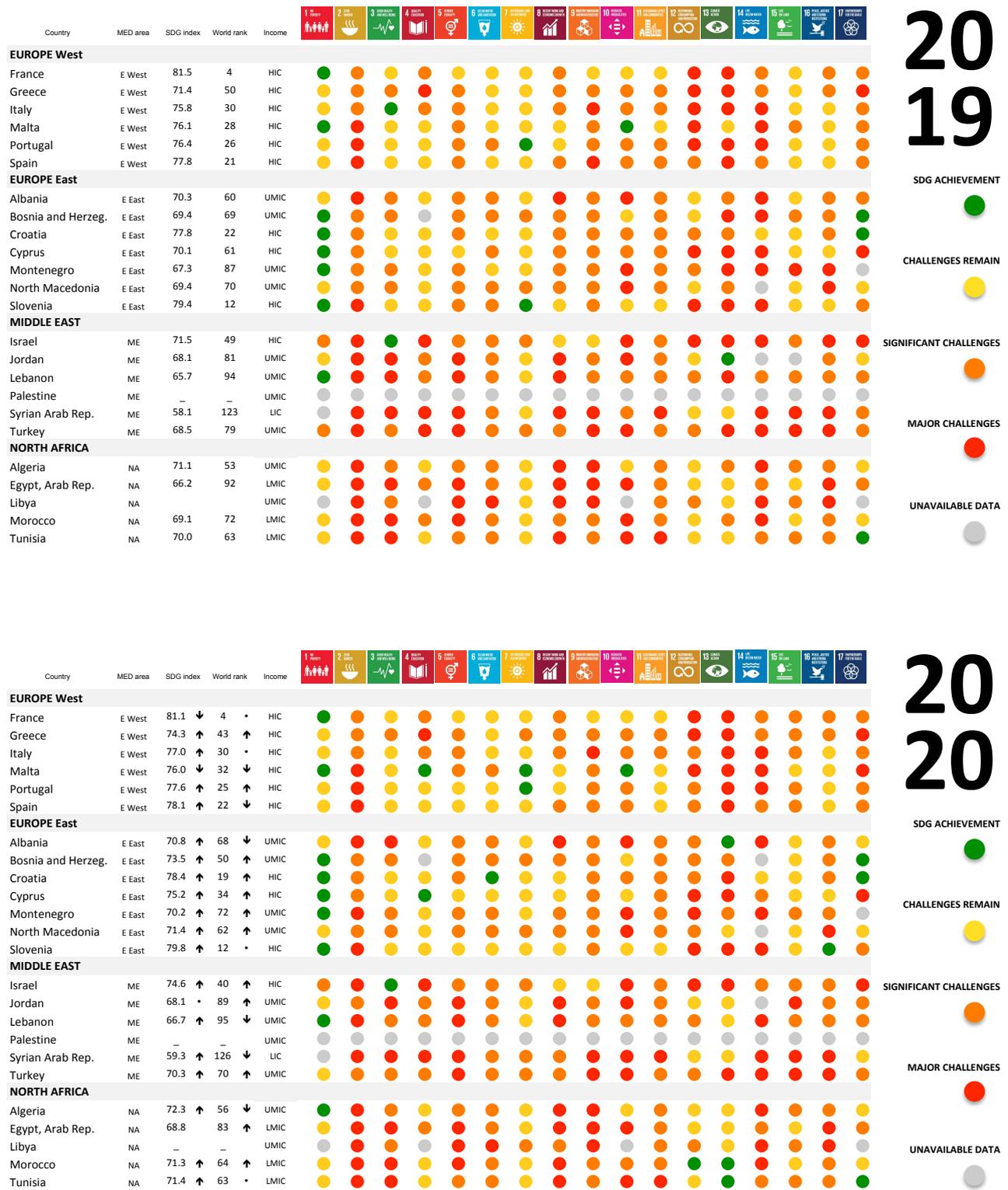
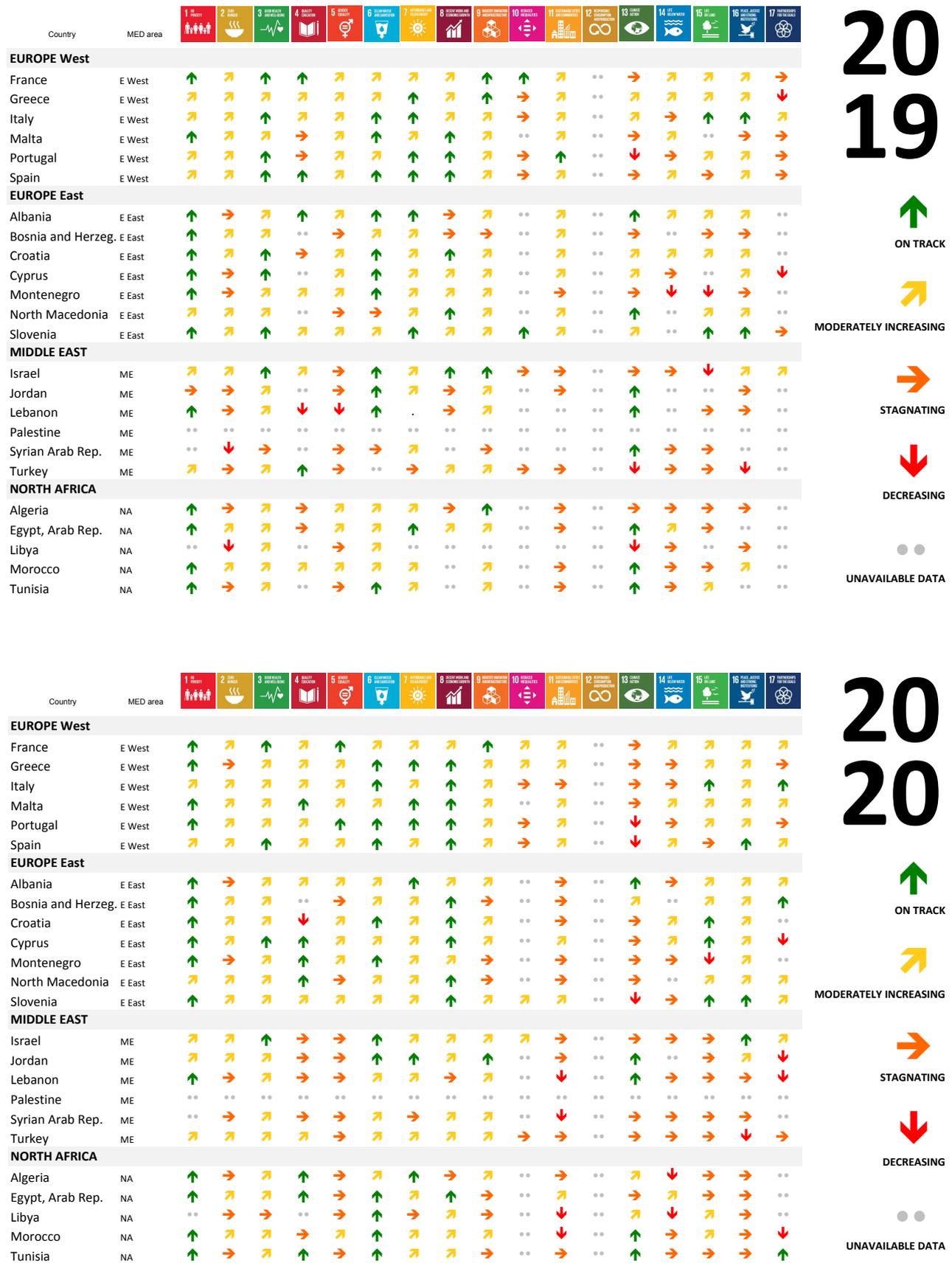


Figure 3 | Compared 2019-2020 SDG Trend Dashboards for Mediterranean countries towards 2030.



3. Six Transformations to achieve the SDGs and challenges

The 2030 Agenda is composed of 17 Sustainable Development Goals (SDGs) and represents the common international political program that the 193 UN member countries have set themselves to reach by 2030. It was officially adopted on September 25, 2015, at a UN Summit attended by over 150 heads of state. The 17 SDGs (Figure 4) are subdivided and better specified by 169 targets and the Agenda also includes recommendations on how nations should proceed in the implementation of the goals. It represents an international opportunity of transformation for humanity, a global vision for prosperity, people and the planet, which considers the three pillars of sustainable development: environmental protection, social inclusion and economic development.

With the 2030 Agenda and the Sustainable Development Goals countries have committed themselves to time-bound targets for Prosperity, People, Planet, Peace, and Partnership (United Nations 2015). They recognize that ending poverty must go hand-in-hand with strategies that build economic growth and address a range of social needs including education, health, social protection, and job opportunities, while tackling climate change and environmental protection. The Paris Agreement, which is part of the SDG framework, requires every country to achieve net zero greenhouse gas emissions by mid-century.

Figure 4 | 17 Sustainable Development Goals – SDGs.



Aiming at identifying driving principles to share and make action, an operative framework to meet the 17 SDGs and the underlying 169 targets has been proposed by Sachs et al. (2019), organized into six broad Transformations. These are intended as sets of potential interventions to accomplish “deep, deliberate, long-term structural changes in resource use, infrastructure, institutions, technologies and social relations” to be undertaken in a short period of time. Any transformation would require guidelines adapted to any specific context, such as the Mediterranean region and its 24 countries, and interpreted according to site-specific social, environmental and economic backgrounds.

Figure 5 lists the six Transformations and their potential interactions with the SDGs, given that each transformation contributes to several SDGs and, similarly, the outcomes for each SDG require contributions from more than one Transformation. The benefit of the Transformations is that they group SDG interventions in ways that promote effective implementation strategies by governments, business, and civil society.

This section of the report is therefore structured into 6 paragraphs, one per each transformation. Significant indicators have been selected and, based on their interpretation, a set of the main challenges has been identified. Each challenge is shown in a dedicated record, including values of reference indicators and, when necessary, additional raw data for a clearer understanding of the observed phenomena. Moreover, each indicator has been represented in the form of maps, through the colour scale from green, to yellow, orange and red.

Maps make the SDG indicators spatially explicit and provide a comprehensive *at-a-glance* view of the current state and any progress of Mediterranean countries towards the SDGs (Maps made through *datawrapper.de*). The indicators mapped are also listed in the tables and grouped by geographic area: Western Europe (WE), Eastern Europe (EE), Middle East (ME) and North Africa (NA). Raw data helps to understand the relevance and magnitude of the phenomena monitored, for example in terms of the number of people affected. Tables and maps provide a clear picture of current state and allow for determining priorities and most urgent actions to be shared by the 24 countries.

This systematic approach has a double role. First it aims at processing indices and dashboards and make them work as an effective decision support tool to achieve the SDGs in the Mediterranean area. Second, it constitutes an hexagonal operational framework to engage six reference institutions in the Mediterranean area, namely MED hubs, and let cooperate to implement and monitor SDGs.

Six MED hubs have been selected and assigned one per each transformation. Their role in the reporting process was to evaluate the state of the art as shown in this section and contribute to determine policies and best practices to accomplish the six transformations (next session). The six MED hubs are led by six SDSN National and Regional networks operating in the Mediterranean region: *SDSN France* hosted by CY Cergy Paris Université, Kedge Business School, and PSL University; *SDSN Spain* hosted by the Universidad Autónoma de Madrid; *SDSN Greece* hosted by the International Center for Research on the Environment and the Economy and the Political Economy of Sustainable Development Lab in Athens; *SDSN Mediterranean* hosted by the University of Siena; *SDSN Turkey* hosted by the Boğaziçi University in Istanbul; *SDSN Cyprus* hosted by The Cyprus Research and Educational Foundation (CREF) in partnership with the Neapolis University and the Frederick University.

The policies are addressed to governments and other stakeholders to determine how to organize interventions – such as improved policies, public and private investments, and regulation – and also useful to promote participatory practices and perform cooperative decision processes, in line with the SDSN statement: “achieving the SDGs requires deep changes to policies, investments, and technologies. But success will not be possible without social activism that mobilizes stakeholders and changes norms to enable the SDG Transformations. Similarly, international diplomacy and international collaboration are critical underpinnings of achieving the SDGs, particularly to address international spillover effects, including international development finance where needed” (Sachs et al 2019a).

Figure 5 | 6 SDG Transformations and the reference Mediterranean Hubs.



3.1 Transformation 1. Education, gender and inequality

A set of indicators has been selected as the most relevant to report on the current state, highlight hotspots and track the progress towards the Transformation 1. This aims to expand and transform the educational systems of countries achieving universal standards of learning outcomes, to reduce inequalities through anti-discrimination measures and social safety nets and to definitely overcome gender inequalities (Sachs et al. 2019).

Figure 3.1 | Selected indicators and challenges in the transformation 1. Education, gender and inequality.

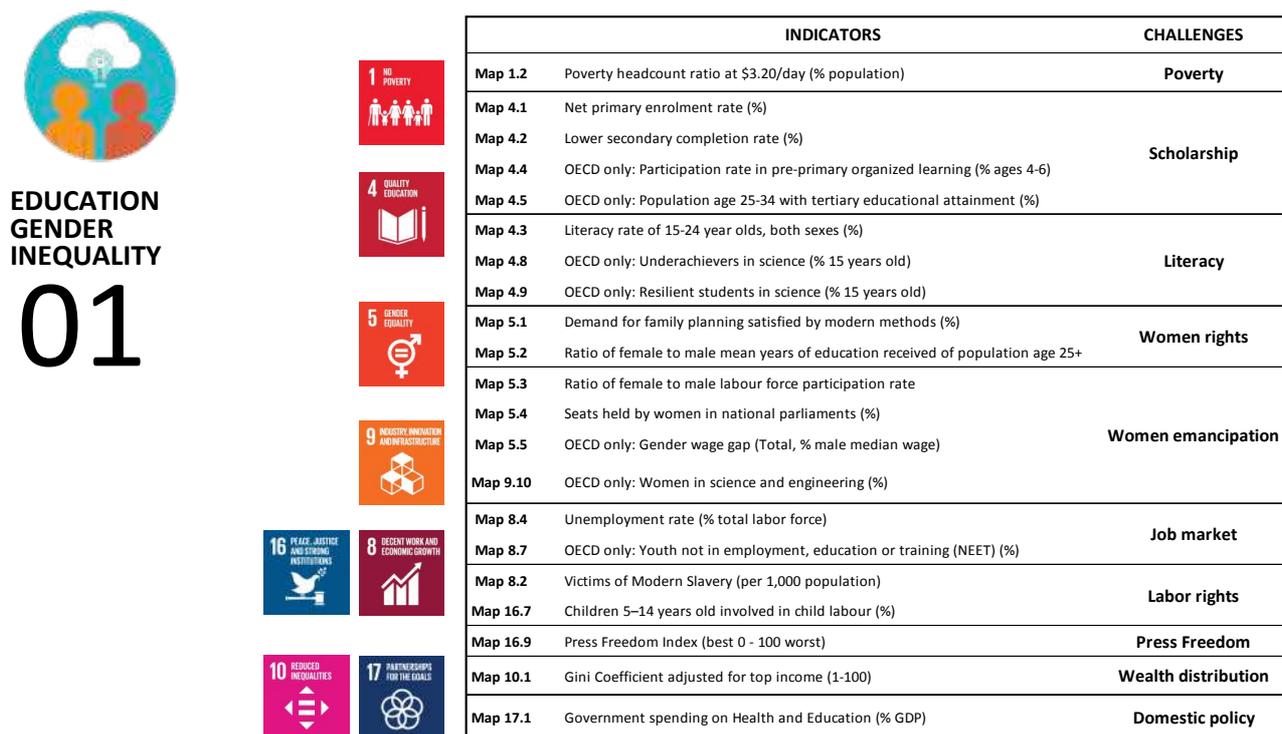


Figure 3.1 shows the 21 representative indicators and the corresponding Goals, that allowed for identifying 10 main challenges to be faced to accomplish the transformation. The following records, one per each challenge, show values of the indicators and their spatially explicit representation into maps. Indicators in the tables are often coupled with the corresponding absolute values, such as the number of people involved, and, when useful, other additional data for their interpretation. References for all indicators and additional data (namely, Add.) are listed in captions.



CHALLENGE

POVERTY

Over 14 million people in the MENA area live with less than \$ 3.20 per day. Despite almost 0.5 million people came out of absolute poverty compared to 2019 (from 17.4 to 16.9), mainly in the Middle East, considering the median income, there are almost 50 million people (12%) in the Med area at **risk of poverty**, including 28 million Europeans.

1.2 Poverty headcount ratio at \$3.20/day (% population)



Countries and regions		Goal 1			
		1.2		people living below 50% of median income	
Units		%	mln	%	mln
France	E West	0.30	0.20	10.10	6.75
Greece	E West	2.42	0.25	14.90	1.60
Italy	E West	1.78	1.08	16.00	9.69
Malta	E West	0.16	0.00	9.40	0.04
Portugal	E West	0.89	0.09	11.00	1.13
Spain	E West	1.32	0.62	16.10	7.50
EUROPE West (6)		1.15	2.23	13.67	26.72
Albania	E East	4.35	0.13	12.00	0.34
Bosnia and Herzegovina	E East	0.23	0.01	-	-
Croatia	E East	1.14	0.05	13.20	0.54
Cyprus	E East	0.08	0.00	8.50	0.10
Montenegro	E East	0.08	0.00	20.50	0.13
North Macedonia	E East	8.10	0.17	17.70	0.37
Slovenia	E East	0.22	0.00	6.40	0.13
EUROPE East (7)		2.18	0.35	12.49	1.62
SOUTHERN EUROPE (13)		1.23	2.59	13.59	28.34
Israel	ME	0.62	0.05	21.20	1.85
Jordan	ME	9.19	0.94	-	-
Lebanon	ME	0.06	0.00	-	-
Palestine	ME	9.40	0.64	12.80	0.57
Syrian Arab Republic	ME	-	-	-	-
Turkey	ME	0.33	0.28	15.60	12.65
MIDDLE EAST (6)		1.09	1.92	15.99	15.07
Algeria	NA	1.97	0.86	-	-
Egypt, Arab Republic	NA	9.46	9.68	5.20	5.02
Libya	NA	-	-	-	-
Morocco	NA	4.53	1.67	-	-
Tunisia	NA	2.15	0.25	10.40	1.19
NORTH AFRICA (5)		6.40	12.47	5.75	6.20
MIDDLE EAST & NORTH AFRICA (11)		4.41	14.39	10.52	21.27
MEDITERRANEAN AREA (24)		3.13	16.97	12.08	49.61

Data source:

1.2– World data lab (2019)

1.1 Add: Proportion of people living below 50 percent of median income (%) – World Bank (2019)



CHALLENGE SCHOLARSHIP

The primary **school enrollment** looks similar in the four areas of the Med but the pupil/teacher ratio shows differences. MENA countries should improve the lower secondary completion rate. Some OECD countries need pre-primary and tertiary educational improvements. Trends are positive compared to 2019.

4.1 Net primary enrolment rate (%)



Source: UNESCO (2020)

4.2 Lower secondary completion rate (%)



Source: UNESCO (2019)

4.4 OECD only: Participation rate in pre-primary organized learning (% pop aged 4-6)



Source: OECD (2019)

4.5 OECD only: Tertiary educational attainment (% of pop 25-34)



Source: OECD (2019)

Countries and regions		Goal 4				
		4.1	pup./teach., primary	4.2	4.4	4.5
Units		%	-	%	% min people left	% min people left
France	E West	99.75	-	99.75	99.82 0.01	46.94 4.24
Greece	E West	97.48	9.38	97.48	92.74 0.04	42.82 0.71
Italy	E West	97.62	11.48	97.62	93.90 0.17	27.73 4.76
Malta	E West	99.54	12.94	100.44	x x	x x
Portugal	E West	98.59	12.35	98.59	99.32 0.00	35.08 0.74
Spain	E West	97.19	13.13	97.19	93.18 0.17	44.26 2.93
EUROPE West (6)		98.29	11.98	93.10	96.24 0.39	39.77 13.38
Albania	E East	94.53	17.57	96.34	x x	x x
Bosnia and Herzegovina	E East	-	16.93	-	x x	x x
Croatia	E East	88.04	13.51	93.09	x x	x x
Cyprus	E East	97.49	12.04	97.61	x x	x x
Montenegro	E East	96.55	-	99.40	x x	x x
North Macedonia	E East	94.89	14.91	88.09	x x	x x
Slovenia	E East	97.96	13.80	97.96	94.08 0.01	40.71 0.15
EUROPE East (7)		93.44	15.10	94.50	-	-
SOUTHERN EUROPE (13)		97.99	12.32	93.19	-	-
Israel	ME	96.96	12.07	96.96	99.09 0.01	48.03 0.62
Jordan	ME	80.86	18.54	59.03	x x	x x
Lebanon	ME	86.30	12.48	52.41	x x	x x
Palestine	ME	91.70	24.45	78.20	x x	x x
Syrian Arab Republic	ME	67.97	-	53.81	x x	x x
Turkey	ME	99.03	16.98	99.03	67.64 2.18	33.28 8.51
MIDDLE EAST (6)		92.42	16.76	86.59	-	-
Algeria	NA	97.64	24.32	84.64	x x	x x
Egypt, Arab Republic	NA	97.03	23.68	84.58	x x	x x
Libya	NA	-	-	-	x x	x x
Morocco	NA	99.10	26.80	64.92	x x	x x
Tunisia	NA	97.80	16.87	77.38	x x	x x
NORTH AFRICA (5)		97.61	24.00	80.36	-	-
MIDDLE EAST & NORTH AFRICA (11)		95.49	21.29	82.91	-	-
MEDITERRANEAN AREA (24)		96.49	18.38	87.02	- 2.58	- 22.67

Data source:

4.1 – UNESCO (2020)

4.2 – UNESCO (2019)

4.4, 4.5 – OECD (2019)

4.1 Add: Pupil-teacher ratio, primary – UNESCO (2020)



CHALLENGE

LITERACY

Almost 2.7 million of youths in MENA do not show good literacy levels. Scientific skills of students should be much improved also in some OECD countries. Educational opportunities become available also for students from low income families.

4.3 Literacy rate of 15-24-year old, both sexes (%)



Source: UNESCO (2019)

4.8 OECD only: Underachievers in science (% of 15-year-olds)



Source: OECD (2018)

4.9 OECD only: Resilient students in science (% of 15-year-olds)



Source: OECD (2018)

Countries and regions		Goal 4			
		4.3	4.8	4.9	
Units		%	<i>mln people left</i>	%	%
France	E West	-	-	20.50	28.93
Greece	E West	99.16	0.01	31.74	19.53
Italy	E West	99.93	0.00	25.88	27.41
Malta	E West	99.30	0.00	x	x
Portugal	E West	99.66	0.00	19.56	41.12
Spain	E West	99.72	0.01	21.28	37.34
EUROPE West (6)		99.76	0.03	22.92	30.60
Albania	E East	99.33	0.00	x	x
Bosnia and Herzegovina	E East	99.66	0.00	x	x
Croatia	E East	99.72	0.00	x	x
Cyprus	E East	99.82	0.00	x	x
Montenegro	E East	99.11	0.00	x	x
North Macedonia	E East	98.60	0.00	x	x
Slovenia	E East	99.80	0.00	14.56	37.74
EUROPE East (7)		99.47	0.01	-	-
SOUTHERN EUROPE (13)		99.72	0.04	-	-
Israel	ME	-	-	33.10	15.96
Jordan	ME	99.34	0.01	x	x
Lebanon	ME	99.75	0.00	x	x
Palestine	ME	99.40	0.01	x	x
Syrian Arab Republic	ME	92.45	0.24	x	x
Turkey	ME	99.75	0.03	25.15	48.22
MIDDLE EAST (6)		92.66	0.29	-	-
Algeria	NA	97.43	0.16	x	x
Egypt, Arab Republic	NA	88.19	1.99	x	x
Libya	NA	99.60	0.00	x	x
Morocco	NA	97.73	0.13	x	x
Tunisia	NA	96.21	0.06	x	x
NORTH AFRICA (5)		92.56	2.35	-	-
MIDDLE EAST & NORTH AFRICA (11)		92.60	2.64	-	-
MEDITERRANEAN AREA (24)		94.12	2.68	-	-

Data source:

4.3 – UNESCO (2019)

4.8 – OECD (2019)

4.9 – OECD (2019)



CHALLENGE
WOMAN RIGHTS

Woman rights must be carefully monitored e.g. performances look good enough in terms of opportunities for **family planning** (except for low demands for assistance recorded in Eastern Europe and the Middle East) and rate of **scholarship** (with a few countries performing below 80%). Further improvements are desirable anyhow.

5.1 Demand for family planning satisfied by modern methods (% women married or in unions, ages 15-49)



5.2 Ratio of female to male mean years of education received (%)



Countries and regions		Goal 5	
		5.1	5.2
Units		%	%
France	E West	95.50	96.55
Greece	E West	62.00	95.37
Italy	E West	68.20	95.24
Malta	E West	74.80	94.83
Portugal	E West	79.10	100.00
Spain	E West	84.50	97.00
EUROPE West (6)		81.76	96.36
Albania	E East	4.90	97.06
Bosnia and Herzegovina	E East	21.90	78.90
Croatia	E East	61.50	90.83
Cyprus	E East	-	98.36
Montenegro	E East	42.80	88.43
North Macedonia	E East	22.30	90.20
Slovenia	E East	78.60	99.19
EUROPE East (7)		37.01	90.85
SOUTHERN EUROPE (13)		78.42	95.93
Israel	ME	71.10	100.00
Jordan	ME	56.70	95.33
Lebanon	ME	63.80	95.51
Palestine	ME	64.80	95.70
Syrian Arab Republic	ME	53.30	82.14
Turkey	ME	59.70	82.14
MIDDLE EAST (6)		59.68	85.29
Algeria	NA	77.20	92.77
Egypt, Arab Republic	NA	80.00	83.75
Libya	NA	24.00	111.11
Morocco	NA	68.60	71.88
Tunisia	NA	73.20	81.01
NORTH AFRICA (5)		74.68	84.25
MIDDLE EAST & NORTH AFRICA (11)		68.60	84.68
MEDITERRANEAN AREA (24)		72.11	90.01

Data source:

5.1 – UNDESA (2018)

5.2 – UNESCO (2019)



CHALLENGE WOMAN EMANCIPATION

Opportunities for women should be further supported e.g. in terms of participation in **labour force** (almost 78% in Europe vs. 34% in MENA) and **policy** (e.g. seats held by women in national parliaments: 37% in Europe; 18% in MENA) and **wage gaps** in OECD countries. Rates of women in **leading positions** are very low in west Europe and MENA.

5.3 Ratio of female to male labour force participation rate



Source: ILO (2019)

5.4 Seats held by women in national parliaments (%)



Source: IPU (2019)

5.5 OECD only: Gender wage gap (Total, % male median wage)



Source: OECD (2020)

9.10 OECD only: Women in science and engineering (%)



Source: OECD (2018)

Countries and regions		Goal 5			Goal 9	
		5.3	5.4	Firms with F top manager	5.5	9.10
Units		%	%	%	%	%
France	E West	84.10	39.51	-	13.00	29.21
Greece	E West	74.82	20.67	17.20	4.50	-
Italy	E West	68.71	35.71	15.30	5.60	-
Malta	E West	65.54	13.43	11.30	x	x
Portugal	E West	83.98	40.00	14.00	14.80	38.10
Spain	E West	81.79	44.00	-	11.50	27.10
EUROPE West (6)		78.24	38.34	6.46	9.97	-
Albania	E East	72.71	29.51	18.10	x	x
Bosnia and Herzegovina	E East	60.77	21.43	16.60	x	x
Croatia	E East	78.81	19.21	27.00	x	x
Cyprus	E East	85.50	19.64	8.20	x	x
Montenegro	E East	75.20	29.63	15.00	x	x
North Macedonia	E East	63.44	40.00	21.30	x	x
Slovenia	E East	85.30	27.78	18.80	5.00	31.05
EUROPE East (7)		73.14	25.58	19.66	-	-
SOUTHERN EUROPE (13)		77.83	37.38	7.50	-	-
Israel	ME	85.84	25.00	-	21.80	-
Jordan	ME	22.21	15.38	3.10	x	x
Lebanon	ME	33.15	4.69	-	x	x
Palestine	ME	27.40	-	0.90	x	x
Syrian Arab Republic	ME	16.83	12.40	-	x	x
Turkey	ME	46.22	17.32	3.90	6.90	30.73
MIDDLE EAST (6)		41.55	16.37	2.74	-	-
Algeria	NA	22.21	25.76	-	x	x
Egypt, Arab Republic	NA	31.33	15.10	4.90	x	x
Libya	NA	32.60	15.96	-	x	x
Morocco	NA	30.41	20.51	5.40	x	x
Tunisia	NA	34.33	24.88	-	x	x
NORTH AFRICA (5)		29.42	19.03	3.49	-	-
MIDDLE EAST & NORTH AFRICA (11)		34.23	17.98	3.19	-	-
MEDITERRANEAN AREA (24)		51.18	25.84	4.87	-	-

Data source:

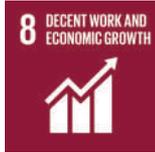
5.3 – ILO (2019)

5.4 – IPU (2019)

5.5 – OECD (2020)

9.10 – OECD (2018)

5.4 Add: Firms with female top manager (% of firms) – World Bank (2020)



CHALLENGE

JOB MARKET

The job market looks stagnant. **Unemployment** rates are around 11% in average in MED, with alarming values in Western Europe (13 million) and MENA (24 million) and almost 39 million in total. The **NEET** phenomenon is increasing in all OECD countries involving almost 8 million youths.

