Med-TSO
TeasiMed2 project

Very Long-Term Mediterranean Energy Perspectives (E-Highway)

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Executive Summary

This report presents electricity demand projections for 2050 within the MENAT region, specifically focusing on the Med-TSO member countries: Algeria, Egypt, Israel, Jordan, Lebanon, Libya, Morocco, Palestine, Syria, Tunisia, and Türkiye. Together, these countries cover approximately five million square kilometres and have a total population of 354 million. The region faces significant challenges, driven by extreme climate events such as record-high temperatures and severe droughts, as well as the ongoing ramifications of the COVID-19 pandemic and persistent geopolitical tensions.

Primary demand drivers

Electricity demand in the MENAT region is primarily driven by economic and population growth. However, emerging factors are significantly reshaping future needs, including:

- **New technologies:** Rapid adoption of electric vehicles (EVs) and an increasing reliance on data centres.
- **Climate adaptation:** The expansion of desalination plants to combat water scarcity.
- **Green hydrogen:** Opportunities for decarbonisation that simultaneously introduce substantial new electrical loads.

This report emphasises the critical need for improved electrification and energy efficiency across key sectors and reveals significant disparities in electrification levels.

Strategic scenarios for 2050

To address future uncertainties, Med-TSO has established three scenarios. These include the Inertial and Mediterranean Ambition scenarios, also designed for Med-TSO planning studies, alongside the specifically designed Net Zero scenario, all assessed against a 2022 reference year and projected to 2050. Each scenario has been examined to assess future electricity demand across the region, taking into account other energy sectors and key variables affecting electricity demand and CO_2 emissions. The Inertial scenario (IN) predicts a continuation of current energy consumption trends, while the Mediterranean Ambition (MA) scenario aligns with national NDCs and regional strategies, promoting steady decarbonisation through enhanced cooperation, policy integration, regulatory coordination, and local manufacturing. The Net Zero Emissions (NZ) scenario outlines a potential pathway for phasing out fossil fuels in the long term, particularly through CO_2-free electricity generation and near-total decarbonisation of energy systems in the eleven countries, aiming to meet the Paris Agreement’s goal of limiting global warming to 1.5°C by 2100.

Methodology and data integrity

The applied methodology combines macro-economic and demographic projections through both bottom-up and top-down approaches with sector-specific analyses of new electricity uses. The three scenarios were developed for each country using consistent approaches and methodologies. They are based on a rigorous process of data collection, verification, and harmonisation. These national inputs are complemented by reputable international sources, in particular the International Energy Agency (IEA), World Bank (WB), International Monetary Fund (IMF), United Nations (UN), and the Organisation for Economic Co-operation and Development (OECD), in addition to national resources.

A comparative analysis between the MA and NZ scenarios highlights the need for significant additional investments in renewable energy infrastructure, carbon pricing, the accelerated phase-out of fossil fuels, comprehensive policy measures, and institutional capacity-building. If fulfilled, the eleven countries can leverage their natural resources to transition towards a low-carbon economy, ultimately meeting their targets by 2050.

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Introduction

The E-Highway activity is a cornerstone of Med-TSO's long-term planning within the TEASIMED 2 Project[1]. Its primary goal is to establish a robust framework for electricity perspectives across the MENAT region, supporting the Mediterranean Master Plans for 2040 and 2050. Specifically, this work defines consistent scenarios for eleven countries, analysing the interplay between electricity demand, technological shifts, and broader energy sector evolution.

The global and regional climate context

One of the most pressing challenges for electricity demand is climate change, which significantly shapes global political discourse and economic priorities. Since the adoption of the Paris Agreement in 2015, countries have intensified their efforts to limit the rise in global temperatures to well below 2°C, with an aspirational target of 1.5°C above pre-industrial levels. The European Union has emerged as a leader in this arena through initiatives such as the European Green Deal and the Fit-for-55 package, underscoring its commitment to achieving climate neutrality by 2050 through sustainable growth that reduces greenhouse gas emissions.

In the MENAT region, while CO_2 emissions are relatively low in global terms, the region faces

1 Activity 1.3.: Very Long-Term Electricity Perspectives.

significant climate-related challenges, including heatwaves, droughts, and water scarcity, which threaten both ecosystems and economic stability. Many of these countries are participating in global climate efforts by updating their Nationally Determined Contributions (NDCs) and designing policies to meet these targets. The potential for coordinated regional action is reinforced by the abundance of renewable energy resources, particularly solar and wind.

Overcoming barriers through cooperation

Despite the region's vast renewable potential, large-scale deployment is hindered by limited grid infrastructure and financing constraints. Enhancing regional cooperation and electricity interconnections is essential to unlock synergies, ensure efficient resource sharing, and strengthen energy security. The future success of the energy transition in the Mediterranean will depend on coordinated actions at national, regional, and European levels, sustained political commitment, infrastructure investment, and stable regulatory frameworks, ultimately positioning the region as a pivotal player in the global energy transition and fostering regional stability.

A structured methodology for 2050

The scenarios were developed following a structured narrative approach consistent with the ENTSO-E Long-Term Framework (LTF) and the Design for the Future (DFT) activity, widely adopted by European TSOs to ensure coherence across national strategies, regional priorities, and long-term decarbonisation objectives. In line with these guidelines, the framework:

- Builds storyline-based scenarios reflecting different ambition levels.
- Ensures cross-sectoral integration of electricity, mobility, hydrogen, buildings, and industry.
- Promotes regional coherence while accommodating national specificities.
- Incorporates socio-economic, technological, and policy drivers into a consistent long-term vision.

Through this approach, the E-Highway activity provides Med-TSO with a transparent, well-aligned, and forward-looking foundation for planning the future power system in the MENAT region.

3

Regional Energy Context and Drivers

3.1 Current energy landscape in MENAT countries

Following the Paris Agreement, many MENAT countries updated their Nationally Determined Contributions (NDCs), pledging significant reductions in greenhouse gas emissions. These commitments outline specific goals and strategies to improve energy efficiency, expand renewable energy capacity, and foster sustainable practices across key sectors. The energy landscape in MENAT countries is currently characterised by a blend of traditional dependency on fossil fuels, particularly oil and natural gas, and emerging initiatives focused on renewable energy. With growing global emphasis on climate change, these nations acknowledge the critical need to diversify their energy portfolios and lower carbon emissions. There is a notable surge in investments towards renewable energy sources, especially solar and wind, capitalising on the region's abundant natural resources.

Moreover, many MENAT countries have established ambitious national targets for renewable energy adoption, central to their long-term development strategies. These goals align with global efforts to transition to cleaner energy systems and fulfil commitments under international climate agreements. Nevertheless, various challenges remain, including political instability, regulatory barriers, and the necessity for significant investments in infrastructure and technology.

In recent years, there has been a noticeable shift towards improving energy efficiency and expanding electrification as part of broader national strategies. Governments increasingly recognise the benefits of energy efficiency, not only in terms of cost savings but also in reducing environmental impact. Initiatives to promote efficient appliances, improve building codes, and foster public awareness have emerged as key components of national policies. Concurrently, efforts to electrify rural areas and support the integration of renewable energy sources are gaining momentum. This shift demonstrates a growing commitment among the eleven countries to modernise their energy systems and address energy consumption challenges more proactively.

To provide a clear view of the future, this analysis uses 2022 as the reference year. This baseline incorporates critical historical data used in electricity demand projections, including:

- **Demographics and economy:** Population and GDP trends.
- **Energy metrics:** Energy intensity, electricity shares, and sectoral consumption patterns.

Standardising these inputs ensures consistency across the region and allows for a robust comparative analysis of different scenarios. The empirical foundation of this report relies on official national reports and international databases from the IEA, World Bank, and other reputable organisations (detailed in Appendices 8.1 and 8.2).

3.2 Key drivers of electricity demand

In the MENAT region, several key drivers are significantly influencing electricity demand. Economic growth is a primary factor, with rising GDP levels correlating with increased industrial activity, construction developments, and the existence of a prosperous middle class that demands more electricity for residential and commercial use. For this analysis, historical GDP data were obtained from the World Bank (WB) databases.

The most fundamental drivers of demand remain the region's robust economic and population growth:

- **Economic expansion:** Between 2000 and 2022, the total GDP for the eleven countries rose from $1.1 trillion to approximately $2.6 trillion (constant 2015 US$), representing a Compound Annual Growth Rate (CAGR) of 4%. This growth fuels industrial activity, construction, and the rise of a prosperous middle class with higher residential power needs.
- **Demographic shifts:** The population has grown by 105 million since 2000, reaching 354.2 million in 2022. This 1.6% CAGR underlines the need for sustainable energy strategies capable of meeting the demands of a continually expanding consumer base.

Furthermore, electricity demand is influenced by several emerging drivers that are reshaping the energy landscape. A significant factor is the rising adoption of electric vehicles (EVs); and railways, which significantly increase electricity consumption in the transition from gasoline and diesel to electric transportation.

Increasing new electricity demands, particularly from the growth of data centres, significantly influence overall electricity consumption, as rising reliance on digital services and cloud computing requires substantial power for computing, cooling, and operations. Additionally, the expansion of desalination plants, driven by the need for sustainable solutions to water scarcity, contributes to rising electricity demands, as these facilities require substantial energy to convert seawater into potable water. Furthermore, the potential of green hydrogen as a clean energy source to mitigate carbon emissions requires considerable electrical input during its production through electrolysis.

Electrification and energy efficiency are pivotal factors in shaping electricity demand and the broader energy transition towards sustainable systems. As key sectors, including transportation, heating, and industry, increasingly shift from fossil fuels to electric solutions, overall electricity consumption is expected to rise significantly.

In the eleven countries, electrification levels vary substantially across sectors. While commercial and public services tend to be highly electrified, sectors such as transport and industry still rely largely on fossil fuels. Agriculture presents a mixed picture, with several countries reporting full electrification while others still rely on diesel.

Energy efficiency is captured by the indicator “Final energy intensity” which is defined as total final energy consumption per unit of GDP.

From 2000 to 2022, this indicator increased at a CAGR of 2.8%. This trend indicates that, despite governmental targets and initiatives in certain countries aimed at improving efficiency, the increase is driven by a combination of energy subsidies and a GDP structure heavily dependent on energy-intensive sectors.

4

Scenarios Development and Methodology

This section details the analytical framework used to project electricity demand through 2050, considering a range of socio-economic, technological, and energy policy drivers. The scenarios examine electricity demand projections across a variety of socio-economic, technological, and energy policy factors shaping electricity consumption patterns. They explore a spectrum of possible futures ranging from conservative approaches to high-growth economic pathways and sustainable frameworks. The insights derived from these scenarios form a basis for evaluating the implications of MENAT countries maintaining their current strategies to 2050, as well as the comparative analysis between these ambitions and the targets outlined in EU initiatives for CO_2 emission reduction by 2050.

4.1 Scenarios overview

Med-TSO has established three distinct scenarios to capture varying levels of policy ambition, regional cooperation, and technological uptake.

Inertial scenario: bottom-up approach

This scenario represents a continuation of current macro-economic trends with limited policy intervention or technological change, maintaining the status quo across sectors. Energy policies are primarily national and local, with renewable energy progressing steadily but moderately, green hydrogen development remaining weak, electrification (including electric vehicles and other sectors) and energy efficiency are advancing slowly. The energy mix remains heavily reliant on conventional sources, while the development of emerging technologies such as e-fuels, advanced electrolysis, and data centres is sluggish, consistent with current investment plans.

Mediterranean Ambition (MA) scenario: top-down approach

This scenario is aligned with national NDCs and regional strategies. It assumes moderate economic growth influenced by environmental policies, targeting steady decarbonisation through electrification, renewable energy, and green hydrogen adoption. Enhanced supranational cooperation drives policy integration, regulatory coordination, and local manufacturing, whilst climate-resilient technologies support sustainable development. By projecting NDC ambitions beyond 2030, the scenario aims to achieve long-term greenhouse gas reductions and foster a more integrated and resilient Mediterranean energy market.

Net Zero (NZ) scenario: top-down approach

This scenario aims for near-total decarbonisation of energy systems across the eleven countries, targeting the Paris Agreement objective of limiting global warming to +1.5 °C by 2100 (50% probability). It emphasises the extensive electrification of end uses, a transition to a circular and resource-efficient economy, and strong decarbonisation efforts supported by national policies. Fossil fuel use falls dramatically, and electricity systems are fully decarbonised by 2050. The scenario is marked by a rapid scale-up of clean energy technologies, including renewables, green hydrogen, and carbon capture. Full carbon neutrality is not uniformly feasible across all countries, as it depends on national capabilities and policy frameworks. The scenario follows a global carbon budget allocated on a per-capita basis, with 2022 as the reference year for emissions and socio-economic indicators.

4.2 Carbon budget approach

The carbon budget approach defines the maximum cumulative CO_2 emissions that can be released into the atmosphere over a specific period of time while still potentially limiting global warming to a specific temperature target, typically 1.5°C or 2°C above pre-industrial levels (1850-1900), as set out in the Paris Agreement.