8.4 Unemployment rate (% total labor force)



Source: ILO (2019)

8.7 OECD only: Youth not in employment, education or training (NEET) (%)



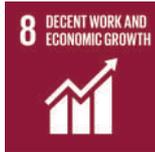
Source: OECD (2019)

Countries and regions		Goal 8			
		8.4		8.7	
Units		%	<i>mln</i>	%	<i>mln</i>
France	E West	8.43	3.50	16.10	1.25
Greece	E West	17.24	1.19	21.46	0.23
Italy	E West	9.89	3.82	23.86	1.39
Malta	E West	3.47	0.01	x	x
Portugal	E West	6.33	0.42	11.58	0.12
Spain	E West	13.96	4.31	19.06	0.86
EUROPE West (6)		10.61	13.25	18.98	3.85
Albania	E East	12.33	0.24	x	x
Bosnia and Herzegovina	E East	18.43	0.42	x	x
Croatia	E East	6.94	0.18	x	x
Cyprus	E East	7.27	0.06	x	x
Montenegro	E East	14.88	0.06	x	x
North Macedonia	E East	17.76	0.26	x	x
Slovenia	E East	4.20	0.06	9.67	0.02
EUROPE East (7)		9.51	1.29	-	-
SOUTHERN EUROPE (13)		10.52	14.53	-	-
Israel	ME	3.86	0.21	13.35	0.18
Jordan	ME	14.72	0.91	x	x
Lebanon	ME	6.23	0.29	x	x
Palestine	ME	26.80	0.71	x	x
Syrian Arab Republic	ME	8.37	0.91	x	x
Turkey	ME	13.49	7.43	26.48	3.55
MIDDLE EAST (6)		12.34	10.44	-	-
Algeria	NA	11.70	3.14	x	x
Egypt, Arab Republic	NA	10.76	6.46	x	x
Libya	NA	18.56	0.83	x	x
Morocco	NA	9.02	2.14	x	x
Tunisia	NA	16.02	1.25	x	x
NORTH AFRICA (5)		11.25	13.82	-	-
MIDDLE EAST & NORTH AFRICA (11)		11.69	24.26	-	-
MEDITERRANEAN AREA (24)		11.23	38.79	-	7.60

Data source:

8.4 – ILO (2019)

8.7 – OECD (2019)



CHALLENGE

LABOR RIGHTS

Numbers show an unexpected scenario with almost 2 million **workers overexploited** or underpaid in the MED area, including European countries (almost 500,000). The exploitation of **child labor** involves 340 million children, 11 million of which in Europe. Rates of “regular” workers with proper contracts should be improved (68% in MENA).

8.2 Prevalence of Modern Slavery (victims per 1,000 population)



16.7 Children 5–14 years old involved in child labour (%)



Countries and regions	Goal 8		Goal 16			
	8.2		Wage and salaried workers	16.7		
	<i>n./10³</i>	<i>n. people</i>	%	<i>mln</i>		
France	E West	2.01	134,577	88.36	0.00	0.00
Greece	E West	7.91	84,899	66.63	0.00	0.00
Italy	E West	2.43	146,908	77.08	0.00	0.00
Malta	E West	-	-	85.96	-	-
Portugal	E West	2.48	25,540	83.34	3.40	3.41
Spain	E West	2.27	105,923	84.08	0.00	0.00
EUROPE West (6)		2.55	497,847	82.34	0.16	3.41
Albania	E East	6.87	19,695	44.63	5.10	1.80
Bosnia and Herzegovina	E East	3.42	11,374	78.91	5.30	1.86
Croatia	E East	5.99	24,504	88.00	-	-
Cyprus	E East	4.23	5,025	86.77	-	-
Montenegro	E East	5.86	3,647	78.41	12.50	0.97
North Macedonia	E East	8.66	18,040	76.69	12.50	2.89
Slovenia	E East	2.17	4,492	85.02	0.00	0.00
EUROPE East (7)		5.34	86,778	76.00	6.21	7.53
SOUTHERN EUROPE (13)		2.77	584,625	81.83	0.50	10.93
Israel	ME	3.86	34,309	87.64	0.00	0.00
Jordan	ME	1.80	17,961	84.99	1.70	3.80
Lebanon	ME	1.72	11,760	63.77	1.90	2.24
Palestine	ME	-	-	69.84	5.70	6.17
Syrian Arab Republic	ME	-	-	62.94	4.00	14.94
Turkey	ME	6.50	534,914	68.50	5.90	78.97
MIDDLE EAST (6)		5.55	598,943	69.98	4.59	106.13
Algeria	NA	2.66	112,116	68.39	5.00	35.37
Egypt, Arab Republic	NA	5.52	543,200	68.75	7.00	132.08
Libya	NA	-	-	93.17	-	-
Morocco	NA	2.45	88,127	49.83	8.30	51.53
Tunisia	NA	2.18	25,177	72.95	2.10	3.51
NORTH AFRICA (5)		4.08	768,621	66.18	6.58	222.49
MIDDLE EAST & NORTH AFRICA (11)		4.62	1,367,564	67.73	5.77	328.61
MEDITERRANEAN AREA (24)		3.85	1,952,189	73.31	4.30	339.55

Data source:

8.2 – Walk Free Foundation (2018)

16.7 – UNICEF (2017)

8.2 Add: Wage and salaried workers, total (% of total employment) – ILO (2020)



CHALLENGE
PRESS FREEDOM

Based on a survey on the **degree of freedom** available to journalists, countries in the MENA area show the most critical limitations, with an average value of the index higher than 50. The average for Europe is almost 23 points. Initiatives to safeguard freedom of press as well as to increase professionalism of journalists are desirable.

16.9 Freedom of Press Index (best 0–100 worst)



Source: Reporters sans frontières (2019)

Countries and regions		Goal 16
		16.9
Units		-
France	E West	22.21
Greece	E West	29.08
Italy	E West	24.98
Malta	E West	29.74
Portugal	E West	12.63
Spain	E West	21.99
EUROPE West (6)		22.91
Albania	E East	29.84
Bosnia and Herzegovina	E East	29.02
Croatia	E East	29.03
Cyprus	E East	21.74
Montenegro	E East	32.74
North Macedonia	E East	31.66
Slovenia	E East	22.31
EUROPE East (7)		28.27
SOUTHERN EUROPE (13)		23.34
Israel	ME	30.80
Jordan	ME	43.11
Lebanon	ME	32.44
Palestine	ME	-
Syrian Arab Republic	ME	71.78
Turkey	ME	52.81
MIDDLE EAST (6)		52.34
Algeria	NA	45.75
Egypt, Arab Republic	NA	56.47
Libya	NA	55.77
Morocco	NA	43.98
Tunisia	NA	29.61
NORTH AFRICA (5)		50.25
MIDDLE EAST & NORTH AFRICA (11)		51.06
MEDITERRANEAN AREA (24)		40.19

Data source:

16.9 – Reporters sans Frontières (2019)



CHALLENGE
WEALTH DISTRIBUTION

Values are correlated to the GINI index measuring the level of **inequality** in family incomes. Inhomogeneity is recorded in the all MED area with highest values in the Middle East. It is an alarming phenomenon also in Europe and with consequent risks of unfair economies and social instability.

10.1 Gini Coefficient adjusted for top income (1-100)



Source: Chandy L., Seidel B. (2017)

Countries and regions		Goal 10
		10.1
Units		-
France	E West	33.31
Greece	E West	45.14
Italy	E West	38.83
Malta	E West	29.61
Portugal	E West	42.14
Spain	E West	38.55
EUROPE West (6)		37.39
Albania	E East	41.68
Bosnia and Herzegovina	E East	34.15
Croatia	E East	36.58
Cyprus	E East	33.95
Montenegro	E East	40.50
North Macedonia	E East	44.01
Slovenia	E East	27.38
EUROPE East (7)		36.71
SOUTHERN EUROPE (13)		37.33
Israel	ME	43.21
Jordan	ME	41.06
Lebanon	ME	36.17
Palestine	ME	-
Syrian Arab Republic	ME	46.47
Turkey	ME	49.04
MIDDLE EAST (6)		46.94
Algeria	NA	31.52
Egypt, Arab Republic	NA	49.60
Libya	NA	-
Morocco	NA	39.75
Tunisia	NA	40.00
NORTH AFRICA (5)		43.04
MIDDLE EAST & NORTH AFRICA (11)		44.62
MEDITERRANEAN AREA (24)		41.60

Data source:

10.1 – Chandy L., Seidel B. (2017)



CHALLENGE

DOMESTIC POLICY

Total general (local, regional and central) government **expenditure on health and education** ranges from 11% of GDP in Europe West to around 7% in Europe East and MENA. Much higher effort is needed to support and guarantee the provision of essential services in this fields.

17.1 Government spending on health and education (% of GDP)



Source: UNESCO (2019); WHO (2019)

Countries and regions		Goal 17
		17.1
Units		% of GDP
France	E West	13.25
Greece	E West	8.88
Italy	E West	10.48
Malta	E West	10.88
Portugal	E West	10.82
Spain	E West	10.60
EUROPE West (6)		11.61
Albania	E East	6.73
Bosnia and Herzegovina	E East	-
Croatia	E East	10.10
Cyprus	E East	9.20
Montenegro	E East	-
North Macedonia	E East	8.03
Slovenia	E East	10.92
EUROPE East (7)		7.61
SOUTHERN EUROPE (13)		10.31
Israel	ME	10.42
Jordan	ME	7.30
Lebanon	ME	6.27
Palestine	ME	-
Syrian Arab Republic	ME	6.72
Turkey	ME	7.00
MIDDLE EAST (6)		6.36
Algeria	NA	7.36
Egypt, Arab Republic	NA	5.30
Libya	NA	-
Morocco	NA	7.78
Tunisia	NA	10.59
NORTH AFRICA (5)		7.04
MIDDLE EAST & NORTH AFRICA (11)		6.51
MEDITERRANEAN AREA (24)		6.77

Data source:

17.1 – UNESCO (2019); WHO (2019)

3.2 Transformation Health, Wellbeing and Demography

A set of indicators has been selected as the most relevant to report on the current state, highlight hotspots and track the progress towards the Transformation 2. This aims to promote initiatives and investments for health and wellbeing, starting from the principal output of a universal health coverage and publicly financed health systems that integrates prevention, therapeutic and palliative services, disease surveillance and control. Community health programs, including policies to raise the quality of life and promote healthy lifestyles, can improve health outcomes significantly (Sachs et al. 2019).

Figure 3.2 | Selected indicators and challenges in the transformation 2. Health, Wellbeing and Demography.

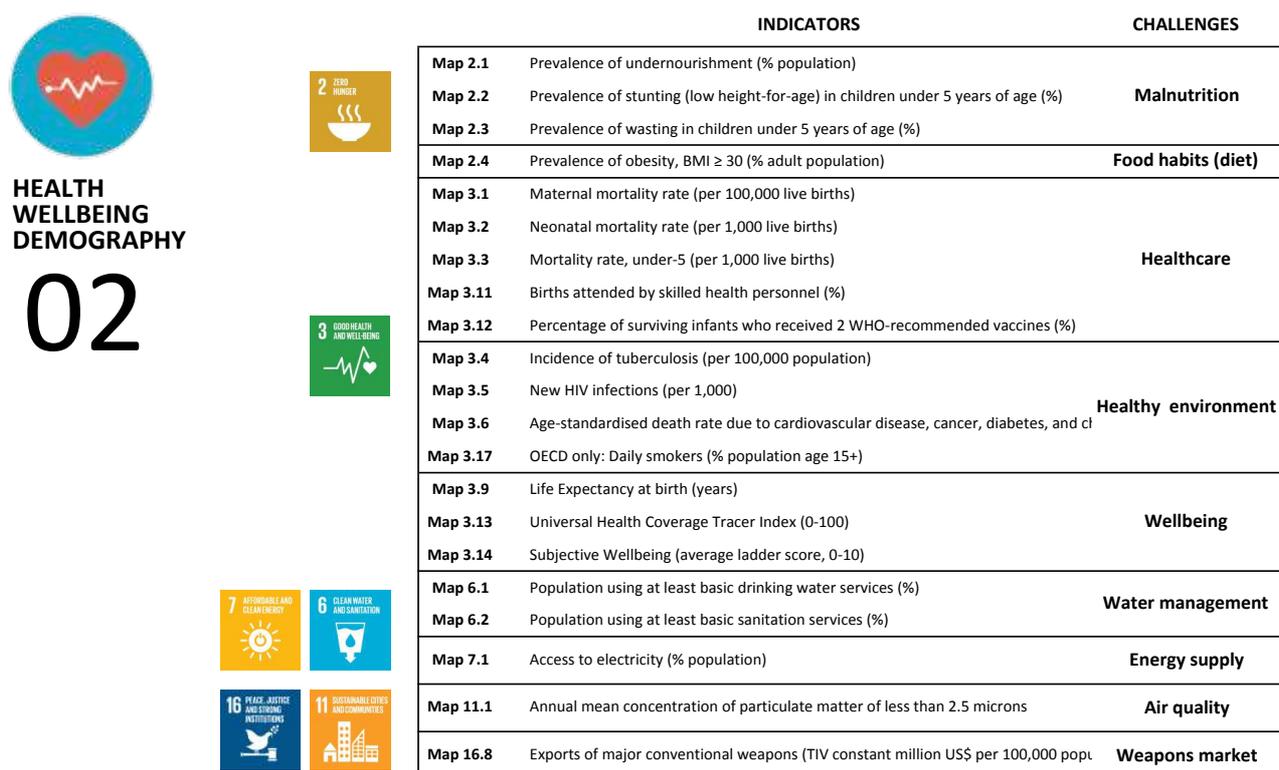


Figure 3.2 shows the 21 representative indicators and the corresponding Goals, that allowed for identifying the 9 challenges to be faced to accomplish the transformation. The following records, one per each challenge, show values of the indicators and their spatially explicit representation into maps. Indicators in the tables are often coupled with the corresponding absolute values, such as the number of people involved, and, when useful, other additional data for their interpretation. References for all indicators and additional data (namely, Add.) are listed in captions.



CHALLENGE
MALNUTRITION

Precarious conditions of health induced by malnutrition require attention in the MENA area: almost 12 million people **undernourished**, 2 million children with **wasting** and almost 6 million children with **stunted** growth. Interventions to avoid the insurgency of these problems would also increase healthiness of next generation adult population.

2.1 Prevalence of undernourishment (% population)



2.2 Prevalence of stunting in children under 5 years of age (%)



2.3 Prevalence of wasting in children under 5 years of age (%)



Countries and regions		Goal 2					
		2.1		2.2		2.3	
Units		%	<i>mln</i>	%	<i>mln</i>	%	<i>mln</i>
France	E West	2.50	1.67	2.58	0.10	0.70	0.03
Greece	E West	2.50	0.27	2.58	0.01	0.70	0.00
Italy	E West	2.50	1.51	2.58	0.07	0.70	0.02
Malta	E West	2.50	0.01	2.58	0.00	0.70	0.00
Portugal	E West	2.50	0.26	2.58	0.01	0.70	0.00
Spain	E West	2.50	1.16	2.58	0.05	0.70	0.01
EUROPE West (6)		2.50	4.89	2.58	0.25	0.70	0.07
Albania	E East	6.20	0.18	23.10	0.04	9.40	0.02
Bosnia and Herzegovina	E East	2.50	0.08	8.90	0.01	2.30	0.00
Croatia	E East	2.50	0.10	2.58	0.00	0.70	0.00
Cyprus	E East	5.60	0.07	2.58	0.00	0.70	0.00
Montenegro	E East	2.50	0.02	9.40	0.00	2.80	0.00
North Macedonia	E East	3.20	0.07	4.90	0.01	1.80	0.00
Slovenia	E East	2.50	0.05	2.58	0.00	0.70	0.00
EUROPE East (7)		3.47	0.56	8.59	0.07	3.03	0.03
SOUTHERN EUROPE (13)		2.57	5.45	3.07	0.32	0.89	0.09
Israel	ME	2.50	0.22	2.58	0.02	0.70	0.01
Jordan	ME	12.20	1.19	7.80	0.09	2.40	0.03
Lebanon	ME	11.00	0.75	16.50	0.10	6.60	0.04
Palestine	ME	-	-	7.40	0.05	1.20	0.01
Syrian Arab Republic	ME	-	-	27.50	0.53	11.50	0.22
Turkey	ME	2.50	2.03	9.50	0.65	1.70	0.12
MIDDLE EAST (6)		3.27	4.19	11.94	1.44	3.48	0.42
Algeria	NA	3.90	1.61	11.70	0.55	4.10	0.19
Egypt, Arab Republic	NA	4.50	4.34	22.30	2.88	9.50	1.23
Libya	NA	-	-	21.00	0.14	6.50	0.04
Morocco	NA	3.40	1.21	14.90	0.52	2.30	0.08
Tunisia	NA	4.30	0.49	10.10	0.11	2.80	0.03
NORTH AFRICA (5)		4.00	7.66	18.37	4.20	6.88	1.57
MIDDLE EAST & NORTH AFRICA (11)		3.71	11.84	16.15	5.64	5.71	1.99
MEDITERRANEAN AREA (24)		3.26	17.30	13.15	5.96	4.60	2.09

Data source:

2.1 – FAO (2019)

2.2 – UNICEF et al. (2019)

2.3 – UNICEF et al. (2019)



CHALLENGE

FOODS HABITS (DIET)

Obesity affects 22% of the population in Europe and 30% in MENA, namely almost 34 million people in western Europe, 34 million in NA and 24 million in ME. Trend are emerging towards high-protein diets and progressive abandon of the Mediterranean diet.

2.4 Prevalence of obesity, BMI \geq 30 (% adult population)



Countries and regions		Goal 2	
		2.4	
Units		%	<i>mln</i>
France	E West	21.60	10.93
Greece	E West	24.90	2.16
Italy	E West	19.90	9.86
Malta	E West	28.90	0.11
Portugal	E West	20.80	1.74
Spain	E West	23.80	8.90
EUROPE West (6)		21.75	33.69
Albania	E East	21.70	0.46
Bosnia and Herzegovina	E East	17.90	0.48
Croatia	E East	24.40	0.81
Cyprus	E East	21.80	0.20
Montenegro	E East	23.30	0.11
North Macedonia	E East	22.40	0.36
Slovenia	E East	20.20	0.34
EUROPE East (7)		21.57	2.75
SOUTHERN EUROPE (13)		21.73	36.44
Israel	ME	26.10	1.43
Jordan	ME	35.50	1.85
Lebanon	ME	32.00	1.37
Palestine	ME	-	-
Syrian Arab Republic	ME	27.80	2.80
Turkey	ME	32.10	16.97
MIDDLE EAST (6)		31.34	24.42
Algeria	NA	27.40	7.07
Egypt, Arab Republic	NA	32.00	17.35
Libya	NA	32.50	1.33
Morocco	NA	26.10	5.87
Tunisia	NA	26.90	2.09
NORTH AFRICA (5)		29.47	33.70
MIDDLE EAST & NORTH AFRICA (11)		30.23	58.13
MEDITERRANEAN AREA (24)		26.27	94.57

Data source:
2.4 – WHO (2019)



CHALLENGE
HEALTHCARE

Relevant improvements are needed in NA countries in terms of equipment and medical assistance at birth and availability of **skilled personnel** (the lack of medical staff is especially relevant in Morocco and Tunisia with only 73% of properly assisted births).

3.1 Maternal mortality rate (per 100,000 live births)



Source: WHO (2019)

3.2 Neonatal mortality rate (per 1,000 live births)



Source: UNICEF et al. (2019)

3.11 Births attended by skilled health personnel (%)



Source: UNICEF (2019)

Countries and regions		Goal 3					
		3.1		3.2		3.11	
Units		n./10 ⁵	n. people	n./10 ⁵	n. people	%	min people left
France	E West	8.00	5,349	2.50	1,675	97.40	0.38
Greece	E West	3.00	323	2.60	279	-	-
Italy	E West	2.00	1,211	2.00	1,209	99.90	0.01
Malta	E West	6.00	28	4.70	23	99.80	0.00
Portugal	E West	8.00	824	2.10	216	98.90	0.03
Spain	E West	4.00	1,864	1.70	794	-	-
EUROPE West (6)		4.91	9,598	2.14	4,195	98.61	0.42
Albania	E East	15.00	431	6.50	186	99.80	0.00
Bosnia and Herzegovina	E East	10.00	335	4.10	136	99.90	0.00
Croatia	E East	8.00	330	2.60	106	99.90	0.00
Cyprus	E East	6.00	71	1.40	17	97.40	0.01
Montenegro	E East	6.00	37	1.70	11	99.00	0.00
North Macedonia	E East	7.00	146	7.40	154	99.90	0.00
Slovenia	E East	7.00	145	1.20	25	99.80	0.00
EUROPE East (7)		9.17	1,495	3.91	635	99.63	0.01
SOUTHERN EUROPE (13)		5.24	11,093	2.28	4,830	98.73	0.43
Israel	ME	3.00	261	1.90	169	-	-
Jordan	ME	46.00	4,498	9.50	946	99.70	0.01
Lebanon	ME	29.00	1,975	4.30	295	98.20	0.03
Palestine	ME	45.00	2,005	11.30	516	99.60	0.00
Syrian Arab Republic	ME	31.00	5,291	8.80	1,488	96.20	0.18
Turkey	ME	17.00	13,787	5.50	4,528	97.40	0.55
MIDDLE EAST (6)		21.75	27,818	6.13	7,941	97.53	0.77
Algeria	NA	112.00	46,356	14.60	6,165	96.60	0.37
Egypt, Arab Republic	NA	37.00	35,684	11.20	11,023	91.50	2.02
Libya	NA	72.00	4,738	6.40	427	99.90	0.00
Morocco	NA	70.00	24,907	13.80	4,972	73.60	2.46
Tunisia	NA	43.00	4,916	11.50	1,330	73.60	0.80
NORTH AFRICA (5)		60.91	116,601	12.27	23,918	88.41	5.64
MIDDLE EAST & NORTH AFRICA (11)		45.22	144,419	9.82	31,859	91.97	6.42
MEDITERRANEAN AREA (24)		29.28	155,512	6.84	36,689	93.98	6.85

Data source:

3.1 – WHO (2019)

3.2 – UNICEF et al. (2019)

3.11 – UNICEF (2019)



CHALLENGE
HEALTHCARE

Med child mortality rate (12%) is below the world optimal threshold (25%). Basic improvements are needed in NA (over 21%) with over 41,000 children affected. The national routine immunisation coverage of infants is estimated good in most of the MED area with deficits in some countries of Eastern Europe and MENA.

3.3 Mortality rate, under-5 (per 1,000 live births)



Source: UNICEF et al. (2019)

3.12 Percentage of surviving infants who received 2 WHO-recommended vaccines (%)



Source: WHO and UNICEF (2019)

Countries and regions		Goal 3			
		3.3		3.12	
Units		n./10 ⁵	n. people	%	mln people left
France	E West	4.00	2,679	90.00	0.10
Greece	E West	4.50	483	97.00	0.00
Italy	E West	3.00	1,813	93.00	0.04
Malta	E West	7.00	34	96.00	0.00
Portugal	E West	3.70	380	99.00	0.00
Spain	E West	3.00	1,402	93.00	0.04
EUROPE West (6)		3.47	6,791	92.21	0.18
Albania	E East	8.80	252	94.00	0.00
Bosnia and Herzegovina	E East	5.80	193	68.00	0.01
Croatia	E East	4.70	192	93.00	0.00
Cyprus	E East	2.40	29	90.00	0.00
Montenegro	E East	2.50	16	58.00	0.00
North Macedonia	E East	9.90	206	83.00	0.00
Slovenia	E East	2.10	43	93.00	0.00
EUROPE East (7)		5.73	931	85.70	0.03
SOUTHERN EUROPE (13)		3.64	7,722	91.68	0.21
Israel	ME	3.70	329	98.00	0.00
Jordan	ME	16.20	1,613	92.00	0.02
Lebanon	ME	7.40	507	82.00	0.03
Palestine	ME	20.90	955	99.00	0.00
Syrian Arab Republic	ME	16.70	2,823	47.00	0.24
Turkey	ME	10.60	8,726	96.00	0.07
MIDDLE EAST (6)		11.55	14,953	87.78	0.36
Algeria	NA	23.50	9,924	80.00	0.25
Egypt, Arab Republic	NA	21.20	20,866	94.00	0.19
Libya	NA	12.00	801	97.00	0.00
Morocco	NA	22.40	8,071	99.00	0.01
Tunisia	NA	17.00	1,966	96.00	0.01
NORTH AFRICA (5)		21.36	41,628	91.91	0.47
MIDDLE EAST & NORTH AFRICA (11)		17.44	56,580	90.51	0.83
MEDITERRANEAN AREA (24)		11.99	64,302	90.77	1.04

Data source:

3.3 – UNICEF et al. (2019)

3.12 – WHO and UNICEF (2019)



CHALLENGE
HEALTHY ENVIRONMENT

In general the MED area perform well in terms of **disease containment**. Nevertheless, tuberculosis in Med area afflicts over 120,000 people (83,000 in NA). Highest numbers of HIV infection and Non-Communicable Disease are mostly located in western Europe and NA. Smokers are still a consistent number in OECD countries.

3.4 Incidence of tuberculosis (per 100,000 population)



Source: WHO (2019)

3.5 New HIV infections (per 1,000)



Source: UNAIDS (2018)

3.6 Age-standardised death rate due to cardiovascular disease, cancer, diabetes, and chronic respiratory disease in populations age 30–70 years (per 100,000 population)



Source: WHO (2019)

3.17 OECD only: Daily smokers (% population age 15+)



Source: OECD (2020)

Countries and regions		Goal 3							
		3.4		3.5		3.6		3.17	
Units		n./10 ⁵	n. people	n./10 ³	n. people	n./10 ⁵	n. people	%	min
France	E West	8.90	5,962	0.09	6,029	10.60	3,592	22.40	12.22
Greece	E West	4.50	483	-	-	12.40	727	27.30	2.52
Italy	E West	7.00	4,230	0.05	3,022	9.50	3,176	19.90	10.42
Malta	E West	14.00	68	-	-	10.80	27	x	x
Portugal	E West	24.00	2,468	0.07	720	11.10	631	16.80	1.49
Spain	E West	9.40	4,392	0.07	3,271	9.90	2,589	22.10	8.76
EUROPE West (6)		9.00	17,602	0.07	13,041	10.20	10,742	-	-
Albania	E East	18.00	516	-	-	17.00	233	x	x
Bosnia and Herzegovina	E East	25.00	831	0.01	33	17.80	337	x	x
Croatia	E East	8.40	344	0.02	82	16.70	378	x	x
Cyprus	E East	5.40	64	-	-	11.30	66	x	x
Montenegro	E East	15.00	93	0.08	50	20.60	67	x	x
North Macedonia	E East	13.00	271	0.02	42	20.30	227	x	x
Slovenia	E East	5.30	110	-	-	12.70	148	18.90	0.33
EUROPE East (7)		13.72	2,228	0.02	206	16.70	1,456	-	-
SOUTHERN EUROPE (13)		9.36	19,831	0.07	13,247	10.70	12,198	-	-
Israel	ME	4.00	355	0.05	444	9.60	352	16.90	1.04
Jordan	ME	5.00	498	0.01	100	19.20	633	x	x
Lebanon	ME	11.00	753	0.02	137	17.90	510	x	x
Palestine	ME	1.00	46	-	-	-	-	x	x
Syrian Arab Republic	ME	19.00	3,212	0.01	169	21.80	1,381	x	x
Turkey	ME	16.00	13,171	-	-	16.10	5,791	26.50	15.80
MIDDLE EAST (6)		13.93	18,036	0.02	850	5.52	8,666	-	-
Algeria	NA	69.00	29,138	0.03	1,267	14.20	2,411	x	x
Egypt, Arab Republic	NA	12.00	11,811	0.04	3,937	27.70	9,707	x	x
Libya	NA	40.00	2,671	0.07	467	20.10	556	x	x
Morocco	NA	99.00	35,669	0.03	1,081	12.40	1,863	x	x
Tunisia	NA	35.00	4,048	0.02	231	16.10	867	x	x
NORTH AFRICA (5)		42.75	83,337	0.04	6,983	20.48	15,403	-	-
MIDDLE EAST & NORTH AFRICA (11)		31.25	101,372	0.03	7,833	14.36	24,069	-	-
MEDITERRANEAN AREA (24)		22.60	121,203	0.05	21,081	15.03	36,268	-	-

Data source:

3.4, 3.6 – WHO (2016)

3.5 – UNAIDS (2018)

3.17 – OECD (2020)



CHALLENGE
WELLBEING

Western Europe shows the best performances in terms of **healthiness** and wellbeing, that is indirectly correlated, albeit not exclusively, with food, land and water quality. **Mediterranean diet** can play a relevant role for improvements as it determines half the rate of cardiovascular mortality and the highest longevity.