The IPCC AR6 WGI[2] report presents carbon budgets for different warming levels and different probabilities:

- Considering a global warming level of 2°C above 1850-1900 and a probability of 50%, the remaining budget is 1,350 GtCO2.
- Considering a global warming level of 1.5°C above 1850-1900 and a probability of 50%, the remaining budget is 500 GtCO2.

Both global budgets are calculated from January 1, 2020.

In this study, the 1.5 °C target has been adopted for the eleven countries counting for emissions between 2020 and 2022, the residual carbon budget for 2023-2100 is 21.3 $GtCO_2$.

The carbon budget is distributed among countries using an equal per-capita principle based on population projections, enabling a fair-share assessment of each country's emission allowances.

Carbon budget distribution

The table below summarises the total carbon budget for the MENAT countries and the world, and the year in which the budget would be exhausted if 2022 emission levels were maintained. This is a hypothetical scenario to illustrate the current level of saturation.

	Carbon budget 2020-2100 ($GtCO_2$)	2020 emissions ($MtCO_2$)	2021 emissions ($MtCO_2$)	2022 emissions ($MtCO_2$)	Residual 2023-2100 ($GtCO_2$)	Year reaching budget (@2022 levels)
Total Eleven Countries	23.9	830	880	880	21.3	2046
World	500	34,800	36,600	37,200	390	2033

Table 1: The eleven countries and world carbon budget

2 https://www.ipcc.ch/report/ar6/wg1/

4.3 Core assumptions

IN scenario

The IN scenario assumes slow progress across all sectors, limited electrification, modest energy efficiency improvements, and gradual technology adoption:

· Slow progress is made in electrification and energy efficiency across all sectors.

· Transport remains dominated by internal combustion engines, with limited electric vehicle uptake.

· Industry and services see modest growth and limited electrification.

· Renewable energy expands gradually, constrained by grid limitations.

· Hydrogen production remains mainly grey, with green hydrogen confined to pilot projects.

MA scenario

The MA scenario envisions moderate electrification and the increased adoption of energy-efficient technologies in buildings and infrastructure:

· Moderate electrification and adoption of energy-efficient technologies are anticipated in buildings.

· Gradual deployment of electric vehicles and hydrogen/e-fuels.

· Incremental electrification in industry and modest modernisation in agriculture.

· Renewable energy expands strongly, supported by grid modernisation and energy storage.

· Hydrogen supply diversifies, with increasing green hydrogen production.

NZ scenario

The NZ scenario is based on the following key assumptions:

· The overall target is to ensure carbon budget depletion aligned with the Paris Agreement target (+1.5°C goal), meaning the carbon budget for each of the 11 countries must not be exhausted, including beyond 2050.

· 100% carbon-free electricity generation: the electricity sector will be fully decarbonised by 2050, through a combination of renewable energy sources and carbon capture and storage (CCS) applied to fossil-based generation.

· Universal access to energy for essential end-uses: the scenario guarantees access to modern and clean energy services for crucial needs - including cooking and water heating - for all populations, as defined in the IEA Net Zero by 2050 scenario.

· Clean hydrogen production: This scenario foresees the production of green hydrogen no later than 2050.

· Carbon Capture and Storage (CCS): the application of CCS technology is foreseen in the main countries for which a concrete development of this technology can be reasonably anticipated based on the current state of knowledge.

4.4 Methodology

The analysis employs a “hybrid” model that integrates top-down macroeconomic dynamics with bottom-up technological assessments across residential, industrial, transport, and service sectors. This combined framework enables comprehensive scenario construction by incorporating detailed evaluations of the economic viability of various consumer technologies. These technologies are assessed based on critical factors such as cost, energy source, and efficiency levels across the sectors involved.

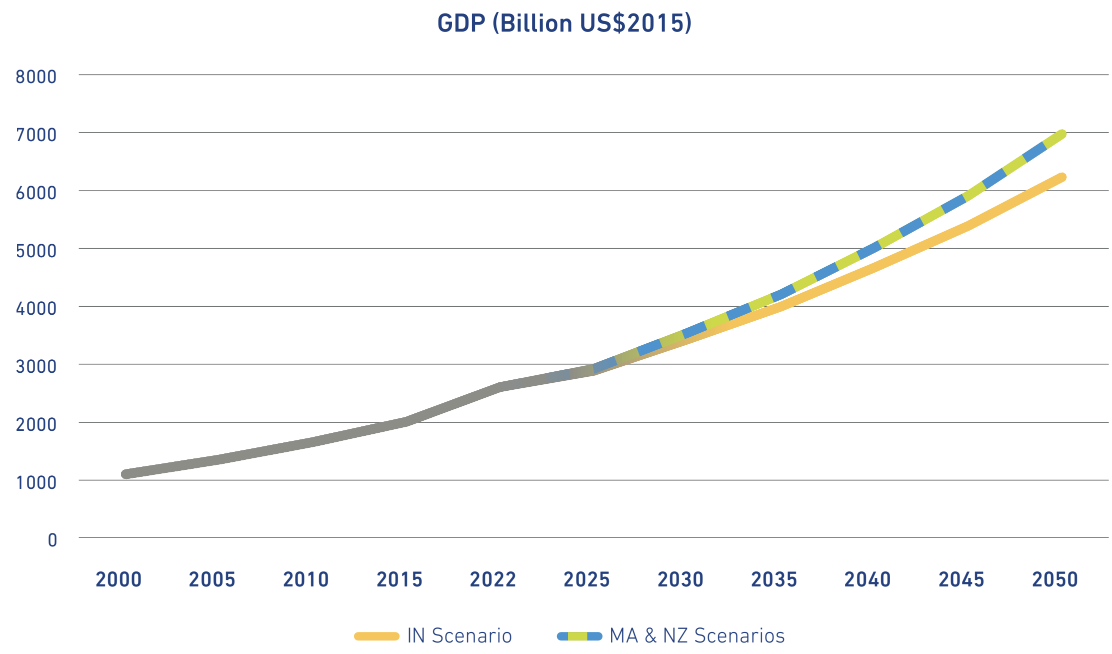
The reference year and scenarios include a curated set of macroeconomic, climatic, and sectoral indicators that form the core input parameters of the electricity demand projection. These variables are harmonised across countries and sourced from internationally recognised databases such as the IEA, World Bank, UN Statistics, Copernicus (PECD4.2), and national official sources. The selection of these parameters ensures the comparability of baseline conditions and provides the foundation for scenario development.

The model’s sectoral division has been designed using IEA data to ensure comprehensive coverage of energy consumption across various national economic sectors, including residential, industrial, transportation, and service sectors. This sectoral detail is crucial for capturing the diverse and complex consumption patterns anticipated in the future. By highlighting heterogeneity in consumption dynamics, the model effectively differentiates the electricity demands of each sector, providing a clearer understanding of potential shifts in energy use as technology evolves and economic conditions change.

4.5 Parameters

This analysis considers a set of key parameters across all sectors to capture the main drivers of energy demand and system evolution in the eleven countries. These variables are used to model and compare the trajectories of the three scenarios: IN, MA, and Net Zero (NZ), reflecting various levels of policy ambition, regional cooperation, and technological uptake. The parameters used to project these variables are detailed below.

Macroeconomic and demographic parameters: GDP, population, and the number of households, capturing overall economic and demographic trends using the International Monetary Fund (IMF) and the OECD database for GDP and population. The projected CAGR of GDP is 3.2% from 2022 to 2050 under the IN scenario and 3.6% under MA and NZ scenarios, representing a robust economic outlook for the eleven countries and suggesting a positive trajectory for economic development in the coming decades. In contrast, the projected population growth rate is 0.7% under IN and 0.9% under MA and NZ scenarios, both of which are relatively modest figures that reflect demographic trends likely to result in a slower increase in energy demand per capita over time. The historical trend and projections to 2050 are illustrated in the figures below.



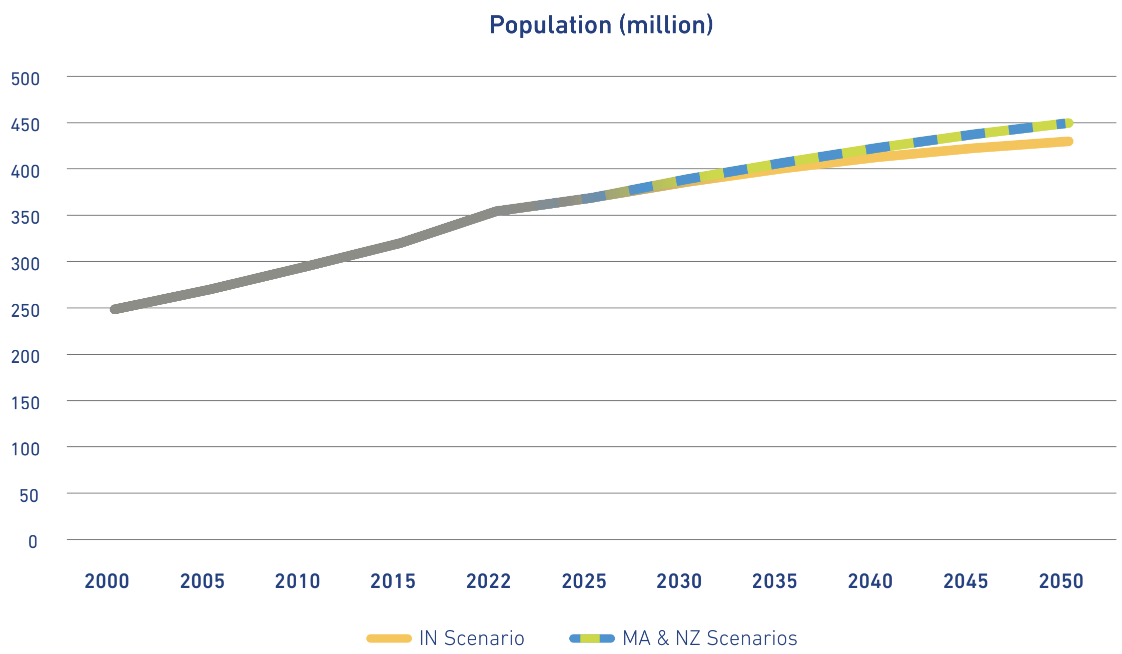


Figure 1: Past trends and projections of GDP and population between 2022 and 2050 for the IN, MA, and NZ scenarios

Electricity sectors: The model incorporates added value for each sector, alongside additional explanatory variables that may significantly influence energy demand (e.g., GDP per capita, population, energy source prices, and climate variables), in addition to specific parameters for the following sectors:

- **Industry:** Production volumes for key sectors such as chemicals, steel, cement, and aluminium.

- **Services:** Number and surface area of buildings, along with sectoral added value, reflecting energy consumption patterns.
- **Household:** Diffusion of energy services, number of dwellings, and total dwelling surface area, indicating residential energy demand and technology adoption.
- **Transport:** Passenger and freight mobility, number of vehicles, and annual registrations, representing sector activity and energy use.

Emerging electricity uses: Desalination capacity, ammonia production and imports, electrolysers and hydrogen production, electric vehicles, and data centres, capturing future energy system developments and the transition to low-carbon technologies.

5

Demand Projection Results

This chapter translates the three scenarios into a clear outlook for energy use across the eleven MENAT countries through 2050. The results cover all final energy and electricity consumption. This final consumption is broken down by sector, in line with the IEA's energy statistics. This sectoral classification is widely adopted in both national and international statistical systems.

The sectors for final energy consumption are:

- Industry
- Commercial and Public Services
- Residential
- Transport
- Agriculture and Fishing
- Other sectors

It should also be noted that desalination plants are included under the industry sector, while the energy consumption of data centres is classified under the Commercial and Public Services sector.

Several sectors fall outside this definition of final energy consumption. These primarily include the energy sector's internal consumption (e.g., hydrocarbon refining and the internal consumption of power plants) as well as losses, particularly technical and non-technical losses in the electricity network.

Special consideration must also be given to the emerging sector of renewable hydrogen production. The energy required to produce hydrogen is not classified as final consumption, as hydrogen is considered an intermediate energy product or a raw material used in specific chemical and steel industry processes. However, given the potentially significant role of MENAT countries in the global renewable hydrogen market, the production projections for 2050 are also presented in this chapter, even though they do not constitute final energy consumption.

All results are presented over a long-term period, specifically from 2000 to 2050 in five-year increments, to illustrate the evolution of future trajectories whilst accounting for past trends. In the models used, the reference year is 2022. The year 2020 is excluded due to the impact of COVID-19 on energy consumption activity.

The first graph illustrates total final energy consumption. This is followed, for each scenario, by graphs depicting final energy consumption by sector, as well as final electricity consumption by sector. Additional graphs cover the electrification rate, energy efficiency indicators, the share of electricity in road transport energy consumption (focusing on the passenger vehicle segment), hydrogen production, CO_2 emissions, and, finally, the share of renewables in electricity generation.