3.9 Life Expectancy at birth (years)



Source: WHO (2019)

3.13 Universal Health Coverage Tracer Index (0-100)



Source: WHO (2019)

3.14 Subjective Wellbeing (average ladder score, 0-10)



Source: Gallup (2019)

Countries and regions		Goal 3		
		3.9	3.13	3.14
Units		years	-	-
France	E West	82.90	78.00	6.69
Greece	E West	81.20	75.00	5.41
Italy	E West	82.80	82.00	6.45
Malta	E West	81.50	82.00	6.73
Portugal	E West	81.50	82.00	6.10
Spain	E West	83.10	83.00	6.46
EUROPE West (6)		82.75	80.49	6.45
Albania	E East	76.40	59.00	5.00
Bosnia and Herzegovina	E East	77.30	61.00	5.89
Croatia	E East	78.30	71.00	5.54
Cyprus	E East	80.70	78.00	6.28
Montenegro	E East	76.80	68.00	5.39
North Macedonia	E East	75.90	72.00	5.02
Slovenia	E East	80.90	79.00	6.67
EUROPE East (7)		77.90	68.36	5.64
SOUTHERN EUROPE (13)		82.37	79.55	6.39
Israel	ME	82.30	82.00	6.93
Jordan	ME	74.30	76.00	4.45
Lebanon	ME	76.30	73.00	5.17
Palestine	ME	-	71.80	4.60
Syrian Arab Republic	ME	63.80	60.00	3.46
Turkey	ME	76.40	74.00	5.19
MIDDLE EAST (6)		74.84	72.70	4.98
Algeria	NA	76.40	78.00	5.04
Egypt, Arab Republic	NA	70.50	68.00	4.01
Libya	NA	71.90	64.00	5.49
Morocco	NA	76.00	70.00	5.06
Tunisia	NA	76.00	70.00	4.32
NORTH AFRICA (5)		73.18	70.52	4.49
MIDDLE EAST & NORTH AFRICA (11)		73.83	71.39	4.68
MEDITERRANEAN AREA (24)		77.30	74.65	5.35

Data source:

3.9 – WHO (2019)

3.13 – WHO (2019)

3.14 – Gallup (2019)



CHALLENGE
WATER MANAGEMENT

North Africa is the Med area that mostly suffers from lack of access at **basic drinking water services** (8,8 million people) and lack of **basic sanitation services** (15,9 million people), but trends are positive compared to the 2019 (respectively -2 and -2,6 million people).

6.1 Population using at least basic drinking water services (%)



6.2 Population using at least basic sanitation services (%)



Countries and regions		Goal 6			
		6.1		6.2	
Units		%	mln people left	%	mln people left
France	E West	100.00	0.00	98.65	0.90
Greece	E West	100.00	0.00	98.98	0.11
Italy	E West	99.44	0.34	98.77	0.74
Malta	E West	100.00	0.00	99.96	0.00
Portugal	E West	99.91	0.01	99.61	0.04
Spain	E West	99.93	0.03	99.90	0.04
EUROPE West (6)		99.81	0.38	99.06	1.84
Albania	E East	91.04	0.26	97.72	0.07
Bosnia and Herzegovina	E East	96.14	0.13	95.36	0.16
Croatia	E East	99.59	0.02	96.54	0.14
Cyprus	E East	99.61	0.00	99.15	0.01
Montenegro	E East	97.04	0.02	97.77	0.01
North Macedonia	E East	93.14	0.14	99.13	0.02
Slovenia	E East	99.54	0.01	99.11	0.02
EUROPE East (7)		96.45	0.58	97.40	0.42
SOUTHERN EUROPE (13)		99.55	0.96	98.93	2.26
Israel	ME	100.00	0.00	100.00	0.00
Jordan	ME	98.94	0.10	97.34	0.26
Lebanon	ME	92.60	0.50	98.48	0.10
Palestine	ME	87.60	0.55	96.00	0.18
Syrian Arab Republic	ME	97.22	0.48	91.22	1.50
Turkey	ME	98.88	0.91	97.30	2.19
MIDDLE EAST (6)		98.01	2.55	96.69	4.23
Algeria	NA	93.56	2.67	87.59	5.14
Egypt, Arab Republic	NA	99.11	0.86	94.19	5.60
Libya	NA	98.53	0.10	100.00	0.00
Morocco	NA	86.78	4.70	88.50	4.09
Tunisia	NA	96.26	0.43	90.92	1.04
NORTH AFRICA (5)		95.42	8.76	91.71	15.87
MIDDLE EAST & NORTH AFRICA (11)		96.46	11.31	93.71	20.10
MEDITERRANEAN AREA (24)		97.69	12.27	95.79	22.36

Data source:

6.1 – LMP (2019)

6.2 – JMP (2019)



CHALLENGE
ENERGY SUPPLY

Access to electricity is generally guaranteed to Mediterranean population. The objective to establish self-sufficiency of electricity systems in the Mediterranean is a possible scenario considering the availability of renewable energy sources with high potentials, such as sunlight and wind.

7.1 Population with access to electricity (%)



Countries and regions		Goal 7	
		7.1	
Units		%	<i>mln people left</i>
France	E West	100.00	0.00
Greece	E West	100.00	0.00
Italy	E West	100.00	0.00
Malta	E West	100.00	0.00
Portugal	E West	100.00	0.00
Spain	E West	100.00	0.00
EUROPE West (6)		100.00	0.00
Albania	E East	100.00	0.00
Bosnia and Herzegovina	E East	100.00	0.00
Croatia	E East	100.00	0.00
Cyprus	E East	100.00	0.00
Montenegro	E East	100.00	0.00
North Macedonia	E East	100.00	0.00
Slovenia	E East	100.00	0.00
EUROPE East (7)		100.00	0.00
SOUTHERN EUROPE (13)		100.00	0.00
Israel	ME	100.00	0.00
Jordan	ME	100.00	0.00
Lebanon	ME	100.00	0.00
Palestine	ME	100.00	0.00
Syrian Arab Republic	ME	89.64	1.77
Turkey	ME	100.00	0.00
MIDDLE EAST (6)		98.62	1.77
Algeria	NA	100.00	0.00
Egypt, Arab Republic	NA	100.00	0.00
Libya	NA	70.15	1.96
Morocco	NA	100.00	0.00
Tunisia	NA	100.00	0.00
NORTH AFRICA (5)		98.97	1.96
MIDDLE EAST & NORTH AFRICA (11)		98.83	3.73
MEDITERRANEAN AREA (24)		99.30	3.73

Data source:
7.1 – SE4All (2019)



CHALLENGE
AIR QUALITY

MENA countries show high levels of exposition to **PM 2.5** ($50 \mu\text{g}/\text{m}^3$). Values in Europe are lower but not negligible ($13 \mu\text{g}/\text{m}^3$) especially considering specific sites with high concentrations. The percentage of med population exposed at PM2.5 is about 90%; even higher in MENA.

11.1 Annual mean concentration of particulate matter of less than 2.5 microns of diameter (PM2.5) ($\mu\text{g}/\text{m}^3$)



Source: IHME (2017)

Countries and regions		Goal 11	
		11.1	
Units		$\mu\text{g}/\text{m}^3$	% pop exposed
France	E West	11.82	78.21
Greece	E West	16.22	100.00
Italy	E West	16.75	94.78
Malta	E West	13.91	100.00
Portugal	E West	8.16	16.01
Spain	E West	9.70	41.12
EUROPE West (6)		12.23	72.47
Albania	E East	18.20	100.00
Bosnia and Herzegovina	E East	27.75	99.96
Croatia	E East	17.90	99.78
Cyprus	E East	17.29	100.00
Montenegro	E East	20.78	100.00
North Macedonia	E East	29.73	100.00
Slovenia	E East	16.02	99.49
EUROPE East (7)		21.84	99.87
SOUTHERN EUROPE (13)		13.34	74.58
Israel	ME	21.38	100.00
Jordan	ME	33.01	100.00
Lebanon	ME	30.62	100.00
Palestine	ME	-	100.00
Syrian Arab Republic	ME	43.76	100.00
Turkey	ME	44.31	100.00
MIDDLE EAST (6)		42.70	100.00
Algeria	NA	38.88	100.00
Egypt, Arab Republic	NA	87.00	100.00
Libya	NA	54.26	100.00
Morocco	NA	32.59	100.00
Tunisia	NA	37.66	100.00
NORTH AFRICA (5)		51.44	100.00
MIDDLE EAST & NORTH AFRICA (11)		50.04	100.00
MEDITERRANEAN AREA (24)		42.45	89.86

Data source:

11.1 – IHME (2017)

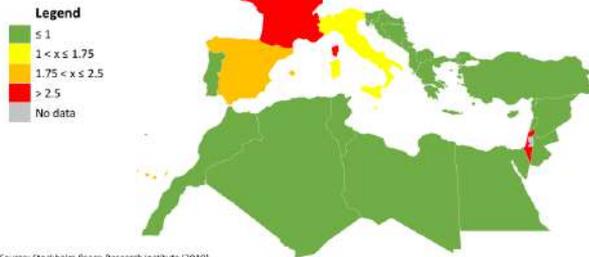
11.1 Add: PM2.5 air pollution, population exposed to levels exceeding WHO guideline value (% of total) – Brauer, M. et al. (2017)



CHALLENGE
WEAPON MARKET

The volume of major conventional **weapons exported**, expressed in constant 1990 US\$ millions per 100 000 people, is relevant in most OECD countries. Considering the delicate role of this economy that risks to nurture instability and wars, this sector requires a special attention and a comprehensive rethinking at international level.

16.8 Exports of major conventional weapons (TIV constant million USD per 100,000 population)



Countries and regions		Goal 16
		16.8
Units		\$/10 ⁵
France	E West	3.55
Greece	E West	0.29
Italy	E West	1.04
Malta	E West	1.14
Portugal	E West	0.47
Spain	E West	1.94
EUROPE West (6)		2.03
Albania	E East	0.00
Bosnia and Herzegovina	E East	0.00
Croatia	E East	0.07
Cyprus	E East	0.00
Montenegro	E East	0.00
North Macedonia	E East	0.00
Slovenia	E East	0.00
EUROPE East (7)		0.02
SOUTHERN EUROPE (13)		1.87
Israel	ME	10.17
Jordan	ME	0.40
Lebanon	ME	0.00
Palestine	ME	-
Syrian Arab Republic	ME	0.00
Turkey	ME	0.28
MIDDLE EAST (6)		0.91
Algeria	NA	0.00
Egypt, Arab Republic	NA	0.01
Libya	NA	0.00
Morocco	NA	0.00
Tunisia	NA	0.00
NORTH AFRICA (5)		0.01
MIDDLE EAST & NORTH AFRICA (11)		0.36
MEDITERRANEAN AREA (24)		0.95

Data source:

16.8 – Stockholm Peace Research Institute (2019)

3.3 Transformation Energy, Decarbonisation and Sustainable Industry

A set of indicators has been selected as the most relevant to report on the current state, highlight hotspots and track the progress towards the Transformation 3. This aims to ensure universal access to renewable energy sources, decarbonize the energy system in line with the Paris agreement and avoid or mitigate impacts of production processes in air, water and soil. Electricity generation and distribution, thermal energy, mobility and transport, industrial processes are among the targeted sectors, for example through lifecycle approaches and circular economy (Sachs et al. 2019).

Figure 3.3 | Selected indicators and challenges in the transformation 3. Energy, Decarbonisation and Sustainable Industry.

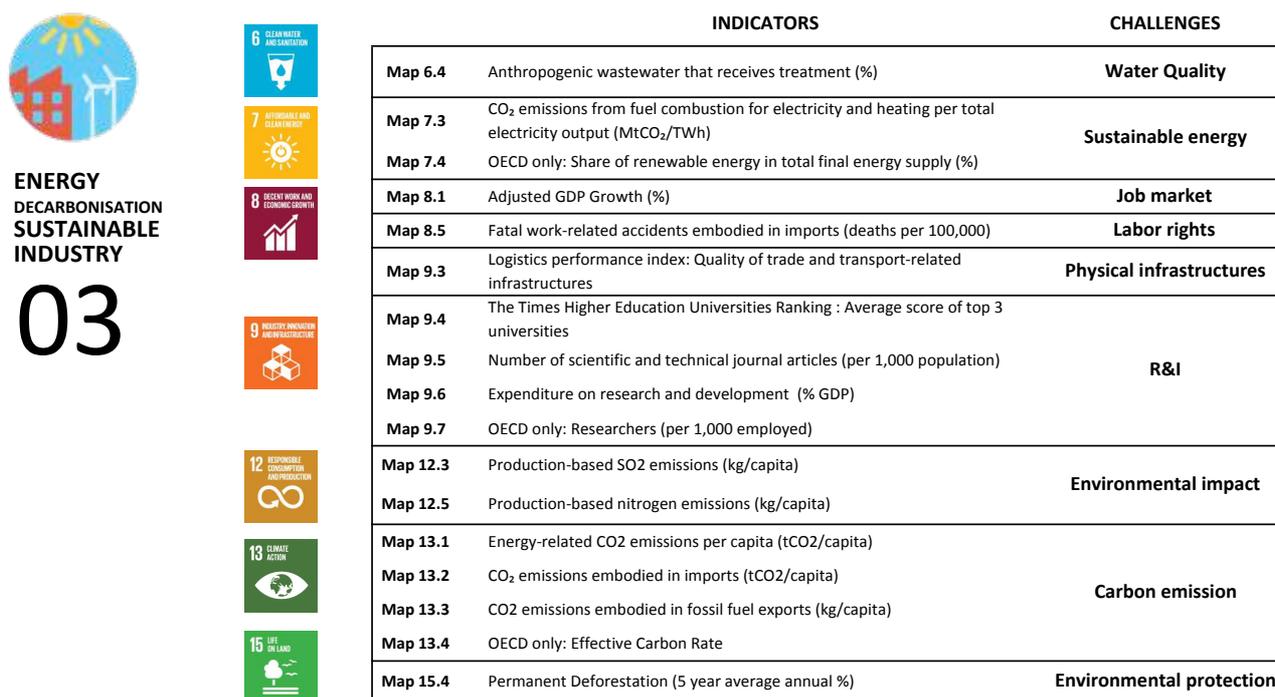


Figure 3.3 shows the 17 representative indicators and the corresponding Goal, that allowed for identifying the 9 challenges to be faced to accomplish the transformation. The following records, one per each challenge, show values of the indicators and their spatially explicit representation into maps. Indicators in the tables are often coupled with the corresponding absolute values, such as the number of people involved, and, when useful, other additional data for their interpretation. References for all indicators and additional data (namely, Add.) are listed in captions.



CHALLENGE
WATER QUALITY

Wastewater treatment is not a practice deployed enough. Besides EW (78%), MENA countries need consistent improvements (33% only). Some countries in particular in EE and MENA show unsatisfactory performances and call for investments in wastewater infrastructures and management.

6.4 Percentage of anthropogenic wastewater that receives treatment (%)



Source: EPI (2018)

Countries and regions		6.4
Units		%
France	E West	88.00
Greece	E West	81.66
Italy	E West	58.75
Malta	E West	100.00
Portugal	E West	54.98
Spain	E West	91.51
EUROPE West (6)		77.75
Albania	E East	2.67
Bosnia and Herzegovina	E East	1.13
Croatia	E East	51.71
Cyprus	E East	50.00
Montenegro	E East	8.37
North Macedonia	E East	0.94
Slovenia	E East	89.09
EUROPE East (7)		29.16
SOUTHERN EUROPE (13)		74.03
Israel	ME	81.70
Jordan	ME	18.63
Lebanon	ME	38.16
Palestine	ME	-
Syrian Arab Republic	ME	48.00
Turkey	ME	30.40
MIDDLE EAST (6)		35.92
Algeria	NA	33.12
Egypt, Arab Republic	NA	41.96
Libya	NA	9.60
Morocco	NA	5.40
Tunisia	NA	43.04
NORTH AFRICA (5)		32.24
MIDDLE EAST & NORTH AFRICA (11)		33.68
MEDITERRANEAN AREA (24)		49.76

Data source:
6.4 – EPI (2018)



CHALLENGE
SUSTAINABLE ENERGY

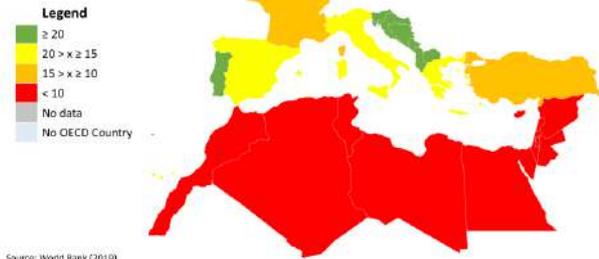
CO2 emissions from fossil combustion per electricity output are lower in European countries, depending on good energy policies and, in some cases (France), on nuclear power plants (high risks for humans and ecosystems). Europe East leads in terms of share of **renewable energy**. Improvements are needed in MENA countries.

7.3 CO₂ emissions from fuel combustion for electricity and heating per total electricity output (MtCO₂/TWh)



Source: IEA (2016)

7.4 Share of renewable energy in total final energy consumption (%)



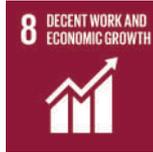
Source: World Bank (2019)

Countries and regions		Goal 7	
		7.3	7.4
Units		MtCO ₂ /TWh	%
France	E West	0.57	10.53
Greece	E West	1.20	12.97
Italy	E West	1.15	17.85
Malta	E West	0.97	5.36
Portugal	E West	0.93	24.70
Spain	E West	0.98	14.59
EUROPE West (6)		0.90	14.63
Albania	E East	0.97	38.62
Bosnia and Herzegovina	E East	1.42	40.75
Croatia	E East	1.43	33.13
Cyprus	E East	1.35	9.94
Montenegro	E East	0.92	43.00
North Macedonia	E East	1.40	24.22
Slovenia	E East	0.88	16.80
EUROPE East (7)		1.25	31.12
SOUTHERN EUROPE (13)		0.93	15.89
Israel	ME	1.00	2.61
Jordan	ME	1.30	3.23
Lebanon	ME	1.41	3.65
Palestine	ME	-	10.47
Syrian Arab Republic	ME	1.34	0.52
Turkey	ME	1.34	13.08
MIDDLE EAST (6)		1.27	9.37
Algeria	NA	1.83	0.06
Egypt, Arab Republic	NA	1.15	5.71
Libya	NA	1.20	1.97
Morocco	NA	1.95	11.32
Tunisia	NA	1.36	12.56
NORTH AFRICA (5)		1.42	5.80
MIDDLE EAST & NORTH AFRICA (11)		1.36	7.23
MEDITERRANEAN AREA (24)		1.20	10.65

Data source:

7.3 – IEA (2016)

7.4 – World Bank (2019)



CHALLENGE
JOB MARKET

In relation to national income levels, the **growth rate of GDP** does not show any improvement, except for Europe East. The decreasing trends of national economies call for a consistent rethinking of the economic system at the international level.

8.1 Adjusted Growth (%)

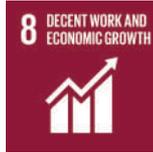


Source: World Bank (2019)

Countries and regions		Goal 8
		8.1
Units		%
France	E West	-0.34
Greece	E West	-1.29
Italy	E West	0.22
Malta	E West	1.49
Portugal	E West	-0.33
Spain	E West	0.26
EUROPE West (6)		-0.07
Albania	E East	-1.13
Bosnia and Herzegovina	E East	1.04
Croatia	E East	1.47
Cyprus	E East	2.19
Montenegro	E East	2.92
North Macedonia	E East	0.24
Slovenia	E East	2.07
EUROPE East (7)		0.95
SOUTHERN EUROPE (13)		0.01
Israel	ME	-0.06
Jordan	ME	-4.74
Lebanon	ME	-4.64
Palestine	ME	-6.70
Syrian Arab Republic	ME	-
Turkey	ME	-1.51
MIDDLE EAST (6)		-2.08
Algeria	NA	-3.71
Egypt, Arab Republic	NA	-1.57
Libya	NA	5.11
Morocco	NA	-3.22
Tunisia	NA	-3.25
NORTH AFRICA (5)		-2.21
MIDDLE EAST & NORTH AFRICA (11)		-2.16
MEDITERRANEAN AREA (24)		-1.28

Data source:

8.1 – World Bank (2019)



CHALLENGE
LABOR RIGHT

The number of **fatal work-related accidents**, associated with imported goods, is still high in Europe West, accounting for 3 million workers. This indicator refers to the spillover effect due to imports of goods produced in places with lower safety standards at work. Directly assessed accidents at work in European countries are 1.67 million with low rates of fatal accidents.

8.5 Fatal work-related accidents embodied in imports (deaths per 100,000)



Countries and regions		Goal 8			
		8.5		Indoor non fatal	Indoor Fatal
Units		<i>n./10⁵</i>	<i>mln</i>	<i>n.</i>	<i>n.</i>
France	E West	2.03	1.32	753,156	585
Greece	E West	1.27	0.14	4,223	32
Italy	E West	0.99	0.59	294,161	484
Malta	E West	1.44	0.01	1,846	1
Portugal	E West	1.06	0.11	135,488	140
Spain	E West	1.79	0.83	453,437	317
EUROPE West (6)		1.55	3.00	1,642,311	1,559
Albania	E East	0.22	0.01	-	-
Bosnia and Herzegovina	E East	0.14	0.01	-	-
Croatia	E East	0.55	0.02	14,164	37
Cyprus	E East	1.32	0.01	2,068	2
Montenegro	E East	1.52	0.01	-	-
North Macedonia	E East	0.20	0.00	-	-
Slovenia	E East	1.05	0.02	13,288	16
EUROPE East (7)		0.47	0.08	29,520	55
SOUTHERN EUROPE (13)		1.47	3.08	1,671,831	1,614
Israel	ME	0.67	0.05	-	-
Jordan	ME	0.43	0.03	-	-
Lebanon	ME	0.74	0.04	-	-
Palestine	ME	-	-	-	-
Syrian Arab Republic	ME	0.08	0.02	-	-
Turkey	ME	0.22	0.16	-	-
MIDDLE EAST (6)		0.26	0.29	-	-
Algeria	NA	0.14	0.05	-	-
Egypt, Arab Republic of	NA	0.10	0.08	-	-
Libya	NA	0.14	0.01	-	-
Morocco	NA	0.08	0.03	-	-
Tunisia	NA	0.31	0.03	-	-
NORTH AFRICA (5)		0.12	0.20	-	-
MIDDLE EAST & NORTH AFRICA (11)		0.17	0.49	-	-
MEDITERRANEAN AREA (17)		0.73	3.57	-	-

Data source:

8.5 – Alsamawi et al. (2017)

8.5 Add1: Non fatal work-related accidents in the country (Eurostat 2017)

8.5 Add2: Fatal work-related accidents in the country (Eurostat 2017)



CHALLENGE
PHYSICAL INFRASTRUCTURES

Quality assessments of **public transport** show highest levels (over 3) in Europe West and ME. **Numbers on passengers** by train and plain confirm this result in EW and ME. Levels in EE and NA are much lower and need to be much improved.

9.3 Logistics performance index: Quality of trade and transport-related infrastructure (1=low - 5=high)



Source: World Bank (2018)

Countries and regions		Goal 9		
		9.3	passenger	railway passenger
Units		-	mln	n. people
France	E West	4.00	70.19	-
Greece	E West	3.17	15.13	-
Italy	E West	3.85	27.63	39,449
Malta	E West	2.90	2.58	-
Portugal	E West	3.25	17.37	-
Spain	E West	3.84	80.67	27,903
EUROPE West (6)		3.83	53.52	-
Albania	E East	2.29	0.30	-
Bosnia and Herzegovina	E East	2.42	-	30
Croatia	E East	3.01	2.09	756
Cyprus	E East	2.89	0.40	-
Montenegro	E East	2.58	0.57	67
North Macedonia	E East	2.47	-	63
Slovenia	E East	3.26	1.09	656
EUROPE East (7)		2.70	1.15	-
SOUTHERN EUROPE (13)		3.74	50.73	-
Israel	ME	3.33	7.40	-
Jordan	ME	2.72	3.38	-
Lebanon	ME	2.64	2.98	-
Palestine	ME	-	-	-
Syrian Arab Republic	ME	2.51	0.02	-
Turkey	ME	3.21	115.60	5,560
MIDDLE EAST (6)		3.05	77.39	-
Algeria	NA	2.42	6.44	-
Egypt, Arab Republic	NA	2.82	12.34	-
Libya	NA	2.25	0.93	-
Morocco	NA	2.44	8.13	4,475
Tunisia	NA	2.10	4.27	-
NORTH AFRICA (5)		2.60	9.43	-
MIDDLE EAST & NORTH AFRICA (11)		2.78	35.74	-
MEDITERRANEAN AREA (24)		3.16	41.49	-

Data source:

9.3 – World Bank (2018)

9.3 Add1: Air transport, passengers carried – ICAO (2020)

9.3 Add2: Railways, passengers carried (2018)



CHALLENGE
R&I

Quality of Higher Education University is medium-high in EW and ME, with lower performances in EE and NA. National **expenditure in R&D** and number of researchers are crucial factors that need improvements in most of Mediterranean countries.