The units used are as follows:

- Energy is expressed in toe (tonnes of oil equivalent)
- TWh for terawatt hour
- Population is given in millions of people
- GDP is given in billions of constant 2015 US dollars
- CO_2 emissions and hydrogen production are given in millions of tons per year

5.1 Total regional final consumption outlook

This graph illustrates the evolution of total final energy consumption across the eleven countries studied, for each of the three scenarios.

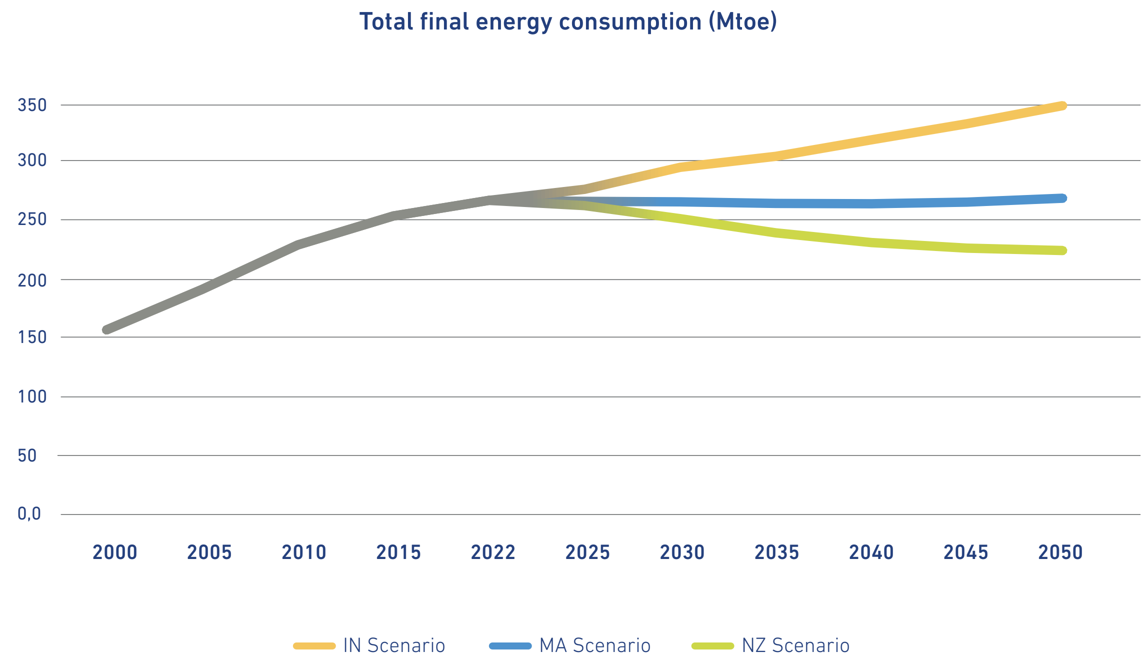


Figure 2: Total final energy consumption

Over the review period, final energy consumption experienced continuous growth, with a noticeable slowdown starting around 2010–2015, which was confirmed in 2022. The primary explanation for this shift lies in improvements in energy efficiency.

In the Inertial scenario, final energy consumption continues to grow until 2050 at a rate consistent with recent years (+30% compared to 2022). However, the MA scenario, and even more so the NZ scenario, show a break in this growth trend and even a reduction in final energy consumption, reaching -15% by 2050 compared to 2022 (despite a 27% population increase over the same period in this scenario). Once again, these results are driven by gains in energy efficiency. The sharp decline in final energy consumption in the NZ scenario reflects the widespread adoption of highly efficient technologies, combined with the electrification of energy uses and the near-complete phase-out of fossil fuels in electricity production.

5.2 Final energy consumption by sector

The following three graphs illustrate the evolution of final energy consumption by sector.

In 2022, the transport sector was the largest consumer of final energy, accounting for 35% of total consumption. This is followed by the industrial sector (26%) and the residential sector (25%), both at similar levels. The commercial and public services sector represents approximately 9% of the total.

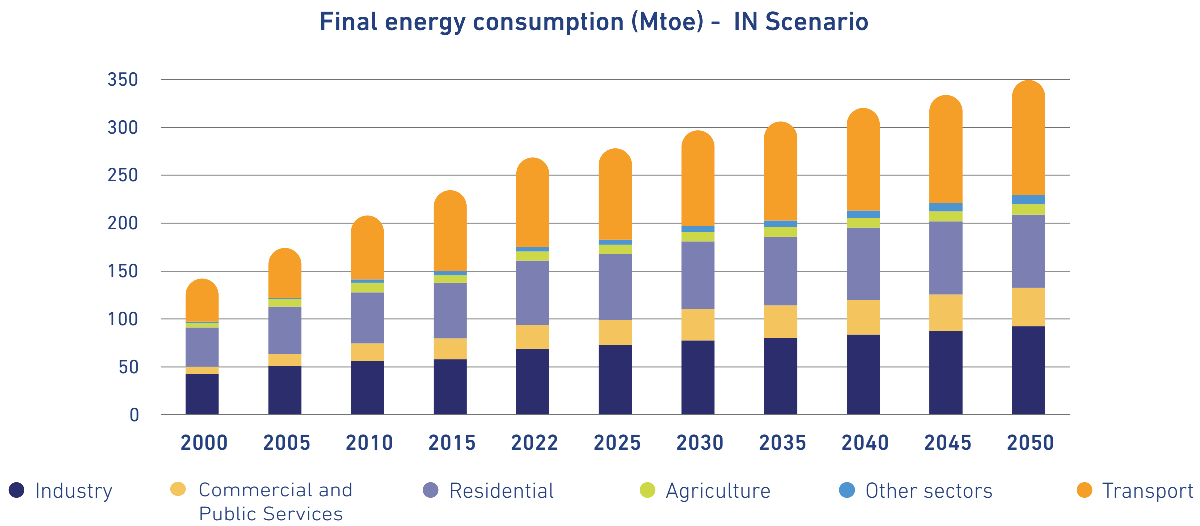
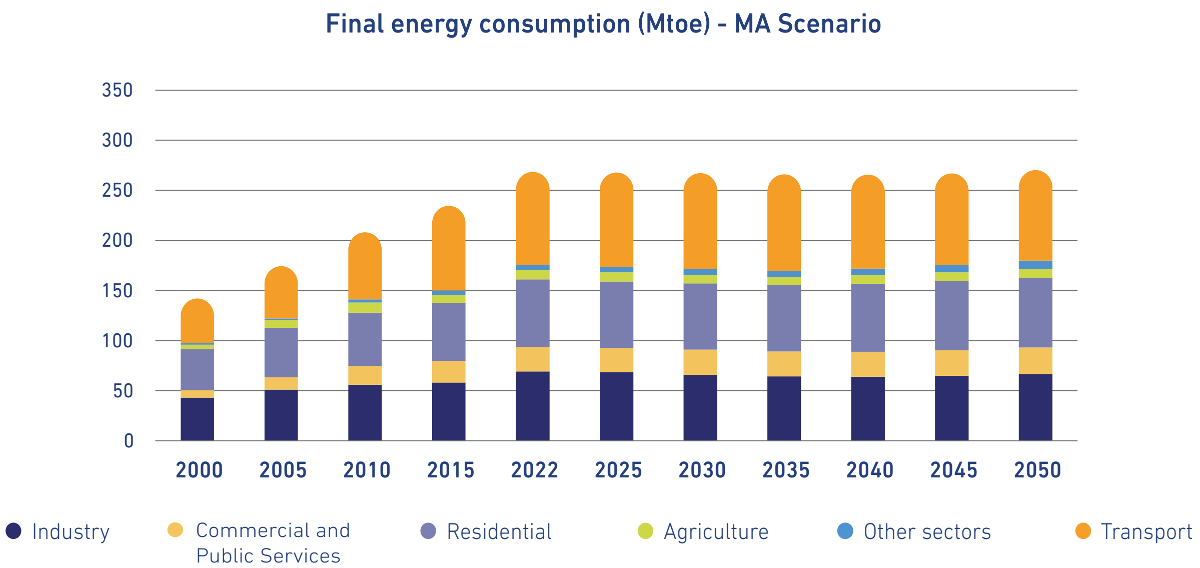


Figure 3: Total final energy consumption by sector in the IN scenario

In the IN and MA scenarios, the relative share of each sector remains broadly stable between 2022 and 2050. The NZ scenario shows a distinct evolution, as illustrated below.



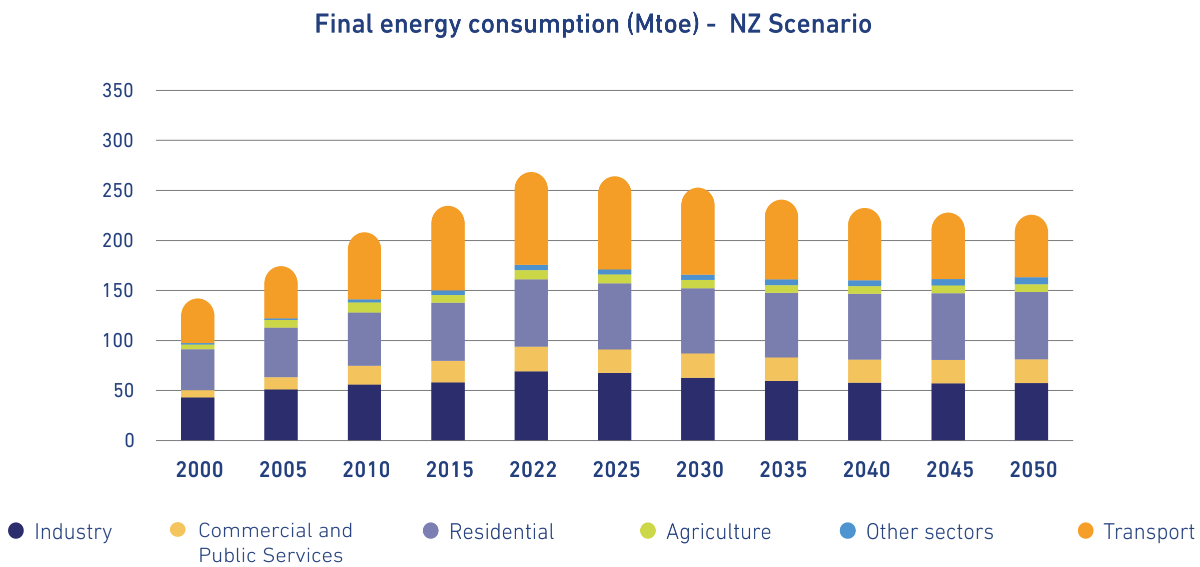


Figure 4: Total final energy consumption by sector in the MA and NZ scenarios

One sector, in particular, exhibits highly contrasting trends across the three scenarios: transport. Whilst energy demand for transport continues to grow in the IN scenario (+13% in 2050 compared to 2022), driven by population growth, rising purchasing power, and increasing freight demand, it is controlled in the MA scenario and even reduced in the NZ scenario (-33% in 2050 compared to 2022). This decline is attributable to the transition from hydrocarbon-based mobility to a rapidly increasing share of electrified transport. The inherent energy efficiency of electric motors delivers significant improvements in energy efficiency within this sector.

The evolution of the residential sector also highlights the role of energy performance improvements across the three scenarios. The primary gains stem from enhanced thermal efficiency in buildings, which has a dual impact on both heating and cooling needs, and from more efficient appliances.

5.3 Final electricity consumption by sector

The following graphs illustrate the evolution of final electricity consumption across the three scenarios.

Unlike overall energy consumption, the transport sector accounted for only a marginal share of final electricity consumption in 2022 (less than 1%). In contrast, the residential and industrial sectors each accounted for roughly one-third of final electricity consumption (33% and 34%, respectively). The commercial and public services sector accounted for nearly a quarter of consumption (23%). Finally, the agricultural sector contributed approximately 5%.