9.4 The Times Higher Education Universities Ranking



Source: Time Higher Education (2020)

9.5 Number of scientific and technical journal articles (per 1,000 population)



Source: National Science Foundation (2019)

9.6 Expenditure on research and development (% of GDP)



Source: UNESCO (2019)

9.7 OECD only: Research and development researchers (per 1,000 employed)



Source: OECD (2019)

Countries and regions		9.4	9.5	9.6	9.7
Units		-	ratio	%	n./10 ³
France	E West	66.57	1.02	2.19	10.88
Greece	E West	37.38	1.04	1.14	8.61
Italy	E West	56.83	1.18	1.36	5.52
Malta	E West	31.75	0.96	0.55	x
Portugal	E West	40.32	1.39	1.33	9.47
Spain	E West	55.53	1.17	1.21	7.04
EUROPE West (6)		48.06	1.12	1.66	-
Albania	E East	0.00	0.06	0.15	x
Bosnia and Herzegovina	E East	7.00	0.21	0.20	x
Croatia	E East	24.08	1.03	0.87	x
Cyprus	E East	43.10	1.05	0.57	x
Montenegro	E East	16.40	0.40	0.33	x
North Macedonia	E East	0.00	0.24	0.35	x
Slovenia	E East	28.48	1.54	1.85	9.89
EUROPE East (7)		17.01	0.63	0.33	-
SOUTHERN EUROPE (13)		31.34	1.09	1.23	-
Israel	ME	48.92	1.46	4.58	-
Jordan	ME	31.27	0.26	0.72	x
Lebanon	ME	31.27	0.26	-	x
Palestine	ME	-	-	0.50	x
Syrian Arab Republic	ME	0.00	0.02	0.01	x
Turkey	ME	39.37	0.41	0.96	4.02
MIDDLE EAST (6)		30.16	0.41	1.90	-
Algeria	NA	24.45	0.12	0.53	x
Egypt, Arab Republic	NA	39.37	0.14	0.61	x
Libya	NA	0.00	0.02	-	x
Morocco	NA	21.52	0.14	0.72	x
Tunisia	NA	16.40	0.48	0.60	x
NORTH AFRICA (5)		20.35	0.15	0.55	-
MIDDLE EAST & NORTH AFRICA (11)		25.26	0.25	0.78	-
MEDITERRANEAN AREA (24)		28.70	0.59	0.87	-

Data source:

9.4 – Time Higher Education (2020)

9.5 – National Science Foundation (2019)

9.6 – UNESCO (2019)

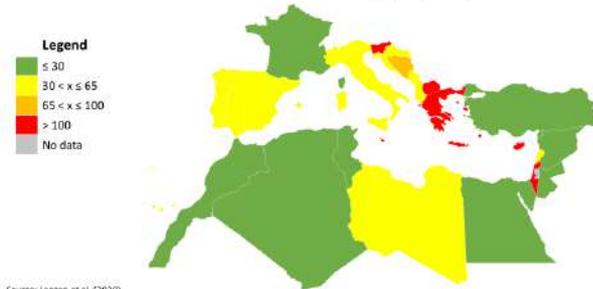
9.7 – OECD (2019)



CHALLENGE ENVIRONMENTAL IMPACT

Environmental impacts of industrial production are higher in more industrialised countries, also depending on population density, but can also reveal insufficient measures of **impact mitigation**. Values would be much improved based on strategies of energy saving, renewability and circular economy.

12.3 Production-based SO₂ emissions (kg/capita)



Source: Lenzen et al. (2020)

12.5 Production-based nitrogen emissions (kg/capita)



Source: Oita et al. (2014)

Countries and regions		Goal 12			
		12.3		12.5	
Units		kg/capita	tot Mt/year	kg/capita	tot Mt/year
France	E West	26.48	1.74	42.08	2.74
Greece	E West	102.47	1.13	50.56	0.56
Italy	E West	38.70	2.30	37.30	2.21
Malta	E West	555.76	0.23	34.34	0.01
Portugal	E West	52.92	0.56	35.52	0.38
Spain	E West	37.20	1.74	45.03	2.10
EUROPE West (6)		39.73	7.70	41.44	8.00
Albania	E East	49.34	0.14	16.96	0.05
Bosnia and Herzegovina	E East	73.80	0.27	17.00	0.06
Croatia	E East	57.58	0.25	20.50	0.09
Cyprus	E East	193.09	0.22	27.32	0.03
Montenegro	E East	43.15	0.03	30.75	0.02
North Macedonia	E East	144.55	0.30	17.05	0.04
Slovenia	E East	126.16	0.26	29.22	0.06
EUROPE East (7)		87.65	1.46	20.58	0.35
SOUTHERN EUROPE (13)		43.52	9.17	39.77	8.34
Israel	ME	113.78	0.90	60.50	0.46
Jordan	ME	29.09	0.24	10.01	0.07
Lebanon	ME	55.53	0.31	15.08	0.07
Palestine	ME	-	-	-	-
Syrian Arab Republic	ME	24.90	0.51	10.40	0.22
Turkey	ME	28.72	2.14	25.49	1.84
MIDDLE EAST (6)		35.12	4.10	23.56	2.67
Algeria	NA	5.32	0.20	9.94	0.36
Egypt, Arab Republic	NA	8.82	0.76	10.85	0.90
Libya	NA	42.45	0.27	19.72	0.12
Morocco	NA	12.78	0.42	10.29	0.33
Tunisia	NA	21.10	0.23	13.71	0.15
NORTH AFRICA (5)		10.80	1.88	11.06	1.86
MIDDLE EAST & NORTH AFRICA (11)		20.55	5.98	16.10	4.53
MEDITERRANEAN AREA (24)		30.20	15.14	26.21	12.87

Data source:

12.3 – Lenzen et al. (2020)

12.5 – Oita et al. (2020)



CHALLENGE CARBON EMISSIONS

CO₂ emissions per capita depending on energy use and imports are highest in EW mirroring carbon intensive lifestyles of citizens. Emissions associated to export of fossil fuels refer to intensive exploitation of non renewable energy sources for economic return. Emissions related to local economies show low efficiencies in OECD countries.

13.1 Energy-related CO₂ emissions per capita (tCO₂/capita)



Source: Gutschew et al. (2016)

13.2 CO₂ emissions embodied in imports (tCO₂/capita)



Source: Lenzen et al. (2020)

13.3 CO₂ emissions embodied in fossil fuel exports (kg/capita)



Source: UN Comtrade (2018)

13.4 OECD only: Effective carbon rate (EUR/tCO₂)



Source: OECD (2018)

Countries and regions		Goal 13							
		13.1		13.2		13.3		13.4	
Units		tCO ₂ /cap	mln tCO ₂	tCO ₂ /cap	mln tCO ₂	kg/cap	tot Mt/year	€/t CO ₂	
France	E West	4.77	318.61	1.86	123.73	0.75	0.05	11.78	
Greece	E West	6.07	65.32	1.60	17.36	5.06	0.05	22.59	
Italy	E West	5.39	326.23	1.33	81.01	8.18	0.49	20.46	
Malta	E West	6.28	2.94	2.78	1.24	0.00	0.00	x	
Portugal	E West	4.84	49.85	1.56	16.17	0.00	0.00	9.00	
Spain	E West	5.32	247.69	1.34	62.33	22.73	1.06	12.47	
EUROPE West (6)		5.17	1,010.65	1.54	301.84	8.49	1.66	-	
Albania	E East	1.49	4.27	0.45	1.28	0.00	0.00	x	
Bosnia and Herzegovina	E East	6.65	22.30	0.40	1.37	90.07	0.30	x	
Croatia	E East	4.21	17.36	1.38	5.82	115.75	0.47	x	
Cyprus	E East	5.48	6.46	2.51	2.92	0.00	0.00	x	
Montenegro	E East	4.11	2.56	0.79	0.49	131.09	0.08	x	
North Macedonia	E East	3.47	7.23	0.55	1.15	2.25	0.00	x	
Slovenia	E East	6.36	13.14	2.64	5.44	54.83	0.11	23.30	
EUROPE East (7)		4.50	73.32	1.05	18.46	59.58	0.97	-	
SOUTHERN EUROPE (13)		5.12	1,084	1.51	320.30	12.40	2.63	-	
Israel	ME	8.16	71.14	1.36	11.38	17.55	0.16	28.77	
Jordan	ME	1.83	17.89	0.61	5.64	0.00	0.00	x	
Lebanon	ME	2.14	14.58	0.89	5.82	0.00	0.00	x	
Palestine	ME	-	-	0.50	2.14	-	-	x	
Syrian Arab Republic	ME	2.56	43.63	0.19	3.46	-	-	x	
Turkey	ME	4.41	357.90	0.47	37.22	2.97	0.24	8.05	
MIDDLE EAST (6)		4.09	505.13	0.53	65.66	3.71	0.40	-	
Algeria	NA	3.36	138.98	0.24	9.49	918.78	38.80	x	
Egypt, Arab Republic	NA	2.00	192.98	0.13	11.56	13.19	1.30	x	
Libya	NA	7.86	51.70	0.37	2.38	-	-	x	
Morocco	NA	1.55	55.29	0.20	7.07	0.00	0.00	x	
Tunisia	NA	1.83	20.90	0.46	5.13	0.00	0.00	x	
NORTH AFRICA (5)		2.40	459.86	0.19	35.63	213.00	40.10	-	
MIDDLE EAST & NORTH AFRICA (11)		3.06	964.99	0.33	101.29	136.70	40.50	-	
MEDITERRANEAN AREA (24)		3.89	2,049	0.81	421.59	84.88	43.13	-	

Data source:

13.1 – Gutshow et al. (2016)

13.2 – Lenzen et al. (2020)

13.3 – UN Comtrade (2018)

13.4 – OECD (2018)



CHALLENGE
ENVIRONMENTAL PROTECTION

Tree cover removal for urbanization, commodity production and small-scale agriculture (not including temporary forest loss due to the forestry sector or wildfires) tends to moderately increase. Differences in terms of forest area per country are relevant in the Mediterranean area due to climate zones.

15.4 Permanent Deforestation (5 year average annual %)



Source: Curtis et al. (2018)

Countries and regions		Goal 15		
		15.4		
Units		%	Forest area, %	Deforestation, ha
France	E West	0.008	31.23	1,371.98
Greece	E West	0.001	31.69	41.81
Italy	E West	0.005	31.79	478.98
Malta	E West	-	1.09	-
Portugal	E West	0.019	34.61	606.49
Spain	E West	0.007	36.94	1,308.11
EUROPE West (6)		0.007	33.39	3,807.38
Albania	E East	0.001	28.12	8.09
Bosnia and Herzegovina	E East	0.001	42.68	21.85
Croatia	E East	0.001	34.35	19.44
Cyprus	E East	0.131	18.69	226.44
Montenegro	E East	0.000	61.49	0.00
North Macedonia	E East	0.000	39.57	0.00
Slovenia	E East	0.000	61.97	0.00
EUROPE East (7)		0.007	40.09	275.82
SOUTHERN EUROPE (13)		0.007	34.17	4,083.20
Israel	ME	0.005	7.73	8.53
Jordan	ME	-	1.10	-
Lebanon	ME	0.063	13.43	88.41
Palestine	ME	-	1.52	-
Syrian Arab Republic	ME	0.156	2.67	772.43
Turkey	ME	0.035	15.35	4,220.57
MIDDLE EAST (6)		0.057	11.81	5,089.93
Algeria	NA	0.783	0.82	15,374.99
Egypt, Arab Republic	NA	0.005	0.07	3.70
Libya	NA	-	0.12	-
Morocco	NA	0.157	12.60	8,834.63
Tunisia	NA	0.545	6.77	6,033.27
NORTH AFRICA (5)		0.508	1.56	30,246.58
MIDDLE EAST & NORTH AFRICA (11)		0.418	3.21	35,336.52
MEDITERRANEAN AREA (24)		0.309	9.61	39,419.72

Data source:

15.4 – Curtis et al. (2018)

15.4 Add1: Forest area (% of land area) –
FAO (2019)

15.4 Add2: Deforestation, ha – Our
elaboration

3.4 Transformation Sustainable Food, Land, Water and Sea

A set of indicators has been selected as the most relevant to report on the current state, highlight hotspots and track the progress towards the Transformation 4. This aims to make food systems, land use and sea sustainable and healthy for people, safeguarding the integrity of ecosystems and biodiversity. Changes are particularly challenging considering that current land use and food systems lead to persistent hunger, malnutrition and obesity, provide environmental impacts in terms of greenhouse gas emissions, nutrient overload and eutrophication, water scarcity, overfishing, pollution and, moreover, are vulnerable to climate change and land degradation (Sachs et al. 2019).

Figure 3.4 | Selected indicators and challenges in the transformation 4. Sustainable Food, Land, Water and Sea.

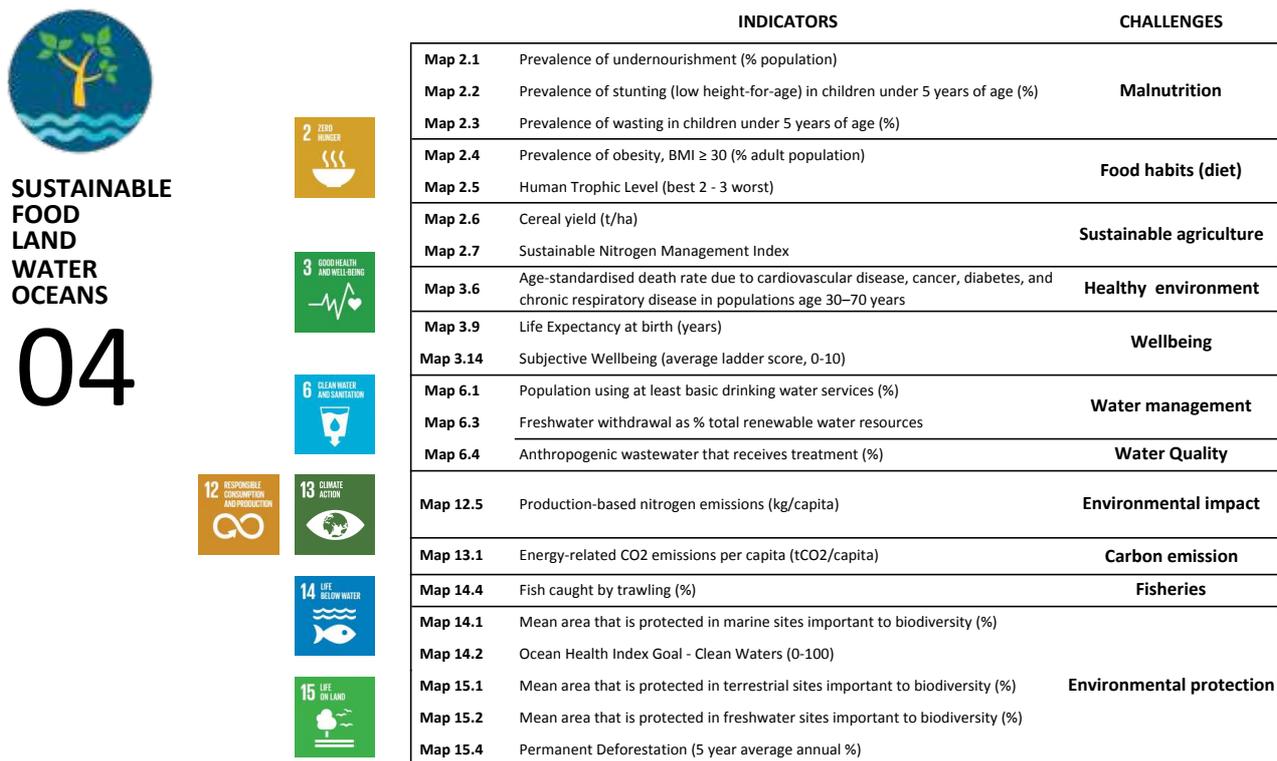


Figure 3.4 shows the 21 representative indicators and the corresponding Goal, that allowed for identifying the 11 challenges to be faced to accomplish the transformation. The following records, one per each challenge, show values of the indicators and their spatially explicit representation into maps. Indicators in the tables are often coupled with the corresponding absolute values, such as the number of people involved, and, when useful, other additional data for their interpretation. References for all indicators and additional data (namely, Add.) are listed in captions.



CHALLENGE MALNUTRITION

Precarious conditions of health induced by malnutrition require attention in the MENA area: almost 12 million people **undernourished**, 2 million children with **wasting** and almost 6 million children with **stunted** growth. Interventions to avoid the insurgency of these problems would also increase healthiness of next generation adult population.

2.1 Prevalence of undernourishment (% population)



2.2 Prevalence of stunting in children under 5 years of age (%)



2.3 Prevalence of wasting in children under 5 years of age (%)



Countries and regions		Goal 2					
		2.1		2.2		2.3	
Units		%	mln	%	mln	%	mln
France	E West	2.50	1.67	2.58	0.10	0.70	0.03
Greece	E West	2.50	0.27	2.58	0.01	0.70	0.00
Italy	E West	2.50	1.51	2.58	0.07	0.70	0.02
Malta	E West	2.50	0.01	2.58	0.00	0.70	0.00
Portugal	E West	2.50	0.26	2.58	0.01	0.70	0.00
Spain	E West	2.50	1.16	2.58	0.05	0.70	0.01
EUROPE West (6)		2.50	4.89	2.58	0.25	0.70	0.07
Albania	E East	6.20	0.18	23.10	0.04	9.40	0.02
Bosnia and Herzegovina	E East	2.50	0.08	8.90	0.01	2.30	0.00
Croatia	E East	2.50	0.10	2.58	0.00	0.70	0.00
Cyprus	E East	5.60	0.07	2.58	0.00	0.70	0.00
Montenegro	E East	2.50	0.02	9.40	0.00	2.80	0.00
North Macedonia	E East	3.20	0.07	4.90	0.01	1.80	0.00
Slovenia	E East	2.50	0.05	2.58	0.00	0.70	0.00
EUROPE East (7)		3.47	0.56	8.59	0.07	3.03	0.03
SOUTHERN EUROPE (13)		2.57	5.45	3.07	0.32	0.89	0.09
Israel	ME	2.50	0.22	2.58	0.02	0.70	0.01
Jordan	ME	12.20	1.19	7.80	0.09	2.40	0.03
Lebanon	ME	11.00	0.75	16.50	0.10	6.60	0.04
Palestine	ME	-	-	7.40	0.05	1.20	0.01
Syrian Arab Republic	ME	-	-	27.50	0.53	11.50	0.22
Turkey	ME	2.50	2.03	9.50	0.65	1.70	0.12
MIDDLE EAST (6)		3.27	4.19	11.94	1.44	3.48	0.42
Algeria	NA	3.90	1.61	11.70	0.55	4.10	0.19
Egypt, Arab Republic	NA	4.50	4.34	22.30	2.88	9.50	1.23
Libya	NA	-	-	21.00	0.14	6.50	0.04
Morocco	NA	3.40	1.21	14.90	0.52	2.30	0.08
Tunisia	NA	4.30	0.49	10.10	0.11	2.80	0.03
NORTH AFRICA (5)		4.00	7.66	18.37	4.20	6.88	1.57
MIDDLE EAST & NORTH AFRICA (11)		3.71	11.84	16.15	5.64	5.71	1.99
MEDITERRANEAN AREA (24)		3.26	17.30	13.15	5.96	4.60	2.09

Data source:

2.1 – FAO (2019)

2.2 – UNICEF et al. (2019)

2.3 – UNICEF et al. (2019)



CHALLENGE
FOOD HABITS (DIETS)

Obesity affects 22% of the population in Europe and 30% in MENA, namely almost 34 million people in western Europe, 34 million in NA and 24 million in ME. Trends are emerging towards high-protein diets (highlighted by the human trophic level) and progressive abandon of the Mediterranean diet.

2.4 Prevalence of obesity, BMI ≥ 30 (% adult population)



2.5 Human Trophic Level (best 2–3 worst)



Countries and regions			Goal 2		
			2.4		2.5
Units			%	<i>mln</i>	-
France	E West		21.60	10.93	2.48
Greece	E West		24.90	2.16	2.38
Italy	E West		19.90	9.86	2.42
Malta	E West		28.90	0.11	2.31
Portugal	E West		20.80	1.74	2.45
Spain	E West		23.80	8.90	2.42
EUROPE West (6)			21.75	33.69	2.44
Albania	E East		21.70	0.46	2.38
Bosnia and Herzegovina	E East		17.90	0.48	2.26
Croatia	E East		24.40	0.81	2.37
Cyprus	E East		21.80	0.20	2.38
Montenegro	E East		23.30	0.11	2.48
North Macedonia	E East		22.40	0.36	2.25
Slovenia	E East		20.20	0.34	2.40
EUROPE East (7)			21.57	2.75	2.34
SOUTHERN EUROPE (13)			21.73	36.44	2.43
Israel	ME		26.10	1.43	2.41
Jordan	ME		35.50	1.85	2.20
Lebanon	ME		32.00	1.37	2.18
Palestine	ME		-	-	-
Syrian Arab Republic	ME		27.80	2.80	2.25
Turkey	ME		32.10	16.97	2.25
MIDDLE EAST (6)			31.34	24.42	2.25
Algeria	NA		27.40	7.07	2.20
Egypt, Arab Republic	NA		32.00	17.35	2.16
Libya	NA		32.50	1.33	2.19
Morocco	NA		26.10	5.87	2.19
Tunisia	NA		26.90	2.09	2.21
NORTH AFRICA (5)			29.47	33.70	2.18
MIDDLE EAST & NORTH AFRICA (11)			30.23	58.13	2.21
MEDITERRANEAN AREA (24)			26.27	94.57	2.30

Data source:

2.4 – WHO (2020)

2.5 – Bonhommeau et al. (2013)



CHALLENGE
SUSTAINABLE AGRICULTURE

Indicators give a general information on **self-sufficiency** of national food systems, compared with food requirements of the population, and on the **type of agricultural production** (intensive vs. extensive; conventional vs. organic). Cereal production yield is lower in the ME despite the use of chemical fertilizers per hectare, much higher in WE.

2.6 Cereal yield (t/ha)



Source: FAO (2020)

2.7 Sustainable Nitrogen Management Index



Source: Zhang and Davidson (2019)

Countries and regions		Goal 2				
		2.6			2.7	
Units		t/ha	mln ha	t/cap	-	kg/ha
France	E West	6.88	9.38	0.96	0.39	163.10
Greece	E West	3.76	0.84	0.29	0.64	123.00
Italy	E West	5.17	3.14	0.27	0.59	129.80
Malta	E West	4.80	0.00	0.03	0.89	264.60
Portugal	E West	4.73	0.24	0.11	1.07	199.40
Spain	E West	2.77	6.02	0.36	0.83	144.00
EUROPE West (6)		5.81	19.61	0.52	0.60	149.69
Albania	E East	4.81	0.15	0.24	0.83	126.10
Bosnia and Herzegovina	E East	3.73	0.31	0.35	1.00	131.80
Croatia	E East	5.72	0.46	0.64	0.49	119.30
Cyprus	E East	2.01	0.02	0.04	1.07	196.70
Montenegro	E East	3.32	0.00	0.01	1.06	285.20
North Macedonia	E East	3.86	0.17	0.31	0.75	79.30
Slovenia	E East	5.54	0.10	0.27	0.73	258.90
EUROPE East (7)		4.95	1.22	0.35	0.78	136.32
SOUTHERN EUROPE (13)		5.76	20.83	0.51	0.62	148.55
Israel	ME	3.57	0.06	0.03	0.87	280.70
Jordan	ME	1.60	0.06	0.01	0.65	112.00
Lebanon	ME	3.05	0.05	0.02	0.92	330.80
Palestine	ME	1.80	0.02	0.01	-	-
Syrian Arab Republic	ME	1.62	1.96	0.19	0.71	7.60
Turkey	ME	3.26	11.09	0.45	0.62	137.70
MIDDLE EAST (6)		3.12	13.25	0.31	0.67	107.70
Algeria	NA	0.99	3.51	0.08	0.71	22.30
Egypt, Arab Republic	NA	7.31	3.18	0.24	0.64	649.20
Libya	NA	0.77	0.23	0.03	0.88	11.70
Morocco	NA	1.76	5.57	0.28	0.80	71.10
Tunisia	NA	1.53	1.07	0.14	0.99	59.30
NORTH AFRICA (5)		5.04	13.56	0.20	0.71	62.29
MIDDLE EAST & NORTH AFRICA (11)		4.06	26.81	0.24	0.69	78.19
MEDITERRANEAN AREA (24)		5.05	47.64	0.35	0.66	102.98

Data source:

2.6 – FAO (2020)

2.7 – Zhang and Davidson (2019)

2.6 Add1: Land under cereal production (hectares) – FAO (2019)

2.6 Add2: Tonnes of cereals per capita – Our elaboration

2.7 Add1: Fertilizer consumption per hectare. FAO (2020)



CHALLENGE
HEALTHY ENVIRONMENT

Some diseases such as cardiovascular, diabetes and respiratory, are indirectly correlated, albeit not exclusively, with food, land and water quality. These more affect EE and NA. If properly promoted, the **Mediterranean diet** can play a relevant role for improvements as it determines half the rate of cardiovascular mortality and the highest longevity.

3.6 Age-standardised death rate due to cardiovascular disease, cancer, diabetes, and chronic respiratory disease in populations age 30–70 years (per 100,000 population)



Source: WHO (2018)

Countries and regions		Goal 3	
		3.6	
Units		n./10 ⁵	n. people
France	E West	10.60	3,592
Greece	E West	12.40	727
Italy	E West	9.50	3,176
Malta	E West	10.80	27
Portugal	E West	11.10	631
Spain	E West	9.90	2,589
EUROPE West (6)		10.20	10,742
Albania	E East	17.00	233
Bosnia and Herzegovina	E East	17.80	337
Croatia	E East	16.70	378
Cyprus	E East	11.30	66
Montenegro	E East	20.60	67
North Macedonia	E East	20.30	227
Slovenia	E East	12.70	148
EUROPE East (7)		16.70	1,456
SOUTHERN EUROPE (13)		10.70	12,198
Israel	ME	9.60	352
Jordan	ME	19.20	633
Lebanon	ME	17.90	510
Palestine	ME	-	-
Syrian Arab Republic	ME	21.80	1,381
Turkey	ME	16.10	5,791
MIDDLE EAST (6)		5.52	8,666
Algeria	NA	14.20	2,411
Egypt, Arab Republic	NA	27.70	9,707
Libya	NA	20.10	556
Morocco	NA	12.40	1,863
Tunisia	NA	16.10	867
NORTH AFRICA (5)		20.48	15,403
MIDDLE EAST & NORTH AFRICA (11)		14.36	24,069
MEDITERRANEAN AREA (24)		15.03	36,268

Data source:

3.6 – WHO (2018)



CHALLENGE
WELLBEING

Western Europe shows the best performances in terms of **healthiness** and wellbeing, that is indirectly correlated, albeit not exclusively, with food, land and water quality. A general improvement in environmental and social sustainability of national economies would contribute to increase longevity rates and the perception of wellbeing.

3.9 Life Expectancy at birth (years)



Source: WHO (2019)

3.14 Subjective Wellbeing (average ladder score, 0-10)



Source: Gallup (2019)

Countries and regions		Goal 3	
		3.9	3.14
Units		years	-
France	E West	82.90	6.69
Greece	E West	81.20	5.41
Italy	E West	82.80	6.45
Malta	E West	81.50	6.73
Portugal	E West	81.50	6.10
Spain	E West	83.10	6.46
EUROPE West (6)		82.75	6.45
Albania	E East	76.40	5.00
Bosnia and Herzegovina	E East	77.30	5.89
Croatia	E East	78.30	5.54
Cyprus	E East	80.70	6.28
Montenegro	E East	76.80	5.39
North Macedonia	E East	75.90	5.02
Slovenia	E East	80.90	6.67
EUROPE East (7)		77.90	5.64
SOUTHERN EUROPE (13)		82.37	6.39
Israel	ME	82.30	6.93
Jordan	ME	74.30	4.45
Lebanon	ME	76.30	5.17
Palestine	ME	-	4.60
Syrian Arab Republic	ME	63.80	3.46
Turkey	ME	76.40	5.19
MIDDLE EAST (6)		74.84	4.98
Algeria	NA	76.40	5.04
Egypt, Arab Republic	NA	70.50	4.01
Libya	NA	71.90	5.49
Morocco	NA	76.00	5.06
Tunisia	NA	76.00	4.32
NORTH AFRICA (5)		73.18	4.49
MIDDLE EAST & NORTH AFRICA (11)		73.83	4.68
MEDITERRANEAN AREA (24)		77.30	5.35

Data source:

3.9 – WHO (2019)

3.14 – Gallup (2019)



CHALLENGE
WATER MANAGEMENT

Critical issues in the Mediterranean, especially in MENA, are related to the condition of **water scarcity** and negative trends due to the effects of climate change. Over 11 million people in NA are left out of basic services for the provision of drinking water and renewability of water sources looks to be a hotspot.