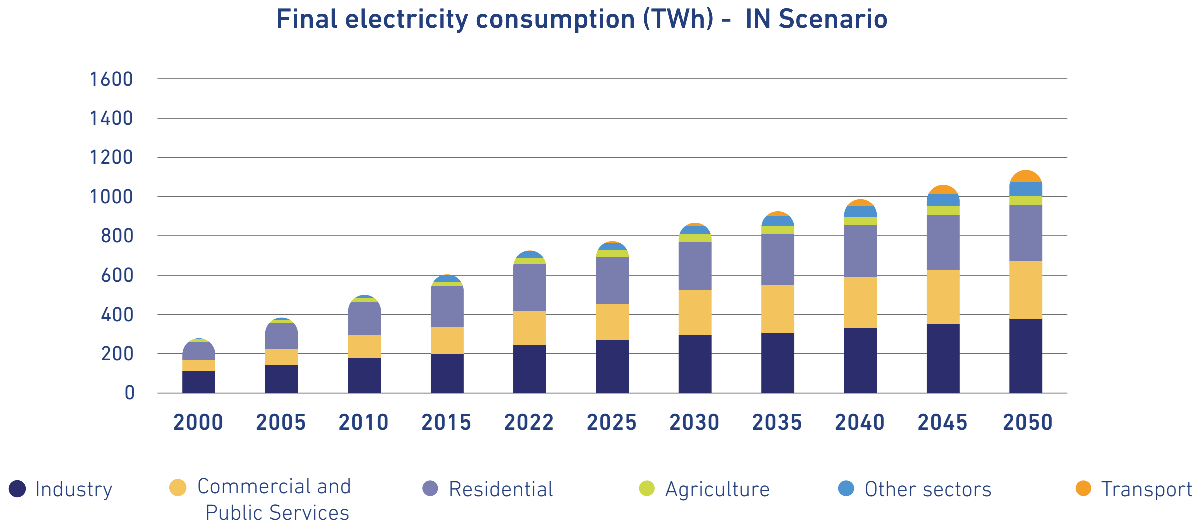


Figure 5: Total final electricity consumption by sector in IN scenario

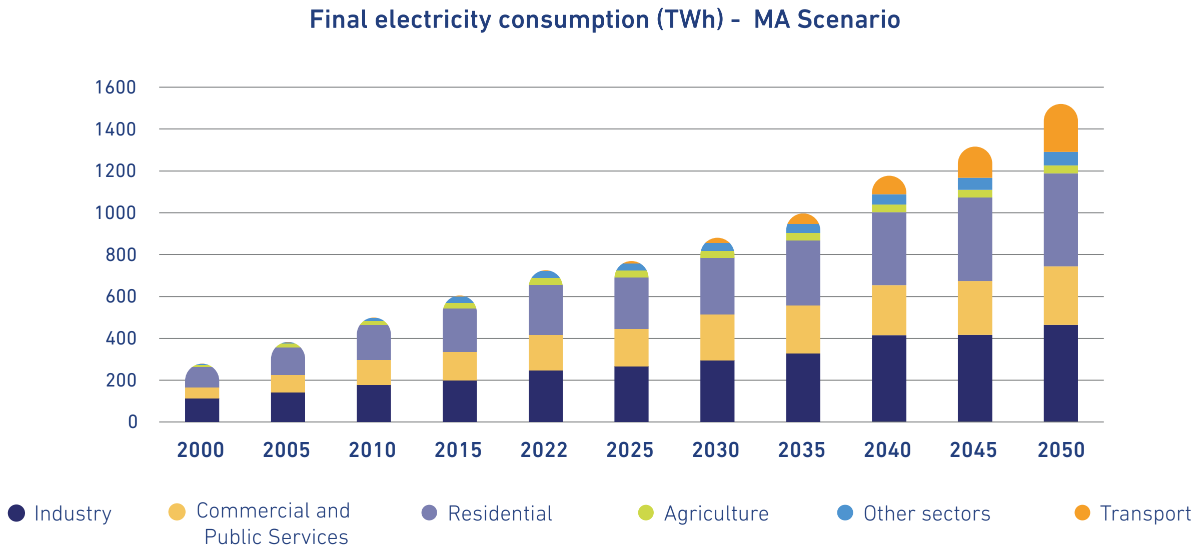


Figure 6: Total final electricity consumption by sector in MA scenario

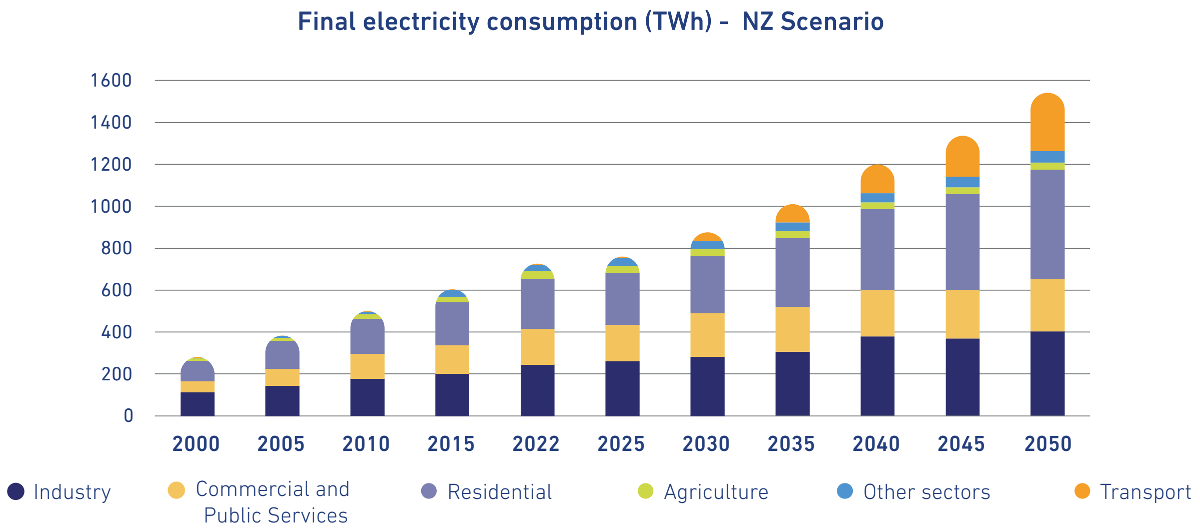


Figure 7: Total final electricity consumption by sector in NZ scenario

Total final electricity consumption recorded in 2022 across the eleven countries covered by the study was approximately 725 TWh. By 2050, this demand is projected to increase by 57% in the IN scenario and to more than double in both the MA and NZ scenarios. Whilst the relative share of most sectors remains broadly stable throughout the period, one sector stands out as an exception: transport. Its share rises from less than 1% in 2022 to around 5% in the IN scenario and 15% and 18% in the MA and NZ scenarios, respectively, by 2050.

While final electricity consumption figures may appear similar in the MA and NZ scenarios, this similarity obscures the interplay of two opposing factors: on the one hand, the efficiency of technologies, and on the other, the share of electricity in the overall energy supply. The gradual shift from fossil fuels to electricity can be illustrated by the graph below, which shows the share of electricity in final energy consumption.