6.1 Population using at least basic drinking water services (%)



Source: JMP (2020)

6.3 Freshwater withdrawal as % total renewable water resources



Source: FAO (2020)

Countries and regions		Goal 6			
		6.1		6.3	
Units		%	mn people left	%	billion m ³
France	E West	100.00	0.00	26.10	29.81
Greece	E West	100.00	0.00	19.30	9.59
Italy	E West	99.44	0.34	30.10	53.75
Malta	E West	100.00	0.00	52.30	0.02
Portugal	E West	99.91	0.01	1.20	9.15
Spain	E West	99.93	0.03	44.00	36.75
EUROPE West (6)		99.81	0.38	30.27	139.07
Albania	E East	91.04	0.26	7.90	1.31
Bosnia and Herzegovina	E East	96.14	0.13	2.70	0.33
Croatia	E East	99.59	0.02	1.50	0.63
Cyprus	E East	99.61	0.00	29.80	0.22
Montenegro	E East	97.04	0.02	-	0.16
North Macedonia	E East	93.14	0.14	13.30	0.55
Slovenia	E East	99.54	0.01	0.60	1.16
EUROPE East (7)		96.45	0.58	6.38	4.36
SOUTHERN EUROPE (13)		99.55	0.96	29.57	143.43
Israel	ME	100.00	0.00	122.40	-
Jordan	ME	98.94	0.10	100.10	1.10
Lebanon	ME	92.60	0.50	57.30	1.10
Palestine	ME	87.60	0.55	48.80	0.41
Syrian Arab Republic	ME	97.22	0.48	126.00	14.14
Turkey	ME	98.88	0.91	42.90	41.96
MIDDLE EAST (6)		98.01	2.55	64.30	58.71
Algeria	NA	93.56	2.67	127.70	7.81
Egypt, Arab Republic	NA	99.11	0.86	118.90	73.80
Libya	NA	98.53	0.10	822.90	5.76
Morocco	NA	86.78	4.70	49.70	10.35
Tunisia	NA	96.26	0.43	121.10	3.22
NORTH AFRICA (5)		95.42	8.76	152.73	100.94
MIDDLE EAST & NORTH AFRICA (11)		96.46	11.31	120.21	159.65
MEDITERRANEAN AREA (24)		97.69	12.27	77.34	303.08

Data source:

6.1 – JMP (2020)

6.3 – FAO (2020)



CHALLENGE
WATER QUALITY

Wastewater treatment is not a practice deployed enough. Besides EW (78%), MENA countries need consistent improvements (33% only). Some countries in particular in EE and MENA show unsatisfactory performances and call for investments in wastewater infrastructures and management.

6.4 Percentage of anthropogenic wastewater that receives treatment (%)



Source: EPI (2018)

Countries and regions		6.4
Units		%
France	E West	88.00
Greece	E West	81.66
Italy	E West	58.75
Malta	E West	100.00
Portugal	E West	54.98
Spain	E West	91.51
EUROPE West (6)		77.75
Albania	E East	2.67
Bosnia and Herzegovina	E East	1.13
Croatia	E East	51.71
Cyprus	E East	50.00
Montenegro	E East	8.37
North Macedonia	E East	0.94
Slovenia	E East	89.09
EUROPE East (7)		29.16
SOUTHERN EUROPE (13)		74.03
Israel	ME	81.70
Jordan	ME	18.63
Lebanon	ME	38.16
Palestine	ME	-
Syrian Arab Republic	ME	48.00
Turkey	ME	30.40
MIDDLE EAST (6)		35.92
Algeria	NA	33.12
Egypt, Arab Republic	NA	41.96
Libya	NA	9.60
Morocco	NA	5.40
Tunisia	NA	43.04
NORTH AFRICA (5)		32.24
MIDDLE EAST & NORTH AFRICA (11)		33.68
MEDITERRANEAN AREA (24)		49.76

Data source:
6.4 – EPI (2018)



CHALLENGE

ENVIRONMENTAL IMPACT

Environmental impacts of industrial production are higher in more industrialised countries, also depending on population density, but can also reveal insufficient measures of **impact mitigation**. Values would be much improved based on strategies of energy saving, renewability and circular economy.

12.5 Production-based nitrogen emissions (kg/capita)



Source: Oita et al. (2016)

Countries and regions		Goal 12	
		12.5	
Units		<i>kg/capita</i>	<i>tot Mt/year</i>
France	E West	42.08	2.74
Greece	E West	50.56	0.56
Italy	E West	37.30	2.21
Malta	E West	34.34	0.01
Portugal	E West	35.52	0.38
Spain	E West	45.03	2.10
EUROPE West (6)		41.44	8.00
Albania	E East	16.96	0.05
Bosnia and Herzegovina	E East	17.00	0.06
Croatia	E East	20.50	0.09
Cyprus	E East	27.32	0.03
Montenegro	E East	30.75	0.02
North Macedonia	E East	17.05	0.04
Slovenia	E East	29.22	0.06
EUROPE East (7)		20.58	0.35
SOUTHERN EUROPE (13)		39.77	8.34
Israel	ME	60.50	0.46
Jordan	ME	10.01	0.07
Lebanon	ME	15.08	0.07
Palestine	ME	-	-
Syrian Arab Republic	ME	10.40	0.22
Turkey	ME	25.49	1.84
MIDDLE EAST (6)		23.56	2.67
Algeria	NA	9.94	0.36
Egypt, Arab Republic	NA	10.85	0.90
Libya	NA	19.72	0.12
Morocco	NA	10.29	0.33
Tunisia	NA	13.71	0.15
NORTH AFRICA (5)		11.06	1.86
MIDDLE EAST & NORTH AFRICA (11)		16.10	4.53
MEDITERRANEAN AREA (24)		26.21	12.87

Data source:

12.5 – Oita et al. (2016)



CHALLENGE
CARBON EMISSIONS

CO₂ emissions per capita depending on energy use are more located in EW, responsible for half of the total CO₂ emissions in MED (tot 2000 million tons per year). Given the high impact of climate change in the MED area, policies of carbon mitigation must be urgently implemented in all countries.

13.1 Energy-related CO₂ emissions per capita (tCO₂/capita)



Source: Gutschow et al. (2016)

Countries and regions		Goal 13	
		13.1	
Units		tCO ₂ /cap	mln tCO ₂
France	E West	4.77	318.61
Greece	E West	6.07	65.32
Italy	E West	5.39	326.23
Malta	E West	6.28	2.94
Portugal	E West	4.84	49.85
Spain	E West	5.32	247.69
EUROPE West (6)		5.17	1,010.65
Albania	E East	1.49	4.27
Bosnia and Herzegovina	E East	6.65	22.30
Croatia	E East	4.21	17.36
Cyprus	E East	5.48	6.46
Montenegro	E East	4.11	2.56
North Macedonia	E East	3.47	7.23
Slovenia	E East	6.36	13.14
EUROPE East (7)		4.50	73.32
SOUTHERN EUROPE (13)		5.12	1,084
Israel	ME	8.16	71.14
Jordan	ME	1.83	17.89
Lebanon	ME	2.14	14.58
Palestine	ME	-	-
Syrian Arab Republic	ME	2.56	43.63
Turkey	ME	4.41	357.90
MIDDLE EAST (6)		4.09	505.13
Algeria	NA	3.36	138.98
Egypt, Arab Republic	NA	2.00	192.98
Libya	NA	7.86	51.70
Morocco	NA	1.55	55.29
Tunisia	NA	1.83	20.90
NORTH AFRICA (5)		2.40	459.86
MIDDLE EAST & NORTH AFRICA (11)		3.06	964.99
MEDITERRANEAN AREA (24)		3.89	2,049

Data source:

13.1 – Gutschow et al. (2016)

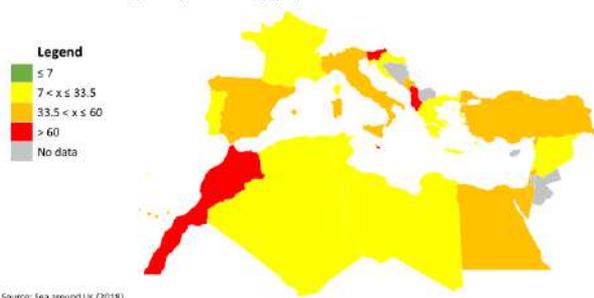


CHALLENGE

FISHERIES

Fishery is still based on unsustainable practices and need special attention in order to stop the increasing loss of fish stocks and biodiversity. Solutions such as the emerging activities of sustainable **aquaculture** are promising.

14.4 Fish caught by trawling (%)



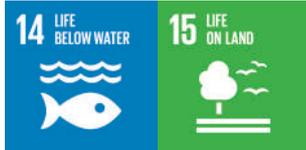
Countries and regions		Goal 14		
		14.4		
Units		%	t tot capture	t tot aquaculture
France	E West	27.79	555,607	180,790
Greece	E West	21.75	60,173	104,663
Italy	E West	51.78	183,846	148,730
Malta	E West	93.64	2,405	4,917
Portugal	E West	11.26	183,664	11,339
Spain	E West	33.62	1,063,653	282,242
EUROPE West (6)		31.39	2,049,348	732,681
Albania	E East	86.27	9,053	2,424
Bosnia and Herzegovina	E East	-	305	3,397
Croatia	E East	17.89	79,353	13,149
Cyprus	E East	-	1,279	4,835
Montenegro	E East	52.81	1,556	859
North Macedonia	E East	-	282	1,214
Slovenia	E East	89.72	411	1,396
EUROPE East (7)		25.67	92,238	27,275
SOUTHERN EUROPE (13)		31.15	2,141,586	759,956
Israel	ME	52.26	2,042	20,166
Jordan	ME	-	873	885
Lebanon	ME	9.95	2,998	1,125
Palestine	ME	-	2,854	240
Syrian Arab Republic	ME	22.02	4,400	3,000
Turkey	ME	33.76	302,214	234,302
MIDDLE EAST (6)		33.49	315,381	259,718
Algeria	NA	29.62	97,828	2,411
Egypt, Arab Republic	NA	34.53	344,792	1,137,091
Libya	NA	19.85	25,003	10
Morocco	NA	62.00	1,367,948	1,189
Tunisia	NA	28.11	111,326	11,279
NORTH AFRICA (5)		53.03	1,946,897	1,151,980
MIDDLE EAST & NORTH AFRICA (11)		50.33	2,262,278	1,411,698
MEDITERRANEAN AREA (24)		41.00	4,403,864	2,171,654

Data source:

14.4 – Sea around us (2018)

14.4 Add1: Capture fisheries production (metric tons) – FAO (2019)

14.4 Add2: Total fisheries from aquaculture – FAO (2019)



CHALLENGE
ENVIRONMENTAL PROTECTION

Seawater quality is a critical issue and must be improved in all MED countries (see the Ocean Health Index); **Protected areas** (including freshwater and lands) are insufficient and need to be further enlarged. A comprehensive overview on current state of protected areas has been provided by Claudet et al. (2020).

14.1 Mean area that is protected in marine sites important to biodiversity (%)



Source: Birdlife International et al. (2020)

14.2 Ocean Health Index Goal–Clean Waters (0-100)



Source: Ocean Health Index (2019)

15.1 Mean area that is protected in terrestrial sites important to biodiversity (%)



Source: Birdlife International et al. (2020)

15.2 Mean area that is protected in freshwater sites important to biodiversity (%)



Source: Birdlife International et al. (2020)

Countries and regions		Goal 14		Goal 15	
		14.1	14.2	15.1	15.2
Units		%	-	%	%
France	E West	79.44	49.08	80.91	78.00
Greece	E West	86.43	58.54	85.80	87.24
Italy	E West	73.76	49.98	77.85	84.69
Malta	E West	98.92	41.11	99.28	-
Portugal	E West	65.65	52.30	74.05	63.99
Spain	E West	85.60	48.64	56.61	46.06
EUROPE West (6)		80.11	49.95	72.56	69.00
Albania	E East	60.07	56.66	76.11	99.01
Bosnia and Herzegovina	E East	-	40.59	18.18	66.67
Croatia	E East	75.20	64.56	74.14	86.77
Cyprus	E East	39.22	58.63	66.07	-
Montenegro	E East	0.00	61.31	12.49	-
North Macedonia	E East	-	-	23.55	93.64
Slovenia	E East	88.56	28.35	85.10	77.49
EUROPE East (7)		63.34	51.33	50.80	82.98
SOUTHERN EUROPE (13)		78.85	50.05	70.05	70.45
Israel	ME	-	30.22	20.89	26.13
Jordan	ME	-	47.16	8.72	9.77
Lebanon	ME	5.13	33.00	13.35	21.06
Palestine	ME	-	-	2.50	-
Syrian Arab Republic	ME	0.00	37.63	0.88	3.16
Turkey	ME	4.14	50.47	2.47	4.39
MIDDLE EAST (6)		3.37	46.11	3.19	5.22
Algeria	NA	29.97	41.44	40.18	52.53
Egypt, Arab Republic	NA	66.19	50.43	40.34	28.49
Libya	NA	0.31	56.44	4.60	-
Morocco	NA	38.70	55.28	51.88	82.58
Tunisia	NA	31.12	49.05	40.15	43.40
NORTH AFRICA (5)		27.91	49.51	30.23	49.49
MIDDLE EAST & NORTH AFRICA (11)		24.34	48.19	25.90	39.98
MEDITERRANEAN AREA (24)		35.38	48.91	35.03	47.83

Data source:

14.1 – Birdlife International et al. (2020)

15.1 – Birdlife International et al. (2020)

15.2 – Birdlife International et al. (2020)

14.2 – Ocean Health Index (2019)



CHALLENGE
ENVIRONMENTAL PROTECTION

Tree cover removal for urbanization, commodity production and small-scale agriculture (not including temporary forest loss due to the forestry sector or wildfires) tends to moderately increase. Differences in terms of forest area per country are relevant in the Mediterranean area due to climate zones.

15.4 Permanent Deforestation (5 year average annual %)



Countries and regions		Goal 15		
		15.4		
Units		%	Forest area, %	Deforestation, ha
France	E West	0.008	31.23	1,371.98
Greece	E West	0.001	31.69	41.81
Italy	E West	0.005	31.79	478.98
Malta	E West	-	1.09	-
Portugal	E West	0.019	34.61	606.49
Spain	E West	0.007	36.94	1,308.11
EUROPE West (6)		0.007	33.39	3,807.38
Albania	E East	0.001	28.12	8.09
Bosnia and Herzegovina	E East	0.001	42.68	21.85
Croatia	E East	0.001	34.35	19.44
Cyprus	E East	0.131	18.69	226.44
Montenegro	E East	0.000	61.49	0.00
North Macedonia	E East	0.000	39.57	0.00
Slovenia	E East	0.000	61.97	0.00
EUROPE East (7)		0.007	40.09	275.82
SOUTHERN EUROPE (13)		0.007	34.17	4,083.20
Israel	ME	0.005	7.73	8.53
Jordan	ME	-	1.10	-
Lebanon	ME	0.063	13.43	88.41
Palestine	ME	-	1.52	-
Syrian Arab Republic	ME	0.156	2.67	772.43
Turkey	ME	0.035	15.35	4,220.57
MIDDLE EAST (6)		0.057	11.81	5,089.93
Algeria	NA	0.783	0.82	15,374.99
Egypt, Arab Republic	NA	0.005	0.07	3.70
Libya	NA	-	0.12	-
Morocco	NA	0.157	12.60	8,834.63
Tunisia	NA	0.545	6.77	6,033.27
NORTH AFRICA (5)		0.508	1.56	30,246.58
MIDDLE EAST & NORTH AFRICA (11)		0.418	3.21	35,336.52
MEDITERRANEAN AREA (24)		0.309	9.61	39,419.72

Data source:

15.4 – Curtis et al. (2018)

15.4 Add1: Forest area (% of land area) –
FAO (2019)

15.4 Add2: Deforestation, ha – Our
elaboration

3.5 Transformation Sustainable Cities and Communities

A set of indicators has been selected as the most relevant to report on the current state, highlight hotspots and track the progress towards the Transformation 5. This aims to make cities economically productive, socially inclusive and environmentally sustainable, give wide access to basic services (such as water and waste management), efficient and sustainable mobility systems and guarantee safe and healthy settlements. Cities also need to increase resilience against climate change and extreme weather events, for example by enforcing the role of ecosystems and nature based solutions in urban areas (Sachs et al. 2019).

Figure 3.5 | Selected indicators and challenges in the transformation 5. Sustainable Cities and Communities.

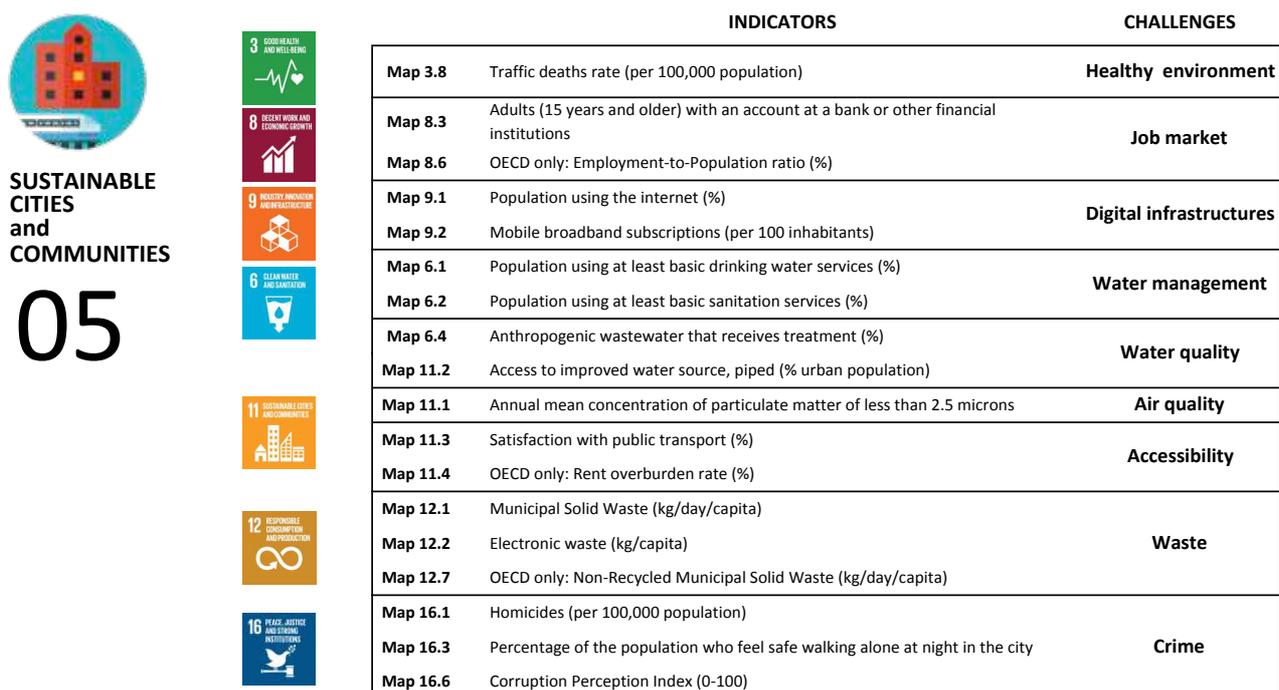


Figure 3.5 shows the 18 representative indicators and the corresponding Goal, that allowed for identifying the 9 challenges to be faced to accomplish the transformation. The following records, one per each challenge, show values of the indicators and their spatially explicit representation into maps. Indicators in the tables are often coupled with the corresponding absolute values, such as the number of people involved, and, when useful, other additional data for their interpretation. References for all indicators and additional data (namely, Add.) are listed in captions.



CHALLENGE
HEALTHY ENVIRONMENT

The traffic deaths rate involves over 60,000 people in the MED area, including 12,000 in Europe and 48,000 in MENA, the latter depending on investments in secure infrastructures and economic capacity of families compared to Europe.

3.8 Traffic deaths rate (per 100,000 population)



Source: WHO (2019)

Countries and regions		Goal 3	
		3.8	
Units		n./10 ⁵	n. people
France	E West	5.50	3,677
Greece	E West	9.20	991
Italy	E West	5.60	3,395
Malta	E West	6.10	28
Portugal	E West	7.40	764
Spain	E West	4.10	1,906
EUROPE West (6)		5.50	10,762
Albania	E East	13.60	391
Bosnia and Herzegovina	E East	15.70	532
Croatia	E East	8.10	338
Cyprus	E East	5.10	60
Montenegro	E East	10.70	67
North Macedonia	E East	6.40	133
Slovenia	E East	6.40	132
EUROPE East (7)		10.09	1,653
SOUTHERN EUROPE (13)		5.86	12,414
Israel	ME	4.20	359
Jordan	ME	24.40	2,331
Lebanon	ME	18.10	1,215
Palestine	ME	5.40	236
Syrian Arab Republic	ME	26.50	4,625
Turkey	ME	12.30	9,818
MIDDLE EAST (6)		14.70	18,583
Algeria	NA	23.80	9,651
Egypt, Arab Republic	NA	9.70	9,161
Libya	NA	26.10	1,694
Morocco	NA	19.60	6,885
Tunisia	NA	22.80	2,577
NORTH AFRICA (5)		15.95	29,969
MIDDLE EAST & NORTH AFRICA (11)		15.44	48,552
MEDITERRANEAN AREA (24)		11.58	60,967

Data source:

3.8 – WHO (2019)



CHALLENGE
JOB MARKET

Access to **basic financial services**, such as a bank account, is widely guaranteed but still 122 million people in MENA remain out (only 36% in NA access these services). The ratio of employees per population in OECD countries shows consistent gaps (e.g. Greece and Italy).

8.3 Adults (15 years and older) with an account at a bank or other financial institution or with a mobile-money service provider (%)



Source: Demirguc-Kunt et al. (2019)

8.6 Employment-to-Population ratio (%)



Source: OECD (2019)

Countries and regions		Goal 8		
		8.3		8.6
Units		%	<i>mn people left</i>	%
France	E West	94.00	3.28	65.55
Greece	E West	85.47	1.34	56.50
Italy	E West	93.79	3.26	59.05
Malta	E West	97.36	0.01	x
Portugal	E West	92.34	0.68	70.48
Spain	E West	93.76	2.48	63.30
EUROPE West (6)		93.32	11.05	-
Albania	E East	40.02	1.41	x
Bosnia and Herzegovina	E East	58.84	1.18	x
Croatia	E East	86.14	0.49	x
Cyprus	E East	88.72	0.11	x
Montenegro	E East	68.36	0.16	x
North Macedonia	E East	76.57	0.41	x
Slovenia	E East	97.53	0.04	71.88
EUROPE East (7)		72.32	3.80	-
SOUTHERN EUROPE (13)		91.71	14.85	-
Israel	ME	92.82	0.45	68.94
Jordan	ME	42.49	3.66	x
Lebanon	ME	44.75	2.76	x
Palestine	ME	25.00	2.03	x
Syrian Arab Republic	ME	23.25	8.93	x
Turkey	ME	68.59	19.10	50.30
MIDDLE EAST (6)		60.20	36.94	-
Algeria	NA	42.78	16.66	x
Egypt, Arab Republic	NA	32.78	42.93	x
Libya	NA	65.67	1.61	x
Morocco	NA	28.64	18.42	x
Tunisia	NA	36.91	5.47	x
NORTH AFRICA (5)		35.62	85.10	-
MIDDLE EAST & NORTH AFRICA (11)		45.76	122.04	-
MEDITERRANEAN AREA (24)		66.13	136.89	-

Data source:

8.3 – Demirguc-Kunt et al. (2019)

8.6 – OECD (2019)



CHALLENGE

DIGITAL INFRASTRUCTURES

Access to **Internet services** is limited in NA, with almost 96 million people offline. 43 million in Europe and 43 in ME stay offline. Use of **mobile devices** is more deployed with some improvements still needed in MENA.

9.1 Population using the internet (%)



9.2 Mobile broadband subscriptions (per 100 inhabitants)



Countries and regions		Goal 9		
		9.1		9.2
Units		%	<i>mln people left</i>	<i>n./10²</i>
France	E West	82.04	12.03	91.62
Greece	E West	72.95	2.90	81.38
Italy	E West	74.39	15.48	89.89
Malta	E West	81.66	0.09	104.34
Portugal	E West	74.66	2.61	73.84
Spain	E West	86.11	6.49	98.48
EUROPE West (6)		79.76	39.59	91.26
Albania	E East	71.85	0.81	62.79
Bosnia and Herzegovina	E East	70.12	0.99	55.38
Croatia	E East	75.30	1.01	79.45
Cyprus	E East	84.43	0.19	111.20
Montenegro	E East	71.52	0.18	73.16
North Macedonia	E East	79.17	0.43	64.72
Slovenia	E East	79.75	0.42	77.67
EUROPE East (7)		75.22	4.03	71.55
SOUTHERN EUROPE (13)		79.41	43.62	89.75
Israel	ME	83.73	1.45	113.35
Jordan	ME	66.79	3.31	87.62
Lebanon	ME	78.18	1.49	45.25
Palestine	ME	65.20	1.59	-
Syrian Arab Republic	ME	34.25	11.12	16.50
Turkey	ME	71.04	23.84	74.20
MIDDLE EAST (6)		66.95	42.79	66.23
Algeria	NA	49.04	21.52	81.65
Egypt, Arab Republic	NA	46.92	52.24	53.92
Libya	NA	21.76	5.23	35.76
Morocco	NA	64.80	12.68	59.09
Tunisia	NA	64.19	4.14	76.08
NORTH AFRICA (5)		50.85	95.81	61.58
MIDDLE EAST & NORTH AFRICA (11)		57.28	138.60	63.43
MEDITERRANEAN AREA (24)		66.02	182.22	73.83

Data source:

9.1, – ITU (2019)

9.2 – ITU (2019)



CHALLENGE

WATER MANAGEMENT

NA is the Med area that mostly suffers from limited access to **basic drinking water services** (8,8 million people) and **basic sanitation services** (15,9 million people).

6.1 Population using at least basic drinking water services (%)



6.2 Population using at least basic sanitation services (%)



Countries and regions		Goal 6			
		6.1		6.2	
Units		%	<i>mln people left</i>	%	<i>mln people left</i>
France	E West	100.00	0.00	98.65	0.90
Greece	E West	100.00	0.00	98.98	0.11
Italy	E West	99.44	0.34	98.77	0.74
Malta	E West	100.00	0.00	99.96	0.00
Portugal	E West	99.91	0.01	99.61	0.04
Spain	E West	99.93	0.03	99.90	0.04
EUROPE West (6)		99.81	0.38	99.06	1.84
Albania	E East	91.04	0.26	97.72	0.07
Bosnia and Herzegovina	E East	96.14	0.13	95.36	0.16
Croatia	E East	99.59	0.02	96.54	0.14
Cyprus	E East	99.61	0.00	99.15	0.01
Montenegro	E East	97.04	0.02	97.77	0.01
North Macedonia	E East	93.14	0.14	99.13	0.02
Slovenia	E East	99.54	0.01	99.11	0.02
EUROPE East (7)		96.45	0.58	97.40	0.42
SOUTHERN EUROPE (13)		99.55	0.96	98.93	2.26
Israel	ME	100.00	0.00	100.00	0.00
Jordan	ME	98.94	0.10	97.34	0.26
Lebanon	ME	92.60	0.50	98.48	0.10
Palestine	ME	87.60	0.55	96.00	0.18
Syrian Arab Republic	ME	97.22	0.48	91.22	1.50
Turkey	ME	98.88	0.91	97.30	2.19
MIDDLE EAST (6)		98.01	2.55	96.69	4.23
Algeria	NA	93.56	2.67	87.59	5.14
Egypt, Arab Republic	NA	99.11	0.86	94.19	5.60
Libya	NA	98.53	0.10	100.00	0.00
Morocco	NA	86.78	4.70	88.50	4.09
Tunisia	NA	96.26	0.43	90.92	1.04
NORTH AFRICA (5)		95.42	8.76	91.71	15.87
MIDDLE EAST & NORTH AFRICA (11)		96.46	11.31	93.71	20.10
MEDITERRANEAN AREA (24)		97.69	12.27	95.79	22.36

Data source:

6.1 – JMP (2019)

6.2 – JMP (2019)



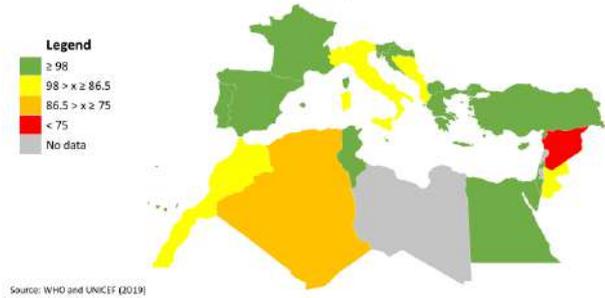
CHALLENGE
WATER QUALITY

Water networks look well structured in most of the Mediterranean area, including MENA countries, despite gaps in accessing basic drinking water and sanitation services mostly affecting rural areas.

6.4 Percentage of anthropogenic wastewater that receives treatment (%)



11.2 Access to improved water source, piped (% of urban population)



Countries and regions		Goal 6	Goal 11	
		6.4	11.2	
Units		%	%	<i>mn people left</i>
France	E West	88.00	99.00	0.54
Greece	E West	81.66	99.00	0.08
Italy	E West	58.75	97.49	1.07
Malta	E West	100.00	99.00	0.00
Portugal	E West	54.98	99.00	0.07
Spain	E West	91.51	99.00	0.37
EUROPE West (6)		77.75	98.57	2.13
Albania	E East	2.67	92.36	0.13
Bosnia and Herzegovina	E East	1.13	97.65	0.04
Croatia	E East	51.71	99.00	0.02
Cyprus	E East	50.00	99.00	0.01
Montenegro	E East	8.37	94.14	0.02
North Macedonia	E East	0.94	98.35	0.02
Slovenia	E East	89.09	99.00	0.01
EUROPE East (7)		29.16	97.22	0.25
SOUTHERN EUROPE (13)		74.03	98.49	2.39
Israel	ME	81.70	99.00	0.08
Jordan	ME	18.63	88.76	1.00
Lebanon	ME	38.16	-	-
Palestine	ME	-	-	-
Syrian Arab Republic	ME	48.00	74.72	2.31
Turkey	ME	30.40	98.62	0.84
MIDDLE EAST (6)		35.92	95.12	4.22
Algeria	NA	33.12	81.88	5.40
Egypt, Arab Republic	NA	41.96	98.58	0.59
Libya	NA	9.60	-	-
Morocco	NA	5.40	94.10	1.30
Tunisia	NA	43.04	99.00	0.08
NORTH AFRICA (5)		32.24	92.70	7.37
MIDDLE EAST & NORTH AFRICA (11)		33.68	93.82	11.59
MEDITERRANEAN AREA (24)		49.76	95.96	13.98

Data source:

6.4 – EPI (2018)

11.2 – WHO and UNICEF (2019)



CHALLENGE

AIR QUALITY

MENA countries show high levels of exposition to **PM 2.5** ($50 \mu\text{g}/\text{m}^3$). Values in Europe are lower but not negligible ($13 \mu\text{g}/\text{m}^3$) especially considering specific sites with high concentrations. The percentage of med population exposed at PM2.5 is about 90%; even higher in MENA.

11.1 Annual mean concentration of particulate matter of less than 2.5 microns of diameter (PM2.5) ($\mu\text{g}/\text{m}^3$)



Source: IHME (2017)

Countries and regions		Goal 11	
		11.1	
Units		$\mu\text{g}/\text{m}^3$	% pop exposed
France	E West	11.82	78.21
Greece	E West	16.22	100.00
Italy	E West	16.75	94.78
Malta	E West	13.91	100.00
Portugal	E West	8.16	16.01
Spain	E West	9.70	41.12
EUROPE West (6)		12.23	72.47
Albania	E East	18.20	100.00
Bosnia and Herzegovina	E East	27.75	99.96
Croatia	E East	17.90	99.78
Cyprus	E East	17.29	100.00
Montenegro	E East	20.78	100.00
North Macedonia	E East	29.73	100.00
Slovenia	E East	16.02	99.49
EUROPE East (7)		21.84	99.87
SOUTHERN EUROPE (13)		13.34	74.58
Israel	ME	21.38	100.00
Jordan	ME	33.01	100.00
Lebanon	ME	30.62	100.00
Palestine	ME	-	100.00
Syrian Arab Republic	ME	43.76	100.00
Turkey	ME	44.31	100.00
MIDDLE EAST (6)		42.70	100.00
Algeria	NA	38.88	100.00
Egypt, Arab Republic	NA	87.00	100.00
Libya	NA	54.26	100.00
Morocco	NA	32.59	100.00
Tunisia	NA	37.66	100.00
NORTH AFRICA (5)		51.44	100.00
MIDDLE EAST & NORTH AFRICA (11)		50.04	100.00
MEDITERRANEAN AREA (24)		42.45	89.86

Data source:

11.1 – IHME (2017)

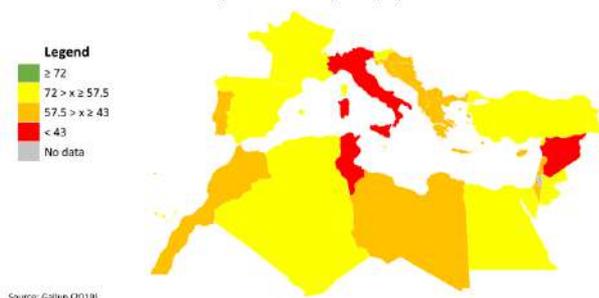
11.1 Add: PM2.5 air pollution, population exposed to levels exceeding WHO guideline value (% of total) – Brauer, M. et al. (2017)



CHALLENGE
ACCESSIBILITY

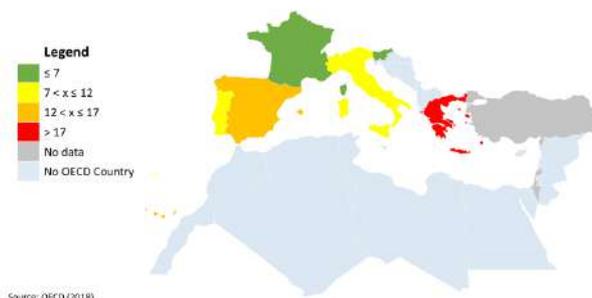
Quality of **public transport** based on satisfaction rates is around 56% in Med calling for consistent improvements. Cost of households compared to family income in OECD countries is variable and would need proper monitoring.

11.3 Satisfaction with public transport (%)



Source: Gallup (2019)

11.4 Rent overburden rate (%)



Source: OECD (2018)

Countries and regions		Goal 11	
		11.3	11.4
Units		%	%
France	E West	67.94	5.23
Greece	E West	57.03	19.66
Italy	E West	34.44	9.09
Malta	E West	60.32	x
Portugal	E West	52.18	8.39
Spain	E West	63.44	12.93
EUROPE West (6)		55.09	
Albania	E East	50.52	x
Bosnia and Herzegovina	E East	49.42	x
Croatia	E East	47.83	x
Cyprus	E East	49.77	x
Montenegro	E East	46.12	x
North Macedonia	E East	50.75	x
Slovenia	E East	59.69	5.17
EUROPE East (7)		50.58	
SOUTHERN EUROPE (13)		54.73	
Israel	ME	57.42	-
Jordan	ME	63.89	x
Lebanon	ME	51.82	x
Palestine	ME	-	x
Syrian Arab Republic	ME	15.28	x
Turkey	ME	57.81	-
MIDDLE EAST (6)		51.74	
Algeria	NA	57.66	x
Egypt, Arab Republic	NA	70.99	x
Libya	NA	45.69	x
Morocco	NA	49.22	x
Tunisia	NA	42.59	x
NORTH AFRICA (5)		61.60	
MIDDLE EAST & NORTH AFRICA (11)		57.77	
MEDITERRANEAN AREA (24)		56.58	

Data source:

11.3 – Gallup (2019)

11.4 – OECD (2019)



CHALLENGE
WASTE

Waste management shows some criticalities and would require improvements in systematic data monitoring and integrated waste management systems to **avoid landfilling** and increase rates of recycling, besides reduction.

12.1 Municipal Solid Waste (kg/year/capita)



Source: World Bank (2012)

12.2 Electronic waste (kg/capita)



Source: UNU-IAS (2017)

12.7 Non-Recycled Municipal Solid Waste (kg/day/capita)



Source: World Bank (2012); OECD (2018)

Countries and regions		Goal 12				
		12.1		12.2		12.7
Units		kg/day/cap	tot Mt/year	kg/capita	tot Mt/year	kg/day/cap
France	E West	1.74	42.39	21.30	1.42	0.81
Greece	E West	1.70	6.73	17.50	0.19	1.14
Italy	E West	1.94	42.94	18.90	1.15	0.62
Malta	E West	1.80	0.29	15.50	0.01	x
Portugal	E West	1.92	7.27	17.30	0.18	0.98
Spain	E West	1.48	25.11	20.10	0.93	0.84
EUROPE West (6)		1.75	124.73	19.84	3.88	-
Albania	E East	1.77	1.86	7.10	0.02	x
Bosnia and Herzegovina	E East	2.02	2.53	6.50	0.02	x
Croatia	E East	1.91	2.93	12.60	0.05	x
Cyprus	E East	1.87	0.79	19.10	0.02	x
Montenegro	E East	2.16	0.49	10.00	0.01	x
North Macedonia	E East	1.81	1.37	7.20	0.01	x
Slovenia	E East	2.24	1.68	16.10	0.03	0.34
EUROPE East (7)		1.94	11.66	10.49	0.17	-
SOUTHERN EUROPE (13)		1.76	136.39	19.11	4.05	-
Israel	ME	1.89	5.79	14.10	0.12	1.43
Jordan	ME	0.77	2.60	5.60	0.05	x
Lebanon	ME	1.04	2.47	11.10	0.07	x
Palestine	ME	-	-	-	-	x
Syrian Arab Republic	ME	1.25	8.18	-	-	x
Turkey	ME	1.39	39.90	7.90	0.63	0.99
MIDDLE EAST (6)		1.34	58.94	8.40	0.88	-
Algeria	NA	1.11	16.12	6.20	0.25	x
Egypt, Arab Republic	NA	1.36	45.75	5.50	0.52	x
Libya	NA	1.14	2.66	11.00	0.07	x
Morocco	NA	0.83	10.51	3.70	0.13	x
Tunisia	NA	0.92	3.75	5.60	0.06	x
NORTH AFRICA (5)		1.17	78.81	5.51	1.04	-
MIDDLE EAST & NORTH AFRICA (11)		1.24	137.75	6.54	1.91	-
MEDITERRANEAN AREA (24)		1.45	274.13	11.82	5.97	-

Data source:

12.1 – World Bank (2012)

12.2 – UNU-IAS (2017)

12.7 – World Bank (2012); OECD (2018)



CHALLENGE

CRIME

Safety is a priority for dignified standards of life and look depending first on political stability and then on social wellbeing and equality, as well as levels of **corruption** in the exercise of public functions. MENA countries show higher criticalities.

16.1 Homicides (per 100,000 population)



Source: UNODC (2018)

16.3 Proportion of the population who feel safe walking alone at night in the city or area where they live (%)



Source: Gallup (2020)

16.6 Corruption Perception Index (0-100)



Source: Transparency International (2019)

Countries and regions		Goal 16		
		16.1	16.3	16.6
Units		n./10 ⁵	n.people	%
France	E West	1.30	869	74.05
Greece	E West	0.70	75	57.49
Italy	E West	0.70	424	68.33
Malta	E West	0.90	4	74.46
Portugal	E West	0.70	72	83.33
Spain	E West	0.70	326	77.51
EUROPE West (6)		0.91	1,771	72.67
Albania	E East	2.30	66	62.99
Bosnia and Herzegovina	E East	1.20	40	67.10
Croatia	E East	1.10	45	75.06
Cyprus	E East	0.60	7	73.59
Montenegro	E East	2.40	15	79.25
North Macedonia	E East	1.50	31	68.33
Slovenia	E East	0.90	19	90.31
EUROPE East (7)		1.37	224	72.36
SOUTHERN EUROPE (13)		0.94	1,994	72.64
Israel	ME	1.40	122	75.15
Jordan	ME	1.40	137	73.39
Lebanon	ME	4.00	272	55.26
Palestine	ME	-	-	-
Syrian Arab Republic	ME	2.20	375	32.24
Turkey	ME	4.30	3,487	56.84
MIDDLE EAST (6)		3.56	4,394	55.73
Algeria	NA	1.40	579	64.26
Egypt, Arab Republic	NA	2.50	2,411	87.03
Libya	NA	2.50	165	54.08
Morocco	NA	2.10	747	57.37
Tunisia	NA	3.00	343	57.91
NORTH AFRICA (5)		2.22	4,245	73.86
MIDDLE EAST & NORTH AFRICA (11)		2.74	8,639	66.82
MEDITERRANEAN AREA (24)		2.02	10,634	69.10

Data source:

16.1 – UNODC (2018)

16.3 – Gallup (2020)

16.6 – Transparency International (2019)

3.6 Transformation Digital Revolution for Sustainable Development

Tracking the progress towards the Transformation 6 requires an indirect approach. Except for a few indicators (e.g. population using the internet; mobile broadband subscriptions), the transition to digital services can have multiple applications in various sectors, concerning different goals and targets.

Figure 3.6 | Selected indicators and challenges in the transformation 6. Digital Revolution for Sustainable Development.



**DIGITAL
REVOLUTION
for
SUSTAINABLE
DEVELOPMENT**

06

	INDICATORS	CHALLENGES
1 NO POVERTY	Map 1.2	Poverty headcount ratio at \$3.20/day (% population)
	Map 2.4	Prevalence of obesity, BMI ≥ 30 (% adult population)
2 ZERO HUNGER	Map 2.5	Human Trophic Level (best 2 - 3 worst)
	Map 2.6	Cereal yield (t/ha)
3 GOOD HEALTH AND WELL-BEING	Map 2.7	Sustainable Nitrogen Management Index
	Map 3.5	New HIV infections (per 1,000)
4 QUALITY EDUCATION	Map 3.6	Age-standardised death rate due to cardiovascular disease, cancer, diabetes, and chronic respiratory disease in populations age 30–70 years
	Map 3.8	Traffic deaths rate (per 100,000 population)
5 GENDER EQUALITY	Map 3.17	OECD only: Daily smokers (% population age 15+)
	Map 4.1	Net primary enrolment rate (%)
6 CLEAN WATER AND SANITATION	Map 4.2	Lower secondary completion rate (%)
	Map 4.4	OECD only: Participation rate in pre-primary organized learning (% ages 4-6)
7 AFFORDABLE AND CLEAN ENERGY	Map 4.5	OECD only: Population age 25-34 with tertiary educational attainment (%)
	Map 4.8	OECD only: Underachievers in science (% 15 years old)
8 DECENT WORK AND ECONOMIC GROWTH	Map 4.9	OECD only: Resilient students in science (% 15 years old)
	Map 5.3	Ratio of female to male labour force participation rate
9 INDUSTRY INNOVATION AND INFRASTRUCTURE	Map 5.5	OECD only: Gender wage gap (Total, % male median wage)
	Map 6.1	Population using at least basic drinking water services (%)
10 REDUCED INEQUALITIES	Map 6.3	Freshwater withdrawal as % total renewable water resources
	Map 6.4	Anthropogenic wastewater that receives treatment (%)
11 SUSTAINABLE CITIES AND COMMUNITIES	Map 7.1	Access to electricity (% population)
	Map 7.3	CO ₂ emissions from fuel combustion for electricity and heating per total electricity output (MtCO ₂ /TWh)
12 RESPONSIBLE CONSUMPTION AND PRODUCTION	Map 7.4	OECD only: Share of renewable energy in total final energy supply (%)
	Map 8.1	Adjusted GDP Growth (%)
13 CLIMATE ACTION	Map 8.3	Adults (15 years and older) with an account at a bank or other financial institutions
	Map 8.4	Unemployment rate (% total labor force)
14 LIFE BELOW WATER	Map 8.6	OECD only: Employment-to-Population ratio (%)
	Map 8.7	OECD only: Youth not in employment, education or training (NEET) (%)
15 LIFE ON LAND	Map 8.2	Victims of Modern Slavery (per 1,000 population)
	Map 8.5	Fatal work-related accidents embodied in imports (deaths per 100,000)
16 PEACE, JUSTICE AND STRONG INSTITUTIONS	Map 9.1	Population using the internet (%)
	Map 9.2	Mobile broadband subscriptions (per 100 inhabitants)
17 PARTNERSHIPS FOR THE GOALS	Map 9.3	Logistics performance index: Quality of trade and transport-related infrastructures
	Map 9.4	The Times Higher Education Universities Ranking : Average score of top 3 universities
	Map 9.6	Expenditure on research and development (% GDP)
	Map 10.1	Gini Coefficient adjusted for top income (1-100)
	Map 11.1	Annual mean concentration of particulate matter of less than 2.5 microns
	Map 11.2	Access to improved water source, piped (% urban population)
	Map 11.3	Satisfaction with public transport (%)
	Map 11.4	OECD only: Rent overburden rate (%)
	Map 12.1	Municipal Solid Waste (kg/day/capita)
	Map 12.2	Electronic waste (kg/capita)
	Map 12.7	OECD only: Non-Recycled Municipal Solid Waste (kg/day/capita)
	Map 12.3	Production-based SO ₂ emissions (kg/capita)
	Map 12.5	Production-based nitrogen emissions (kg/capita)
	Map 13.1	Energy-related CO ₂ emissions per capita (tCO ₂ /capita)
	Map 13.2	CO ₂ emissions embodied in imports (tCO ₂ /capita)
	Map 13.3	CO ₂ emissions embodied in fossil fuel exports (kg/capita)
	Map 13.4	OECD only: Effective Carbon Rate
	Map 14.4	Fish caught by trawling (%)
	Map 14.1	Mean area that is protected in marine sites important to biodiversity (%)
	Map 14.2	Ocean Health Index Goal - Clean Waters (0-100)
	Map 15.1	Mean area that is protected in terrestrial sites important to biodiversity (%)
	Map 15.2	Mean area that is protected in freshwater sites important to biodiversity (%)
	Map 15.4	Permanent Deforestation (5 year average annual %)
	Map 16.3	Percentage of the population who feel safe walking alone at night in the city
	Map 16.6	Corruption Perception Index (0-100)
	Map 16.9	Press Freedom Index (best 0 - 100 worst)
	Map 17.1	Government spending on Health and Education (% GDP)

This transformation aims to deploy digital technologies disrupting nearly every sector of the economy, including agriculture (precision agriculture), mining (autonomous vehicles), manufacturing (robotics), retail (e-commerce), finance (e-payment and trading strategies), media (social network), health (diagnostics and telemedicine), education (online learning), public administration (e-governance and e-voting), and science and technology. Main objectives concern the universal access to the internet through mobile broadband, digital inclusion and privacy protection. Digital innovation is especially expected to tackle implementation challenges towards sustainable development across the six SDG Transformations (Sachs et al. 2019).

Figure 3.6 shows a selection of indicators and emerging challenges (already mentioned in the previous transformations) that can be indirectly influenced by the use of digital technologies. Rather than directly monitored through specific indicators, the effects of the digital revolution are expected to support and contribute to accomplish the previous 5 transformations. Nevertheless, the strategic role of digitalization and the definition of proper policies and strategies for its implementation require a specific focus (next section).



Union for the Mediterranean
Union pour la Méditerranée
الاتحاد من أجل المتوسط

**Focus on The Union for the Mediterranean:
regional positive agenda for implementing the
SDGs in the Mediterranean**



Figure: UfM member states – Source: Annual Report UfM 2019

The Union for the Mediterranean (UfM), an intergovernmental institution bringing together the European Union Member States and the countries from the Southern and Eastern shores of the Mediterranean, promotes cooperation aimed at tackling the root causes of the challenges in the Euro-Mediterranean.

The UfM seeks to address global issues such as climate change, environment, water, higher education, and research and innovation, based on an inclusive approach while guaranteeing its coherence with and its contribution to the implementation of the Sustainable Development Goals (SDGs) in the Euro-Mediterranean region.

The last few years have marked a turning point for the institution, both at a political and operational level. Indeed, a Roadmap adopted by UfM Ministers of Foreign Affairs enabled working towards the socio-economic root causes of the growing regional challenges, while capitalizing on its immense untapped potential, particularly its youth. It also paved the way for using the UfM framework to interlink Mediterranean regional action with the global SDGs, taking fully into account the contribution that this work can make in addressing the current global challenges facing the region.

The current situation offers an historic opportunity to explore and promote the potential that it entails for the Euro-Mediterranean region. The UfM is determined to reinforce its role as a regional cooperation platform to help the region recover from the socioeconomic implications of the pandemic. Since the outbreak of the COVID-19, UfM virtual activities have brought together a wide range of experts and stakeholders to share ideas, build consensus and coordinate efforts in key areas such as research and innovation, water management, job creation, urban development and the promotion of gender equality and digitalization. Finally, the pandemic is a unique chance to address the heavy impacts of climate and environmental change.



Mediterranean
Action Plan
Barcelona
Convention

UNEP/MAP State of the Environment and Development in the Mediterranean

In the framework of the UNEP/MAP-Barcelona Convention system and as mandated by the Contracting Parties to the Barcelona Convention (i.e. 21 Mediterranean countries and the European Union), Plan Bleu has organized and edited the report on the State of the Environment and Development in the Mediterranean (SoED), a collective effort involving more than 150 contributors.

SoED aims at presenting a comprehensive and updated assessment of the interactions between environment and development in the Mediterranean region. This assessment study analyses socio-economic drivers and impacts of environmental degradation of the Mediterranean marine and coastal ecosystems. By applying an integrated and systemic approach, SoED is expected to increase awareness and understanding of environmental status and trends in the region, their driving forces and impacts, facilitating the measurement of progress towards sustainable development, providing an up-to-date foundation for improved decision-making at all levels, and enhancing the implementation of the UN 2030 Agenda, Sustainable Development Goals (SDGs) and the Mediterranean Strategy for Sustainable Development (MSSD).

Over the last decades, human-induced pressures have increasingly affected the Mediterranean region. Population growth and unsustainable production and consumption patterns have led to environmental degradation. Despite some progress, economic growth continues to increase resource consumption and carbon emissions. Land- and sea-use change, in particular on the coast, are detrimental to the environment. Exploitation of resources and organisms, pollution and climate change are projected to exacerbate pre-existing fragilities in the Mediterranean, leading to “multiple stresses and systemic failures”, putting health and livelihoods at risk.

Progress has been achieved in policy responses and actions to manage the Mediterranean more sustainably. Results are positive compared to scenarios with no intervention. However, these results have not been sufficient to reduce the most significant pressures on the environment and to safeguard the Mediterranean for present and future generations while meeting human development needs. Current trends do not allow achievement of Good Environmental Status (GES) of the Mediterranean Sea by 2020.

Urgent and collective efforts for transformative change are required to safeguard the Mediterranean environment, while simultaneously fostering human development, taking into account differences between Mediterranean countries. Mediterranean countries have committed to achieve GES of the Mediterranean Sea and coast and more largely the SDGs under the 2030 Agenda. A fundamental reorganization of economic and social systems, including changes in paradigms and values, is required to achieve these commitments.

Reference

UNEP/MAP and Plan Bleu (2020). State of the Environment and Development in the Mediterranean. Nairobi

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#SustainableMED

4. Recommended policies

The indicators selected and the corresponding maps, elaborated and interpreted by area, trace a general picture of Mediterranean countries in relation to the actuation of the six transformations. The emerging picture allows for highlighting the main challenges to tackle in the short, medium and long period. The list of challenges has been taken as guideline to determine a series of policies and strategies to accomplish each transformation. This is aimed at addressing the planning of coordinated actions, relating to the characteristics of the four macro-regions, and foster the interaction between research centres and both the public and the private sectors. In particular, the following sections have been outlined, one per each transformation, and relevant initiatives or projects selected (within dedicated boxes) to support the transition process in the complex Mediterranean context.

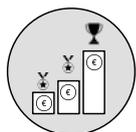
In general, recommended policies can be classified into the following seven categories.



Regulation and control protocols to be applied by public authorities at both transnational and national level, as part of a cooperative action shared by all the Mediterranean countries or specific Mediterranean regions.



Practices of governance aimed at improving performance of public-private facilities and services through sectorial planning, including urbanism, resource and waste management (e.g. energy and water supply networks), mobility in all its forms, coastal and marine governance, ecosystem services, climate change mitigation.



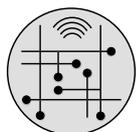
Incentive schemes and supporting programs for sustainable development, aimed at deploying best practices through political agreements, financial support, and public-private initiatives. Governments, international organizations and businesses should coordinate their action and increase their investments for SDG implementation.



Information and educational programs including awareness raising campaigns, knowledge transfer, capacity building and innovation development, especially targeting young generations, enterprises, value chain operators in any productive sector.



Stakeholders engagement mechanisms to promote broad public support for each transformation. The scientific community can play an important role to develop tools and methods for multi-stakeholder engagement allowing for technical feasibility of long-term pathways.



Digital and technological development to implement monitoring systems as decision-support tools and data sharing systems at transnational level. For example, the development of open access repositories of successful experiences and solutions in the Mediterranean region can contribute to support the SDGs achievement and the emergence of new transnational partnerships. This action clearly refers to the Transformation 6 that is mentioned among strategic policies for the achievement of all the transformations.



Economic and market development by fostering innovation through the engagement of value chain actors and providing information directly to consumers thus promoting healthier and more sustainable behaviours.

In general, the perception of the Mediterranean as a common stage needs to be emphasised and strengthened through a more intense cooperation and transnational collaboration among countries, besides interactions between disciplines, to face complex challenges and fill the gap towards the SDGs.

4.1 Transformation. Policies for Education, Gender and Inequality

Poverty - Around 12% of the Mediterranean population (almost 50 million people) is classified at risk of poverty, including 27 million Europeans, and it can expect to get worse due to the COVID 19 crisis (not monitored here). Recommended policies concern the following issues.



New legislations at national and regional level to protect minor classes, impose balanced taxes, guarantee fair salaries and redistribute wealth, thus avoiding the concentration of riches in the pockets of very few people.



Programs and plans to improve healthiness of poor neighbourhoods and increase accessibility to safe food and basic public services, including sanitation facilities, public transport and green infrastructures, avoiding isolation and exclusion of marginal areas.



Programs of social assistance to support most vulnerable categories of people and assure their subsistence.



Educational programs to facilitate re-integration of unemployed people through alternative opportunities of education and training at any stage of their life and facilitations for employment.



Innovative monitoring systems to have a constant control at national and regional level on the current state of families and neighbourhoods in each country.

Scholarship and literacy - The level of scholarship looks good in most of the Mediterranean countries as well as educational outcomes in terms of acquired skills and literacy rate. Nevertheless, the role of education is crucial for sustainable development and needs continuous monitoring and improvement. Recommended policies concern the following issues.



Clear legislations and control protocols to guarantee high standards of educational facilities and infrastructures, in compliance with stringent security criteria, including resistance to extreme natural events.



Incentive schemes for supporting most deserving students and their careers as well as students from low income families, made easily accessible and suitable to current requirements and costs of life. Incentives should also support the accessibility to digital infrastructures to all students as an essential solution widely used to face the COVID 19 crisis.



Programs at national level to give opportunities of professional updating to teachers and skilled personnel and constant reviewing of educational programs at any level in every country, in line with international standards.



Innovative monitoring systems to have a constant control at national and regional level on the state of facilities and infrastructures and the performance of the educational systems in each country.

Women rights and emancipation – Women rights are not equally developed in Mediterranean countries and need careful monitoring. In general, all countries should promote significant cultural changes to enhance the position of women in society. Specific indicators on abuses and violence should be taken into account. Recommended policies concern the following issues.



Legislations at national level to protect women rights, especially safeguarding women and girls from abuses and assuring their independent choices, and to guarantee gender equality, such as through fair salaries and minimum female representation in public and private bodies, until it belongs a consolidated cultural background.



Programs and incentives to foster initiatives and support entrepreneurs and independent businesses with women in a leading position.



Programs and incentives including dedicated actions to increase accessibility of women, at any stage of their life, and girls to educational and training programs.



Innovative solutions to improve services targeting women, especially concerning protection from abuses and surveillance aimed at preventing violence in both domestic and public places.

Job market and labour rights – The unemployment rate in the Mediterranean countries is 11% in average and accounts for 39 million people. Number of NEETs in OECD countries is not reassuring and reveals an alarming disenchantment of young generations. Recommended policies concern the following issues.



Legislations at transnational and national level to promote sustainable development such as to discourage fossil fuels based businesses and investments, convert industries and remove constraints to the exploitation of renewable energy sources and circular economy.



Plans for renewable energy deployment at national, regional and municipal level, clearly addressing new urban and sectorial planning practices to energy transition and climate adaptation, to address next investments and create new job opportunities with effects on local economies and wellbeing.



Programs and incentives at national level to support entrepreneurship and job creation with relevant contributions in terms of tax reduction. This should particularly support entrepreneurs and employees in the field of research and innovation, new technologies and expertise for sustainability.



Programs at national level to guarantee education and training to people at any stage of their life, including applicants for new jobs and entrepreneurs looking for new sustainable businesses.



Business networks, well supported by public institutions, to join efforts to strengthen innovation capacity and increase job opportunities by training generally skilled personnel and coordinating actions, such as through temporary jobs planning and market oriented initiatives.



Making digital technologies a leverage for innovation capacity building and sustainable development.

Press Freedom – The survey on the degree of freedom of press in the Mediterranean shows the need of improvements and constant surveillance. Recommended policies concern the following issues.



Legislations at national level to protect freedom of press as well as to regulate the use of internet and social media by abusers as instruments of defamation, fake news and anonymous intimidation.



Programs at national level to educate young citizens at school to manage their use of the internet by respecting freedom of expression as well as the right to privacy, as a necessary cultural background in the digital era.



Deployment of mobile digital technologies to allow free access to information and opportunities of web based networking in every country and at the transnational level, avoiding limitations with any social class distinction and increasing the capacity to limit abuses and guarantee safe and fair browsing on internet for everybody.

Wealth distribution – Inequalities in family income are recorded in the all Mediterranean area. Recommended policies concern the following issues.



Legislations at national and regional level to protect minor classes, impose right taxes, guarantee fair salaries and redistribute wealth, thus avoiding the concentration of riches in the pockets of very few people.



Programs and plans to improve healthiness of poor neighbourhoods and increase accessibility to safe food and basic public services, including sanitation facilities, public transport and green infrastructures, avoiding isolation and exclusion of marginal areas.



Programs and incentives to foster entrepreneurial initiatives and support start-up and small businesses as well as to promote sustainable turn-over policies to guarantee opportunities of career improvements to employees in both public and private sectors.



Programs and incentives including dedicated actions to increase accessibility of students from low income families, at any stage of their life, to educational and training programs.



Deployment of mobile digital technologies to allow free access to information and opportunities of web based networking without any social class distinction in every country.

Domestic policy – Expenditures on health and education ranges from 11% of GDP in Western Europe to 7% in Eastern Europe and the MENA area. Recommended policies concern the following issues.



Legislations to guarantee free access to national healthcare systems to everybody, without any social class distinction and nationality, including migrants that need to be rescued and properly assisted by national governments based on transnational cooperation and agreements.



Improved investments in health and education to guarantee the achievement of high standards of basic services in the all Mediterranean region.



Programs at national level to guarantee a high level of skilled personnel for healthcare and education in every country, in line with international standards, and a proper information system addressed to citizens to guarantee a high accessibility to basic services.



Innovative monitoring systems to have a constant control at national and regional level on the state of facilities and infrastructures and the performance of basic services in each country, also improving accessibility through web-based applications and remote services.

4.2 Transformation. Policies for Health, Wellbeing and Demography

Malnutrition - No critical situations are highlighted in the Mediterranean, nevertheless the number of people involved, especially in MENA, calls for a careful monitoring and action planning. Precarious conditions of health induced by malnutrition can have negative effects in the long run such as, besides healthiness, in terms of social wellness and economic costs. Recommended policies concern the following issues.



Programs of prevention and assistance to families most exposed to risk, such as economic bonuses or free access to basic foodstuffs during pregnancy and lactation, to limit problems linked to insufficient or inadequate food, especially in children, and improve health of future generations.

Food habits (diet) - The increasing spread of child and adult obesity is mostly due to incorrect eating habits. Trends towards high-protein diets, with high consumption of meat, cheese and other high-calorie foods, and a progressive abandon of the Mediterranean diet, rich in fruit and vegetables, further contribute to increase the problem. Recommended policies concern the following issues.



New legislations aimed at improving food standards and prevent obesity and diseases associated to incorrect food habits, especially of young generations, and their negative effects in terms of healthiness and sanitary costs.



Dietary education programmes in schools and school canteens assuring a healthy balanced diet and informing on the benefits of good food habits, such as the Mediterranean diet, and more dynamic lifestyles, often sedentary and unhealthy.



Innovative solutions to communicate and promote good behaviours, such as to inform on calorie content of packaged foods, for example through smart labelling of products and monitoring of production chains.



National campaigns addressed to consumers promoting a healthy balanced diet, especially targeting younger generations, and consumption of healthy fresh food instead of packaged and overprocessed.

Healthcare – Medical assistance at birth and availability of skilled personnel is an important requirement not fully complied in some North African country. Recommended policies concern the following issues.



Legislations to guarantee free access to national healthcare systems to everybody, without any social class distinction and nationality.



Increasing investments in health services to guarantee the achievement and improvement of high standards in the all Mediterranean region.



Information campaigns of prevention addressed to families most exposed to risk to limit problems and assure proper assistance by skilled personnel at birth.

Healthy environment - Disease containment in the Mediterranean area looks under control, with some problems emerging in North Africa and Eastern Europe. Some diseases such as cardiovascular, diabetes and respiratory, are indirectly correlated, albeit not exclusively, with food, land and water quality. Recommended policies concern the following issues.



New legislations aimed at improving food standards and prevent obesity and diseases associated to incorrect food habits, especially of young generations, and their negative effects in terms of healthiness and sanitary costs.



Dietary education programmes in schools and school canteens assuring a healthy balanced diet and informing on the benefits of good food habits, such as the Mediterranean diet, and more dynamic lifestyles, often sedentary and unhealthy.



Innovative solutions to communicate and promote good behaviours, such as to inform on calorie content of packaged foods, for example through smart labelling of products and monitoring of

production chains.



National campaigns addressed to consumers promoting a healthy balanced diet, especially targeting younger generations, and consumption of healthy fresh food instead of packaged and overprocessed. Populations that follow a Mediterranean diet show half the rate of cardiovascular mortality and the highest longevity.

Well-being – Best performances in terms of healthiness and wellbeing are in Western Europe as expected as a consequence of the economic wellness. Nevertheless, potentialities to improve are high in most of the Mediterranean areas, considering for example the mean age of the population (34 years in Med), much younger in MENA (27 years) than in Europe (40 years). Recommended policies concern the following issues.



Planning activities oriented to sustainability to improve both urban and rural environments, avoid pollution, increase accessibility to basic services, including for example nature based facilities and public transport, and provide opportunities for assuring healthy and dynamic lives, rather than sedentary.



National and regional programs targeting youths to maximise public and private investments in cultural and social development, especially in countries with the highest rates of young population, and build the conditions to live full and fulfilling lives.



Educational programs teaching sustainability to young students to form the next generation citizens and let them understand the implications of our common living in one planet.



Stakeholders engagement, including citizens, in decision making to promote dynamic and resilient communities, build capacities to accomplish consistent transformations through bottom-up initiatives in cities and rural areas and assure direct interactions with local authorities.



Promotion of fair trade to avoid spillover effects of developed countries often compromising opportunities of developing countries to maintain and improve their economic, social and environmental conditions.

Water management – This is a major theme in the Mediterranean, especially in parts of the MENA area, with high risks of drought due to climate change. Recommended policies concern the following issues.



Stringent regulations at national level to limit water use and protect water sources as fundamental common goods for long term survival of populations, ecosystems and biodiversity.



New sectorial plans and control protocols to improve the efficiency of water supply networks (including Europe) and management of water supply in MENA countries, including the development of new treatment and distribution technologies and innovative irrigation systems (agriculture is responsible for a large part of the demand for water).



Incentives schemes to promote best practices for the containment of the water footprint in different sectors, from agriculture to industry, residential and tourism.



Educational programs teaching correct behaviours and use of water resources to young students to form the next generation citizens and let them understand the implications of our common living in one planet.



Containment of the water footprint of countries and protection of available water resources by engaging stakeholders in participating activities, including public authorities, industry and agriculture, research centres and the civil society.



Developing monitoring tools for water availability and quality as decision-support systems to regulate sharing and management of available resources.

Energy supply – Access to electricity is guaranteed in most of Mediterranean countries. Recommended policies concern the following issues.



Policies to improve security standards and sustainability of national energy grids and to promote a progressive transition to renewable energy sources, thus assuring a higher resilience and long term energy supply. Solar and wind potentials are high in the Mediterranean area and should be the subject for transnational agreements based on sharing renewable sources rather than fossil fuels.



Educational programs teaching correct behaviours and use of energy to young students to form the next generation citizens and let them understand the implications of our common living in one planet.



Development of smart grids at regional, local and domestic level can highly improve the management of distribution grid, integrating energy consumers and producers in local areas.



Promotion of free competition in the energy market, provided information and costs are clearly provided to consumers.

Air quality – High levels of exposition to polluted air are detected in most of Mediterranean countries. Recommended policies concern the following issues.



Stringent regulations at national level to identify clear thresholds and limit the exposition to polluted air, especially in urban environments.



Programs and plans at national, regional and municipal level to definitely promote integrated mobility systems, with limited use of private cars, and accomplish the transition to sustainable mobility. Similarly, programs to mitigate impacts of industrial activities.



Incentive schemes to foster the abandon of private cars, promoting the use of public transports, bicycles, and electric mobility, and to promote and financially support private investments in new infrastructures and services of an integrated mobility system. Incentives schemes to promote best practices for the containment of pollutant outflows from industries.



Educational programs teaching correct behaviours to young students to form the next generation citizens and let them understand the implications of our common living in one planet.



Engaging stakeholders in cooperative activities, including public authorities, practitioners and businesses, to promote sustainable mobility, such as through the engagement of employees.



Development of innovative solutions at national and regional level, such as with a real time monitoring and common ticketing system for all the integrated transports, can highly improve the transition to sustainable mobility.

Weapons market – Western Europe is among the exporters of weapons and regulation and control systems need constant update and monitoring to avoid unfair behaviours and allow for full traceability. Recommended policies concern the following issues.



More stringent regulations at international and national level and control protocols to assure transparency and traceability, with publicly accessible information on the weapon market.



Disincentives through taxes to minimize profit of producers and sellers and limit the number of sector operators under stringent and constant monitoring by control authorities.



Innovative digital technologies to assure traceability of weapons, such as through real time geo-location, and only allow accessibility to authorised persons.

Box 4.2.1



**Urban Planning, Environment and Health Initiative,
Barcelona Institute for Global Health**

ISGlobal **Barcelona**
**Institute for
Global Health**

COVID-19 has profoundly tested cities, while at the same time has brought opportunities for reflection and action in unprecedented ways. The pandemic has clearly evidenced the importance of the link between the urban environment and health as a foundation for prosperous cities.

The Urban Planning, Environment and Health Initiative (UPEH) combines research, advocacy, policy and capacity building to engage with key stakeholders and the public for transformative action and impact in society. Our research shows that up to 20% of premature mortality in urban areas could be prevented through better urban and transport planning. Further, COVID-19 has hit hardest in cities, bringing new urgency and complexity to these issues and the need for flexible and safe public spaces and transport systems. To achieve this, collaboration amongst planning, transport, environment and health sectors is essential. Multi-sectoral action and health in all policies are needed to tackle problems such as high air and noise pollution, heat island effects, lack of green space, sedentary behaviour, poor housing conditions and the ability to respond to climate change and other emerging threats.

The UPEH initiative brings together experts, practitioners and decision-makers across sectors to address the challenges posed by urbanisation, putting health and wellbeing at the centre of urban and transport planning. Our approach applies rigorous scientific evidence, tools and indicators to promote sustainable and healthy urban development. Our main lines of action are:

1. Translating scientific evidence to make it accessible and relevant for policy and decision making.
2. Creating communities of practice among urban and transport planners, health professionals, and economic and environmental specialists to create common language and indicators across sectors.
3. Developing innovative tools and approaches at different scales to address health challenges posed by urbanisation and monitor the impacts of solutions.
4. Engaging with the public and other key stakeholders in co-creation and citizen science processes to enable uptake.
5. Building capacity through education and training for current and future practitioners and leaders.

We are successfully engaging with diverse actors at the technical and policy levels to develop new research methods and solutions that respond to local needs. We are also working with governments and citizens to promote monitoring and evaluation of urban interventions to understand their health impacts and potential for replication, ensure equitable distribution of benefits, as well as detect and mitigate undesired outcomes. Our initial work began at home in Barcelona, and we are expanding our activities through national initiatives like El Día Después, involving 22 Spanish cities, and the Patios X Clima project, as well as the collaborative roles in international events like the Healthy City Design and Urban Transitions conferences. Now in its fourth year, the UPEH has been steadily growing its reach and partnerships, and will continue to support cities to a more sustainable and healthy future.

4.3 Transformation. Policies for Energy Decarbonisation and Sustainable Industry

Water quality – Practices of wastewater treatment are not well developed in the Mediterranean (78% of water is treated in Europe and only from 36% to 30% in MENA and EE). This has negative effects on the availability of freshwater and on seawater quality. Recommended policies concern the following issues.



Stringent regulations at national level to limit water use and protect water sources as fundamental common goods for long term survival of populations, ecosystems and biodiversity.



New sectorial plans and control protocols to improve the efficiency of water supply networks (including Europe) and management of water supply in MENA countries, including the development of new treatment and distribution technologies and innovative irrigation systems (agriculture is responsible for a large part of the demand for water).



Incentives schemes to promote best practices for the containment of the water footprint in different sectors, from agriculture to industry, residential and tourism.



Educational programs teaching correct behaviours and use of water resources to young students to form the next generation citizens and let them understand the implications of our common living in one planet.



Containment of the water footprint of countries and protection of available water resources by engaging stakeholders in participating activities, including public authorities, industry and agriculture, research centres and the civil society.



Developing monitoring tools for water availability and quality as decision-support systems to regulate sharing and management of available resources.

Sustainable energy – Efficiency and sustainability of national energy systems, such as in terms of carbon emission per unit energy, and share of renewable energy need improvements in most of Mediterranean countries. Recommended policies concern the following issues.



Policies to improve sustainability of national energy grids in compliance with international agreements and to promote a progressive transition to renewable energy sources, assuring higher resilience and long term energy supply. Solar and wind potentials are high in the Mediterranean area and should be the subject for transnational agreements based on sharing renewable sources, rather than fossil fuels.



Integrated energy planning at transnational, national, regional and municipal level, including the development of local smart grids connected to multiple energy producers and consumers, including both electricity and heat grids.



Incentives schemes to promote best practices for energy saving in different sectors and to support the deployment of renewable energy technologies, including electricity and heat generation.



Educational programs teaching correct behaviours and use of energy to young students to form the next generation citizens and let them understand the implications of our common living in one planet. Training programs to transfer knowledge on best practices to entrepreneurs and employees and support a wide deployment of sustainable energy systems and innovation capacity building.



Engaging stakeholders in participating activities of energy planning, including public authorities, research centres, enterprises and citizens, to start initiatives of co-ownership and sharing of renewable energy technologies through smart grids and explore the potentialities of future energy communities.



Development of smart grids at national, regional, local and domestic level can highly improve the management of distribution grids, integrating energy consumers and producers in local areas.



Making innovation of energy systems an opportunity for the green economy. Promotion of free competition in the energy market, assuring that information and costs are clearly provided to consumers.

Job market and labour rights – The current economic system does not show growing trends and needs to be carefully reviewed. The number of fatal accidents at work calls for careful monitoring and solutions for consistent improvements. Recommended policies concern the following issues.



Legislations at transnational and national level to promote sustainable development, including more stringent regulations regarding security protocols at work in most of Mediterranean countries.



Plans for renewable energy deployment at national, regional and municipal level, clearly addressing new urban and sectorial planning practices to energy transition and climate adaptation, to address next investments and create new job opportunities with effects on local economies and wellbeing.



Programs and incentives at national level to support entrepreneurship and job creation with relevant contributions in terms of tax reduction. This should particularly support entrepreneurs and employees in the field of research and innovation, new technologies and expertise for sustainability.



Programs at national level to guarantee education and training to people at any stage of their life, including applicants for new jobs and entrepreneurs looking for new sustainable businesses.



Business networks, well supported by public institutions, to join efforts to strengthen innovation capacity and increase job opportunities by training generally skilled personnel and coordinating actions, such as through temporary jobs planning and market oriented initiatives.



Making digital technologies a leverage for innovation capacity building and sustainable development.

Physical infrastructures – Quality and use of public transport is a reference indicator to appraise the level of infrastructures in Mediterranean countries; consistent improvements are desirable in most of MENA countries. Recommended policies concern the following issues.



Stringent regulations at national level to identify clear standards for the provision of high quality public transport services, especially in urban environments.



Programs and plans at national, regional and municipal level to definitely promote integrated mobility systems, with limited use of private cars, and accomplish the transition to sustainable mobility.



Incentive schemes to foster the abandon of private cars, promoting the use of public transports, bicycles, and electric mobility, and to promote and financially support private investments in new infrastructures and services of an integrated mobility system.



Educational programs teaching correct behaviours to young students to form the next generation citizens and let them understand the implications of our common living in one planet.



Engaging stakeholders in cooperative activities, including public authorities, practitioners and businesses, to promote sustainable mobility, such as through the engagement of employees.



Development of innovative solutions at national and regional level, such as with a real time monitoring and common ticketing system for all the integrated transports.

R&I – Assessments of High Education Institutions confirm high quality issues, nevertheless higher investments in research and innovation, such as for the employment of researchers and project development, are desirable in all Mediterranean countries. Recommended policies concern the following issues.



Legislations to guarantee high standards of high educational facilities and infrastructures and clearly identify research and innovation among strategic solutions for sustainable development.



Programs to increase the capacity of educational and research activities to add value through innovation to the market, for example interacting with the private sector and also through incubators and accelerators of entrepreneurial initiatives, such as start-up companies, based on research outcomes.



Incentive schemes for supporting most deserving HE students and their careers as well as students from low income families, including innovative solutions to support turn-over policies at Universities and research centres and guarantee opportunities of academic career to young researchers.



Clearly addressing educational programs and research activities to sustainable development in any sector taking the SDGs as main reference for evaluating innovation outcomes.



Making research centres intensely interact with stakeholders at any level, including public authorities, enterprises and the civil society in order to promote sustainable development practices and point the way for most effective transformations towards the SDGs.



Exploiting potentialities of digital technologies to increase accessibility to research outcomes and educational activities, improving the capacity of interaction and the opportunity to avoid part of travels through remote working.



Making research centres interpret market trends and contribute to design new market oriented initiatives inspired by the green economy, through innovation capacity building and direct interactions with the private sector.

Environmental impact and carbon emission - The impact of industrial production mainly involves industrialised countries of Western Europe, but has to be taken into account also for the next development of the other Mediterranean countries. Greenhouse gas emissions per capita in Mediterranean countries are higher in Europe (5.1 t CO₂eq/cap) and ME (4.1 t CO₂eq/cap), lower in NA (2.4 t CO₂eq/cap). Recommended policies concern the following issues.



Stringent regulations at national level to reduce the carbon footprint aiming at mitigating the effects of climate change, particularly intense in the Mediterranean area.



Planning practices for decarbonisation to determine new pathways towards carbon neutrality of regions and new patterns of land use to contain the effects of extreme events, reducing the hydrogeological risk induced by urbanisation and soil erosion, and assure the protection of forest ecosystems, including reforestation, also in urban areas, and other nature based solutions to compensate greenhouse gas emissions by carbon uptake.



Incentives schemes to promote best practices for the containment of the carbon footprint in different sectors, from agriculture to industry, residential and tourism.



Educational programs teaching correct behaviours and implications of our lifestyles to young students to form the next generation citizens and let them understand the implications of our common living in one planet. Training programs to transfer knowledge on best practices to entrepreneurs and employees, especially in small businesses, and support a wide deployment of sustainable practices and innovation capacity building.



Containment of the carbon footprint of countries and protection of available water resources by engaging stakeholders in participating activities, including public authorities, industry and agriculture, research centres and the civil society.



Monitoring production chains to identify and implement impact mitigating strategies, such as solutions of energy saving, renewability, circular economy, and organisational innovation. This concerns the manufacturing sector but also engages operators in agriculture and other sectors.



Making sustainability and environmental protection a leverage for market development, for example through innovative information systems addressed to consumers.

Environmental protection – Indicators highlight the critical issue of seawater quality in all Mediterranean countries, the limited size of protected areas, including marine, freshwaters and land, and the difficult conservation of forested areas. Recommended policies concern the following issues.



Improved transnational policies to enlarge and properly manage protected areas for the conservation of biodiversity for freshwater systems, marine governance and other natural areas, including more stringent regulations and control on sea outflows from coastal and maritime

activities.



Clear criteria for the management of protected areas and planning of sustainable activities, provided a high level of compatibility with the environmental protection, aimed at adding value to local resources, including autochthonous and traditional food and sustainable tourism with limited accessibility.



Constant and cooperative monitoring systems of seawater quality to decrease the alarming concentrations of pollutants and marine litter.

Box 4.3.1



Global Roundtable for SUSTAINABLE SHIPPING



The Global Roundtable for Sustainable Shipping and Ports was launched at the COP25 in December 2019 in Madrid, Spain. This initiative aims at bringing together researchers and technology developers, shipbuilders, shipowners, ports, policymakers and politicians, from around the globe, to work on technological and policy innovations seeking net-zero emissions in the maritime sector by 2050.

The Initiative will be composed of a monthly participatory workshop, seeking to co-design a sustainable future vision and to identify technological solutions and financing tools that can support the energy transition of the maritime sector in Greece and the implementation of the identified pathways towards the future vision. The methodology followed by SDSN Greece, which has a more than 10-year experience on Living Labs and roundtables organization, is Systems Innovation approach.

The Systems Innovation approach is in the core of the hereby-suggested methodology for solving complex, multi-parameter problems. Following this approach, emphasis is given on the functions of the ecosystem “as a whole” and on the variety of services that can be beneficial for human well-being, instead of just focusing on specific functions and relevant beneficiaries. This enables us not only to better understand the total value of an ecosystem and its benefits for human welfare, but also to identify the complex links among actions that affect the function and balance of the ecosystem (deciding for example whether LNG is the optimal power solution), and the effects on various economic sectors and stakeholders.

This Initiative will seek to address innovative solutions through a global dialogue on:

- Synergies between the maritime, the energy and the financial sector, ports, Governments and Universities and NGOs
- Implementation of existing international and national policies & Increase of public policy support
- Incentives for the low carbon transition supporting R&D and innovation
- Upscaling best practices in maritime decarbonization internationally
- Available financial tools and investments

Box 4.3.2



BRIGAIID H2020 European Commission Project

BRIGAIID is a 4-year project (2016-2020) under EU Horizon 2020 aimed to effectively bridge the gap between innovators and end-users in resilience to the effects to climate change. The objective of BRIGAIID is to provide innovators with guidance to develop testing plans which increase the TRL of an innovation and its potential for market uptake.

BRIGAIID aims to offer:

- Support to Innovators. BRIGAIID clears the path to deliver innovations on floods, droughts and extreme weather to the market through the assessment and improvement of Technical, Social and Market Readiness. By advancing these three factors simultaneously, BRIGAIID smoothens the development path, because technical, social and market requirements can be incorporated in the design, business model and market approach early on.
- Involvement of end-users. BRIGAIID aims to engage with a broad range of end-users to fully incorporate their requirements in the process of guiding innovations from prototype to market-ready products. BRIGAIID commits to take into consideration the needs of all types of end users through:
 - Involvement of end-users in the identification and testing of most promising innovations.
 - Creation of local 'communities of innovation' (coi's) where different users can share their experiences and engage with other coi's and innovators to foster mutual learning.
 - Participation in the design and implementation of demonstration events.
- Information for investors. BRIGAIID is developing a Public-Private Investment and Financing (PPIF) model for securing investments in innovations during and beyond BRIGAIID's lifetime to produce an assessment of the 'investment readiness' of an innovation.
- The Climate Innovation Window. The Climate Innovation Window (CIW) is a portal to climate change adaptation created in order to facilitate the market uptake of climatic resilience innovations. BRIGAIID has developed this platform where you can obtain descriptive information of innovations as well as results produced through the application of BRIGAIID methods.
- BRIGAIID Connect. BRIGAIID Connect builds on the EU-funded BRIGAIID project. Since 2016, BRIGAIID has helped climate innovators turn their ideas into implementable solutions by developing and providing a full range of support services: access to testing facilities for prototypes, guidance on business strategy development and marketing communication, and engagement in Communities of Innovation.

4.4 Transformation. Policies for Sustainable Food, Land, Water and Sea

Malnutrition - No critical situations are highlighted in the Mediterranean, nevertheless the number of people involved, especially in MENA, calls for a careful monitoring and action planning. Precarious conditions of health induced by malnutrition can have negative effects in the long run such as, besides healthiness, in terms of social wellness and economic costs. Recommended policies concern the following issues.



Programs of prevention and assistance to families most exposed to risk, such as economic bonuses or free access to basic foodstuffs during pregnancy and lactation, to limit problems linked to insufficient or inadequate food, especially in children, and improve health of future generations.

Food habits (diet) and Healthy environment - The increasing spread of child and adult obesity is mostly due to incorrect eating habits. Trends towards high-protein diets, with high consumption of meat, cheese and other high-calorie foods, and a progressive abandon of the Mediterranean diet, rich in fruit and vegetables, further contribute to increase the problem (populations that follow a Mediterranean diet show half the rate of cardiovascular mortality and the highest longevity). Some diseases such as cardiovascular, diabetes and respiratory, are indirectly correlated, albeit not exclusively, with food, land and water quality. Recommended policies concern the following issues.



New legislations aimed at improving food standards and prevent obesity and diseases associated to incorrect food habits, especially of young generations, and their negative effects in terms of healthiness and sanitary costs.



Dietary education programmes in schools and school canteens assuring a healthy balanced diet and informing on the benefits of good food habits, such as the Mediterranean diet, and more dynamic lifestyles, often sedentary and unhealthy.



Innovative solutions to communicate and promote good behaviours, such as to inform on calorie content of packaged foods, for example through smart labelling of products and monitoring of production chains.



National campaigns addressed to consumers promoting a healthy balanced diet, especially targeting younger generations, and consumption of healthy fresh food instead of packaged and overprocessed.

Sustainable agriculture - Indicators are focussed on self-sufficiency of national food systems, compared with the food requirements of the population, and indirectly on the type of agricultural production (e.g. intensive with high use of chemical products, or extensive with natural methods). Recommended policies concern the following issues.



Stringent regulations at national level concerning thresholds for nutrient and chemical input per hectare per crop to avoid excessive use of chemicals and safeguard natural resources and ecosystem productivity in the long period.



Developmental programs targeting primary producers and food processors to transfer knowledge on best practices, build capacity and make sustainable agriculture a standard in the Mediterranean region.



Incentive schemes to support initiatives of private businesses, including primary producers and other actors of the production chain, to promote sustainable agriculture practices not only as a source of finance, but also through innovation development.



Programs at national and regional level to assure knowledge transfer and training to entrepreneurs and employees, especially in small businesses, and support a wide deployment of sustainable practices and innovation capacity building.



Business networks, well supported by public institutions, to join efforts to strengthen innovation capacity and increase job opportunities by training generally skilled personnel and coordinating actions, such as through temporary jobs planning and market oriented initiatives.



Integrating digital technologies in agricultural and breeding farms, as well as for food processing, to implement sustainable practices and improve environmental performance, such as precision agriculture through remotely controlled sensors and permanent data monitoring throughout

production chains.



Making sustainability a leverage for market development, for example through smart labelling of products and innovative information systems addressed to consumers.

Well-being – Best performances in terms of healthiness and wellbeing are in Western Europe as expected as a consequence of the economic wellness. Nevertheless, potentialities to improve are high in most of the Mediterranean areas, considering for example the mean age of the population (34 years in Med), much younger in MENA (27 years) than in Europe (40 years). Recommended policies concern the following issues.



Planning activities oriented to sustainability to improve both urban and rural environments, avoid pollution, increase accessibility to basic services, including for example nature based facilities and public transport, and provide opportunities for assuring healthy and dynamic lives, rather than sedentary.



National and regional programs targeting youths to maximise public and private investments in cultural and social development, especially in countries with the highest rates of young population, and build the conditions to live full and fulfilling lives.



Educational programs teaching sustainability to young students to form the next generation citizens and let them understand the implications of our common living in one planet.



Stakeholders engagement, including citizens, in decision making to promote dynamic and resilient communities, build capacities to accomplish consistent transformations through bottom-up initiatives in cities and rural areas and assure direct interactions with local authorities.



Promotion of fair trade to avoid spillover effects of developed countries often compromising opportunities of developing countries to maintain and improve their economic, social and environmental conditions.

Water management and quality – This is a major theme in the Mediterranean, especially in parts of the MENA area, with high risks of drought due to climate change. Practices of wastewater treatment are not well developed in the Mediterranean (78% of water is treated in Europe and only from 36% to 30% in MENA and EE). This has negative effects on the availability of freshwater and on seawater quality. Recommended policies concern the following issues.



Stringent regulations at national level to limit water use and protect water sources as fundamental common goods for long term survival of populations, ecosystems and biodiversity.



New sectorial plans and control protocols to improve the efficiency of water supply networks (including Europe) and management of water supply in MENA countries, including the development of new treatment and distribution technologies and innovative irrigation systems (agriculture is responsible for a large part of the demand for water).



Incentives schemes to promote best practices for the containment of the water footprint in different sectors, from agriculture to industry, residential and tourism.



Educational programs teaching correct behaviours and use of water resources to young students to form the next generation citizens and let them understand the implications of our common living in one planet.



Containment of the water footprint of countries and protection of available water resources by engaging stakeholders in participating activities, including public authorities, industry and agriculture, research centres and the civil society.



Developing monitoring tools for water availability and quality as decision-support systems to regulate sharing and management of available resources.

Environmental impact and carbon emission - The impact of industrial production mainly involves industrialised countries of Western Europe, but has to be taken into account also for the next development of the other Mediterranean countries. Greenhouse gas emissions per capita in Mediterranean countries are higher in Europe (5.1 t CO₂eq/cap) and ME (4.1 t CO₂eq/cap), lower in NA (2.4 t CO₂eq/cap). Recommended policies concern the following issues.



Stringent regulations at national level to reduce the carbon footprint aiming at mitigating the effects of climate change, particularly intense in the Mediterranean area.



Planning practices for decarbonisation to determine new pathways towards carbon neutrality of regions and new patterns of land use to contain the effects of extreme events, reducing the hydrogeological risk induced by urbanisation and soil erosion, and assure the protection of forest ecosystems, including reforestation, also in urban areas, and other nature based solutions to compensate greenhouse gas emissions by carbon uptake.



Incentives schemes to promote best practices for the containment of the carbon footprint in different sectors, from agriculture to industry, residential and tourism.



Educational programs teaching correct behaviours and implications of our lifestyles to young students to form the next generation citizens and let them understand the implications of our common living in one planet. Training programs to transfer knowledge on best practices to entrepreneurs and employees, especially in small businesses, and support a wide deployment of sustainable practices and innovation capacity building.



Containment of the carbon footprint of countries by engaging stakeholders in participating activities, including public authorities, industry and agriculture, research centres and the civil society.



Monitoring production chains to identify and implement impact mitigating strategies, such as solutions of energy saving, renewability, circular economy, and organisational innovation. This concerns the manufacturing sector but also engages operators in agriculture and other sectors.



Making sustainability and environmental protection a leverage for market development, for example through innovative information systems addressed to consumers.

Fisheries - Overexploitation has led to a progressive depletion of fish-stocks with loss of biodiversity and impacts on local economies of coastal communities. Recommended policies concern the following issues.



Improved regulation at transnational level to limit the impact of fisheries and avoid unfair fishing methods.



Practices of coastal management and marine governance to identify criteria and requirements for the development of sustainable aquaculture as complementary activity to fisheries and potential solution for the sustainable development of local communities.



Increased development and innovation of sustainable aquaculture, carefully monitoring and minimising the use of nutrients (for example through the coproduction of algae for energy production and other uses), with strategic effects in terms of job opportunities.



Training programs to transfer knowledge on best practices to entrepreneurs and employees in fisheries and aquaculture and support a wide deployment of sustainable practices and innovation capacity building.



Stakeholders engagement in participating activities, including public authorities and research centres to implement value chains based on aquaculture.



Innovative monitoring systems to have a constant control at national and regional level on fishing activities and their sustainability compared to availability of fishstock in different seasons.



Making sustainability of aquaculture activities a leverage for market development, for example through innovative information systems addressed to consumers.

Environmental protection – Indicators highlight the critical issue of seawater quality in all Mediterranean countries, the limited size of protected areas, including marine, freshwaters and land, and the difficult conservation of forested areas. Recommended policies concern the following issues.



Improved transnational policies to enlarge and properly manage protected areas for the conservation of biodiversity for freshwater systems, marine governance and other natural areas, including more stringent regulations and control on sea outflows from coastal and maritime activities.



Clear criteria for the management of protected areas and planning of sustainable activities, provided a high level of compatibility with the environmental protection, aimed at adding value to local resources, including autochthonous and traditional food and sustainable tourism with limited accessibility.



Constant and cooperative monitoring systems of seawater quality to decrease the alarming concentrations of pollutants and marine litter.

Box 4.4.1



PRIMA Observatory on Innovation



PRIMA (Partnership for Research and Innovation in the Mediterranean Area) promotes international partnerships in the sectors of agriculture, food and water resources (water management, farming systems, agro-food value chain). With about 500 million euro (2018-2024) PRIMA makes innovation a lever of Mediterranean development, and by close public-private collaboration, aims to influence policies and the market. Based on the equal footing principle among the participating states, it offers an extraordinary opportunity for scientific diplomacy and enterprise.

The Italian Secretariat of PRIMA (Euro-Mediterranean Research and Innovation Programme funded and managed by the European Commission through Horizon 2020 and 19 Euro-Mediterranean Countries), in collaboration with MIUR (Italian Minister for Education, Universities and Research), launched the *PRIMA Observatory on Innovation* (available at the link <https://primaobservatory.unisi.it>).

The *Observatory* is a digital platform collecting and sharing best practices in Agri-Food research, innovation and education in the MED area. It aims to analyse and monitor business dynamics and supply chains in the Italian and Euro-Mediterranean Agri-Food sector, paying specific attention to the new entrepreneurship, to promote new concrete solutions for communities and enterprises and to stimulates new partnerships among Euro Mediterranean researchers, innovators, businesses and stakeholders. It also disseminates positive and remarkable stories of innovation, using traditional media and social networks, by gathering the direct experiences of key players such as researchers, students, professors and entrepreneurs.

Main Goals of the Observatory are:

- To support new solutions based upon research and innovation;
- To promote partnerships among Euro Mediterranean researchers, innovators, enterprises, stakeholders;
- To attract new investments and interests.

Accordingly, the action of Digital Dissemination leverages on three concepts:

- Sharing good research and innovation practices;
- Valorising successful stories of innovation in Agri-Food systems, making them attractive and easy to understand;
- Being part of a large open network with freely accessible data.

The Observatory is an initiative implemented within the PRIMA Annual Work Plan 2018-2019.

The Observatory was created and is run by Santa Chiara Lab (the Interdisciplinary Innovation Center of the University of Siena) thanks to grant by the Italian "Fondo Integrativo Speciale per la Ricerca" (FISR).

Box 4.4.2



Future Scenarios for the EuroMed Agrifood.



An EuroMed Survey has been launched in the frame of PRIMA (Partnership for Research and Innovation in the Mediterranean Area) to understand the situation of the EuroMed agrifood system in light of the COVID pandemic, the emerging trends, the new challenges as well as the transformations to be positively induced.

The report included a summary of the main findings, based on more than 180 answers received, and some remarks, which take into account the notes, comments and analyses sent by the experts. Moreover, the document is enriched with a summary of the online debate co-organized by PRIMA and the Union for the Mediterranean on July 15 2020, as well as additional notes and contributions from PRIMA-partnering institutions.

In particular, all respondents have been asked to state their opinion on several statements concerning the future of Euro-Med scenario for agrifood. The statements have been divided into three pillars: agrifood systems and society, businesses, consumers.

Widely agreed statements concerning the agrifood systems and society pillar:

- Limitations to mobility of temporary agricultural work force will negatively impact production;
- International trade will slow down;
- International policies are needed for a broader governance and more effective control on sustainable production of food;
- Food security and regional/national self-sufficiency will become more important;
- Innovative approaches will be needed to secure food supplies to vulnerable groups;
- Price volatility of agricultural commodities will grow.

Widely agreed statements concerning the business pillar:

- The introduction of technological innovations (Agriculture 4.0, artificial intelligence, digitalization, blockchains, innovative research-based products ...) and organisational innovations (new business models, aggregations, partnerships, ...) will become crucial for agrifood businesses to survive;
- E-commerce will streamline value chains and digital sales will grow;
- Major financial problems will affect smallholders and SMEs in the agrifood sector;
- Risk management will become more relevant.

Widely agreed statements concerning the consumer pillar:

- Due to the economic crisis, consumers will give attention mainly to the price of food;
- Consumers will give more attention to rigorous traceability of inputs, production processes and logistics;
- E-commerce and digital sales will grow.

Results from the survey show that, despite the disruption caused by the pandemic to economies, emphasis should be given to create more resilient agrifood systems in conjunction with more sustainable social and economic systems. Surveys like this can bring useful information to understand current trends and support initiatives to promote healthy and sustainable food systems.

4.5 Transformation. Policies for Sustainable Cities and Communities

Healthy environment – Traffic deaths show moderate numbers in Europe and alarming results in MENA. Investments in infrastructures and prevention through people behavioural changes are desirable. Recommended policies concern the following issues.



Improved regulation to mitigate risk through stringent control protocols, especially addressed to young people.



Programs and plans at national, regional and municipal level to promote integrated mobility systems, with limited use of private cars.



Incentive schemes to foster the abandon of private cars, promoting the use of public transports, bicycles and to promote and financially support private investments in new infrastructures and services of an integrated mobility system.



Educational programs teaching correct behaviours to young students to form the next generation citizens and let them understand risks and implications of incorrect habits.



Engaging stakeholders in cooperative activities, including public authorities, practitioners and businesses, to promote sustainable mobility, such as through the engagement of employees.



Development of innovative solutions at national and regional level, such as with a real time monitoring and common ticketing system for all the integrated transports, can highly improve the transition to sustainable mobility. Innovation can also increase capacity to monitor the mobility system, prevent crises and face emergencies.

Job market – The unemployment rate in the Mediterranean countries is 11% in average and accounts for 39 million people. Almost 122 million people in MENA do not have access to basic financial services, such as bank accounts. Recommended policies concern the following issues.



Legislations at transnational and national level to promote sustainable development such as to discourage fossil fuels based businesses and investments, convert petrol industries and remove constraints to the exploitation of renewable energy sources and circular economy.



Plans for renewable energy deployment at national, regional and municipal level, clearly addressing new urban and sectorial planning practices to energy transition and climate adaptation, to address next investments and create new job opportunities with effects on local economies and wellbeing.



Programs and incentives at national level to support entrepreneurship and job creation with relevant contributions in terms of tax reduction. This should particularly support entrepreneurs and employees in the field of research and innovation, new technologies and expertise for sustainability.



Programs at national level to guarantee education and training to people at any stage of their life, including applicants for new jobs and entrepreneurs looking for new sustainable businesses.



Business networks, well supported by public institutions, to join efforts to strengthen innovation capacity and increase job opportunities by training generally skilled personnel and coordinating actions, such as through temporary jobs planning and market oriented initiatives.



Making digital technologies a leverage for innovation capacity building and sustainable development.

Digital infrastructures – Internet services show limitations in most of Mediterranean countries, especially in MENA. Recommended policies concern the following issues.



Legislations at national level to expand accessibility to internet to most of the population, provided that digitalisation must facilitate accessibility to basic services, making connected data repositories and avoiding proliferation of bureaucracies, as well as to regulate its use, avoiding unfair uses such

as fake news and anonymous crimes.



Programs for digitalisation of public facilities to increase accessibility to basic services, determining unified protocols and standards, avoiding proliferation of bureaucracies and allowing users to easily upload and process data.



Programs at national level to educate young citizens at school to manage their use of the internet by respecting freedom of expression as well as the right to privacy, as a necessary cultural background in the digital era.



Creation of web-based facilities and initiatives at transnational, national and regional level to support business clustering, expertise matching for project development and job offers through digitalisation, including the creation of open access repositories of best practices to support research and innovation through knowledge transfer and capacity building.



Deployment of mobile digital technologies to allow free access to information and opportunities of web based networking in every country and at the transnational level, avoiding limitations with any social class distinction and increasing the capacity to limit abuses and guarantee safe and fair browsing on internet for everybody.



Development of web-based market facilities to support small producers and increase their opportunities for business, especially supporting local food markets or sustainable productions of goods.

Water management and quality – This is a major theme in the Mediterranean, especially in parts of the MENA area, with high risks of drought due to climate change. Practices of wastewater treatment are not well developed in the Mediterranean (78% of water is treated in Europe and only from 36% to 30% in MENA and EE). This has negative effects on the availability of freshwater and on seawater quality. Recommended policies concern the following issues.



Stringent regulations at national level to limit water use and protect water sources as fundamental common goods for long term survival of populations, ecosystems and biodiversity.



New sectorial plans and control protocols to improve the efficiency of water supply networks (including Europe) and management of water supply in MENA countries, including the development of new treatment and distribution technologies and innovative irrigation systems (agriculture is responsible for a large part of the demand for water).



Incentives schemes to promote best practices for the containment of the water footprint in different sectors, from agriculture to industry, residential and tourism.



Educational programs teaching correct behaviours and use of water resources to young students to form the next generation citizens and let them understand the implications of our common living in one planet.



Containment of the water footprint of countries and protection of available water resources by engaging stakeholders in participating activities, including public authorities, industry and agriculture, research centres and the civil society.



Developing monitoring tools for water availability and quality as decision-support systems to regulate sharing and management of available resources.

Air quality – High levels of exposition to polluted air are detected in most of Mediterranean countries. Recommended policies concern the following issues.



Stringent regulations at national level to identify clear thresholds and limit the exposition to polluted air, especially in urban environments.



Programs and plans at national, regional and municipal level to definitely promote integrated mobility systems, with limited use of private cars, and accomplish the transition to sustainable mobility. Similarly, programs to mitigate impacts of industrial activities.



Incentive schemes to foster the abandon of private cars, promoting the use of public transports, bicycles, and electric mobility, and to promote and financially support private investments in new infrastructures and services of an integrated mobility system. Incentives schemes to promote best practices for the containment of pollutant outflows from industries.



Educational programs teaching correct behaviours to young students to form the next generation citizens and let them understand the implications of our common living in one planet.



Engaging stakeholders in cooperative activities, including public authorities, practitioners and businesses, to promote sustainable mobility, such as through the engagement of employees.



Development of innovative solutions at national and regional level, such as with a real time monitoring and common ticketing system for all the integrated transports, can highly improve the transition to sustainable mobility.

Accessibility – Availability of public transport and costs of households show variable values in Mediterranean countries. Recommended policies concern the following issues.



Legislations at national and regional level to support minor classes, offer fair conditions for housing and personal mobility to everybody.



Programs and plans to improve healthiness of poor neighbourhoods and increase accessibility to basic public services, including housing and public transport, avoiding isolation and exclusion of marginal areas.



Programs of social assistance to support most vulnerable categories of people and families and assure decent and independent lifestyles to everybody.



Educational programs teaching correct behaviours, including sustainable mobility, to young students to form the next generation citizens and let them understand the implications of our common living in one planet.



Engaging stakeholders in cooperative activities, including public authorities, practitioners and businesses, to promote sustainable mobility, such as through the engagement of employees.



Development of innovative solutions at national and regional level, such as with a real time monitoring and common ticketing system for all the integrated transports, can highly improve the transition to sustainable mobility.

Waste - Improvements in data monitoring and integrated waste management systems are desirable in most of Mediterranean countries to avoid landfilling and increase rates of recycling, besides reduction. Recommended policies concern the following issues.



Legislations at national and regional level to avoid landfilling and increase transparency and traceability of collected waste, besides regulations to limit packaging and waste.



Programs and sectorial plans at regional and municipal level to develop integrated systems of waste management and recycling.



Incentives to support private businesses to reduce waste through innovative packaging, more efficient processes and circular economy.



Educational programs teaching correct behaviours, including waste management, to young students to form the next generation citizens and let them understand the implications of our common living in one planet.



Engaging stakeholders in cooperative activities, including public authorities, practitioners and businesses, to promote circular economy with outputs from one process used as input for new processes.



Development of innovative solutions at national and regional level, such as for example real time monitoring of waste collection and treatment to improve efficiency of waste management systems and transparency and traceability.

Crime – Among other indicators, corruption is generally perceived as a critical issue in most of Mediterranean countries, especially in MENA. Recommended policies concern the following issues.



Legislations at national and regional level to increase transparency and traceability of money transfers.



Educational programs teaching correct behaviours to young students to form the next generation citizens and let them understand the implications of our common living in one planet.



Development of innovative solutions at national and regional level to support public-private interactions, such as in tenders, fully trace money transfers, promoting digital transactions, including tax payments to definitely avoid tax evasion.

Box 4.5.1



Zero Waste Project in Turkey

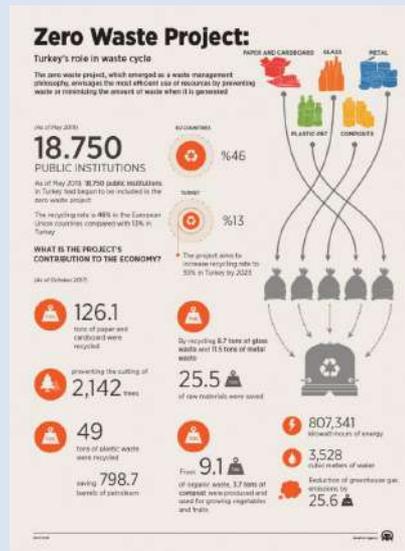
Turkey's zero waste Project (<http://zerowaste.gov.tr/>) aims to reduce non-recyclable waste separated at source and even aims to completely eliminate waste. In this way, the project promotes the efficient use of the planet's finite resources. The project is developed under the auspices of Mrs Emine Erdogan, First Lady of Turkey .

The Zero Waste Project was first initiated in Beştepe Presidential Complex. It was subsequently enacted in various ministries throughout 2017, then rolled out to local governments, the private sector, and certain public institutions, including schools. The SDSN Turkey is represented in the Advisory Committee of the Project. Thanks to the project, tons of plastic have been recovered and the seas have been made cleaner with thousands of buildings, residences and companies that have recycled. By the end of 2019, 25,000 public buildings switched to the zero waste system. It was announced that she aims to implement the project across the country by 2023.

In addition to environmental benefits, the project aims to save approximately 20 billion TL per year for the country and create employment for 100,000 people by 2023. The country aims to increase the recycling rate from 13% to 35%. Considering the importance of education for success in the project, efforts were made to raise awareness in schools to combat the haphazard use of disposable materials and the culture of food waste.

Since the launch of the Zero Waste Project, at least 4.5 million tons of packaging, over 100 thousand tons of e-waste, over 100 thousand tons of organic waste and nearly 400 thousand tons of waste tires were separated at their source and sent for recycling. In January 2019, the ban on plastic bags used everywhere from supermarkets to department stores reduced the use of plastic bags by approximately 77%. In this way, sustainability was achieved with the use of canvas bags.

Zero Waste Blue, the maritime wing of the project, has also worked well, encouraging the public to keep the country's seas and other bodies of water clean. More than 163,000 cubic meters of waste have been removed from the seas since Zero Waste Blue was launched in early 2019. More than 30,000 people have been trained on how to prevent and overcome marine pollution. 760 companies made a commitment not to discharge waste into the seas. Diver associations have also contributed to the Zero Waste Blue program and organized public events to collect waste from the seas. Cooperation between institutions has been successful in the waste project.



Box 4.5.2



Sustainable Cities and Climate Change Action



Boğaziçi University Rectorate Conference Hall

SDSN Turkey has initiated an intensive action about the localization of the SDG 11 and SDG13 at the level of municipalities. On 3-5 December 2019, the Network Turkey organized a 3-day long Cities for Climate Workshop to raise awareness on climate action and build capacity of municipalities staff on preparing Sustainable Energy and Climate Action Plan and taking action for climate adaptation with the support of Boğaziçi University, 350 Turkey and the Local Monitoring Research and Implementation Association. At the last day of the workshop, the representatives of 24 Turkish municipalities declared their intent to help limit global warming to 1.5°C by 2030 with the Cities for Climate Action Declaration. The Declaration also highlights that for a fair, equitable, and sustainable future, local leaders must take concrete steps against the climate crisis.

The Turkish administrations acknowledge the climate emergency and feel obliged to take concrete actions. Many economic, environmental, and social issues are deepening in Turkish cities as climate disasters are increasing day by day. The crisis rates high among the concerns of Turkey's population with 61% of the society worried by the climate crisis.

The mayors announced that they would:

- Prepare Climate Action Plans to reduce carbon emissions and take measurements to adapt to climate change, using the latest scientific information and following international standards,
- Prioritize sustainable transportation, renewable energy and sustainable agriculture practices in cities,
- Work together with, support and collaborate with local, national, and international institutions, entrepreneurs, co-ops and civil society for climate action,
- Prioritize readiness and preparedness for locked-in climate change effects in urban planning and zone planning processes to protect urbanites and infrastructures.

Following the Workshop, SDSN Turkey continued to work on a detailed education program for Turkish Municipalities in collaboration with the Marmara Municipalities, Boğaziçi University Life-Long Learning Center, 350 Turkey and the Local Monitoring Research and Implementation Association. Nevertheless, the uncertain conditions of COVID-19 pandemic compelled us to the change of the format of the education. Thus, the 7 weeks certified seminar program including experimentation workshop has been converted into an on-line courses to municipal employees and to the stakeholders who are ready to contribute to local climate action and efforts of building sustainable and resilient cities. Within this framework, the "Sustainable Cities and Climate Change Online Training Program" encourages Municipalities in Turkey to plan their mitigation and adaptation activities between May 13-June 29.

4.6 Transformation. Policies for harnessing the Digital Revolution

Policies concerning the digital revolution have been included in most of the challenges above, already mentioned in relation to previous transformations. These can be easily accessed by looking at the specific actions concerning digital and technological development, aimed at implementing monitoring systems as decision-support tools and data sharing systems at transnational level.

Box 4.6.1



Digital Transformation

As mentioned in Chapter 3, the Digital transformation aims to deploy digital technologies disrupting nearly every sector of the economy, including agriculture, mining, manufacturing, retail, finance, media, health, education, public administration, and of course science and technology. As such, the Med Hub for the Digital Transformation, led by SDSN Cyprus, with the support of the Cyprus Institute's cyberinfrastructure and computational resource in general, will be a horizontal support structure, covering aspects relevant to all the SDGs, to all the other five transformations, and with the ambition to ultimately support the entire Mediterranean region.

Policies concerning the digital revolution have been included in most of the challenges above, already mentioned in relation to previous transformations. These are discussed and obviated in the specific actions concerning digital and technological development. In this respect, the main challenge is to accelerate digitalization in all the relevant sectors to help create an enabling environment at the national, regional and international level. This will provide a critical enabling technology to the widest number of actors to be informed about, and contribute meaningfully to the implementation of the SDGs.

It is envisioned that the Digital Transformation Hub will provide user-friendly repositories of best practices around the world, drawing on the massive experience of the various SDSN stakeholders globally and global rosters of expertise relating to each SDG. It will thus provide open and easily accessible channels of communications between citizens and policy makers to enable a constant and transparent policy dialogue about sustainability issues, open-access digital libraries of SDG-related literature, digital tools for the cross-referencing of databases, international data sharing, creation of decision-support tools etc.

SDSN Cyprus, and the Cyprus Institute, on whose premises SDSN is hosted, already have in place a pilot model which is serving the Eastern Mediterranean Region but can be scaled up to cover the entire Mediterranean Region. At the heart of this is "Cyclone", the new High-Performance Computing facility of the Cyprus Institute. Like its predecessor (Cy-TERA), it is one of the most powerful civilian HPC infrastructures in the Eastern Mediterranean, and it is not simply an in-house computing facility, nor even a National Computing Facility. It is a collaborative facility which provides free access to computing time and storage space to academic partners throughout the Eastern Mediterranean Region. Given the Big Data approach needed to analyse and sort the huge amounts of data required to measure the various SDG indicators, such heavy infrastructure and the associated knowhow to run it effectively is a prerequisite for the effective launching of the Hub. The researchers at the Cyprus Institute have a long experience of using their HPC facility to produce complex models (and visualisation tools) for subject matters as varied as Climate modelling, 3D visualisation of archaeological objects, and epidemiological modelling. If similar modelling approaches were applied to the enormous wealth of data produced by collecting SDG indicators, for example Structural Equation modelling, which would help untangle the various trends in society and the paths of least resistance to achieving the SDGs in the different national contexts. At CREF/Cyl, the host of SDSN – Cyprus, the computing power and the expertise to enable the SDSN community throughout the Mediterranean to achieve its goals through the Digital Transformation Hub, exists, at least as a starting point.

A recent example of a similar and relevant case at the European level, is the recently launched Cyl High Performance Computing Competence Centre, within the European EuroCC project. The EuroCC project is a network of National Competence Centres (NCCs) co-funded by the EuroHPC Joint Undertaking, and the Deputy Ministry of Research, Innovation and Digital Policy and the Research and Innovation Foundation of Cyprus. This National Competence Centre (NCC) is envisioned to act as the focal point, facilitating access of national and international stakeholders to HPC infrastructure, and providing training and skills development (which could include the skills required for deep analysis of SDG-related data). It will promote the digital transformation not only of Cyprus but of the wider region. Indeed, the establishment of an easily accessible facility such as this is envisioned to act as a catalyst towards a wider adoption of advanced computing and data science technologies, including in the field of sustainable development.

As the need for the Digital Transformation Hub and its scope is well understood, a detailed planning is needed, starting with the engagement of the stakeholders and the leadership of the Mediterranean SDSN network, given the horizontal nature of the Hub.

5. Conclusions

The present report, *Sustainable Development in the Mediterranean*, uses indicators taken from the world edition of the *Sustainable Development Report 2020*, grouped into six transformations as proposed by Sachs et al. (2019). Its main goal is to use the SDSN indicators as a decision support tool aimed at driving choices and addressing multiple stakeholders activities to achieve the SDGs in the Mediterranean area.

After analysing selected indicators, tables, maps and specific challenges per each transformation were identified and, a set of policies and initiatives were determined including different levels of implementation, from the transnational scale, to the national and local. To this aim, *SDSN Mediterranean* elaborated the full report in collaboration with six institutions, one per each transformation, each of which contributed in the determination of recommended policies and the identification of best practices described in dedicated boxes.

A few major findings from the report can be shared by the 24 Mediterranean countries.

- Endorsements of the SDGs in official statements, regulations, sectorial plans and programs at transnational, national and local levels are highly desirable in the next future. The “European Green Deal” (EC 2019) is a first example of a consistent operative framework shared by European countries; it can be taken as reference for similar initiatives in the MENA area and for determining a common strategy for sustainability in the Mediterranean.
- Public authorities should act in collaboration with businesses, civil society and other stakeholders by supporting initiatives and participative approaches through economic incentives and investments. The European Taxonomy (EU-TEG 2020, EU 2020) represents a first step in this direction since it lays the basis for tracing new legal obligations for financial markets, large companies and the member states, by providing detailed technical screening criteria for determining when an economic activity can be considered sustainable. Taking inspiration from this initiative, research centres in all the Mediterranean countries can play a crucial role to address choices and develop mechanisms for stakeholders engagement, contributing to make all the members of the society be part of well designed and widely agreed transformation processes.
- Businesses are expected to change their mission, fully embracing sustainability as a driving principle for their activities. Increasing environmental and social performances throughout the production chains becomes a competitive factor for value chain actors and open opportunities for market development in a new sustainable rationale, with benefits in terms of economic growth, resilience and duration in time. This would progressively transform the market from a linear to a circular economy.
- The digital revolution can multiply opportunities for life and business assuring wide accessibility to basic services and supporting market oriented initiatives, such as through the emergence of thematic networks and clusters to foster knowledge transfer and innovation capacity building. Moreover, increased traceability systems and transparency on information sources would support fairness and security with benefits for any user and consumer.
- High-income countries often generate high environmental and socio-economic spillover effects. Domestic implementation of the SDGs should not undermine other countries’ ability to achieve the goals, for example through the tolerance for poor labour or low environmental standards in international supply chains. This makes international partnerships important elements for coordinating actions at the transnational level and sharing a common roadmap for sustainability in the Mediterranean region.

This report provides a general view, not pretending to be exhaustive, on the SDGs achievement in the Mediterranean and proposes a set of possible policies and best practices as a shareable roadmap for sustainability. It can be used a decision support tool by taking into account recommended actions and their measures through specific indicators, allowing for maximising the impact of policies through backcasting and progressively monitoring their ex post effects. Scope of the report is to start a coherent transformation process and, as stated in the foreword, contribute to close the gap between rhetoric and action.

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