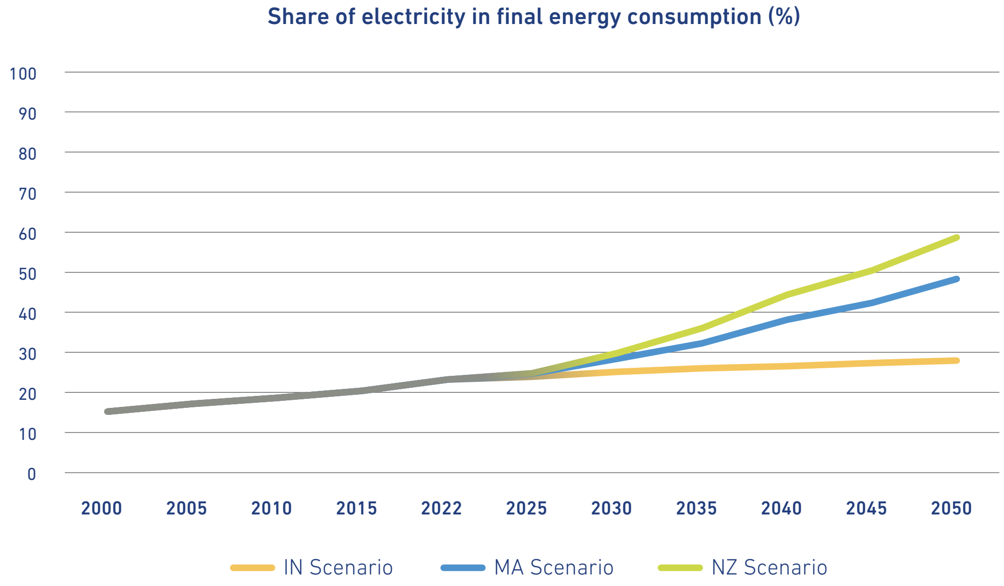


Figure 8: Share of electricity in final energy consumption

This graph shows an increase in the share of electricity in final energy consumption between 2000 and 2022, rising from 15% to 23%. In the IN scenario, this growth continues at a moderate pace, reaching 28% by 2050. However, the electrification rate in the MA and NZ scenarios accelerates significantly, reaching 50% and 60% respectively by 2050.

This transition towards greater electricity use affects not only the transport sector but also residential applications, such as the deployment of reversible heat pumps, electric cooking, and domestic hot water systems, as well as the industrial sector, where processes are electrified where technological solutions permit, and renewable hydrogen replaces fossil fuels.

For illustration purposes, the graph below shows the penetration of electric vehicles in the passenger vehicle segment from 2025 to 2050.

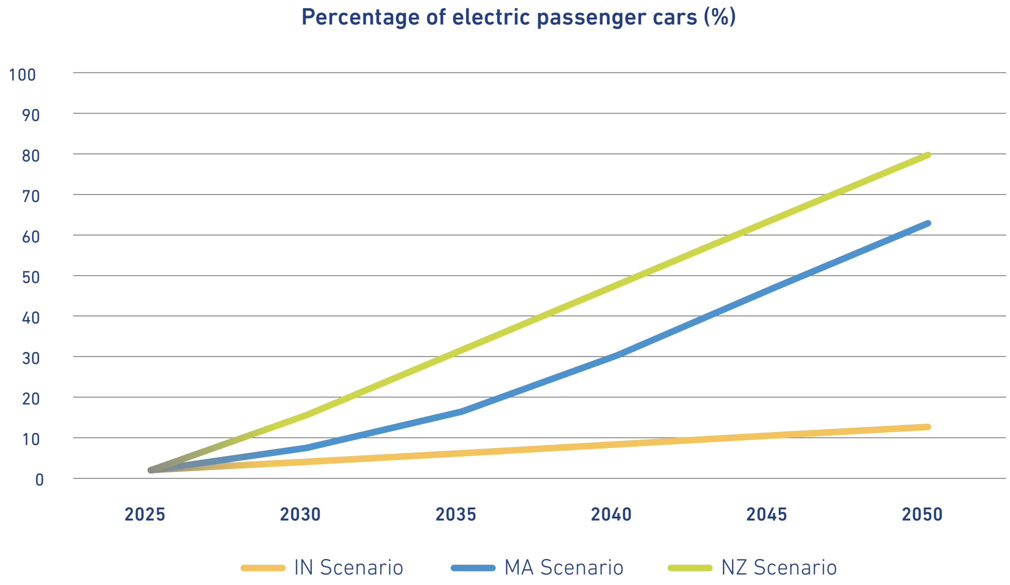


Figure 9: Percentage of electric passenger cars

Whilst the development of electric vehicles remains modest in the IN scenario, achieving a genuine transition to decarbonised mobility, as envisioned in the MA and NZ scenarios, requires rapid acceleration of fleet electrification, reaching 60% to 80% by 2050.

5.4. Energy efficiency

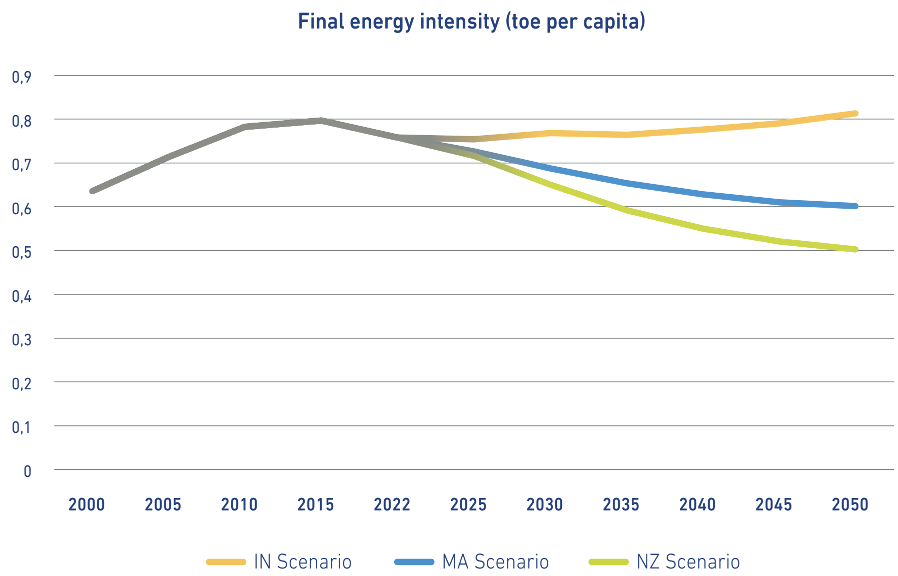
The concept of energy efficiency encompasses a broad range of interpretations. For instance, it can reflect the quality of a home's insulation, linking the comfort of its occupants to the energy required to maintain a specific temperature during winter and summer.

Energy efficiency can also be analysed at the national or regional level, where it is referred to as energy intensity. This indicator compares a country's total final energy consumption with its economic output, measured by GDP. To account for inflation, energy intensity is typically measured against GDP expressed in constant currency, in this case, constant 2015 US dollars. This indicator reflects a system's ability to generate more or less economic value for a given level of energy consumption. A decline in this indicator signifies an improvement in the system's energy performance.

Between 2000 and 2022, the overall final energy intensity of the eleven countries studied decreased from 143 to 103 toe per million US$2015, representing a significant 28% reduction.

The second indicator presented here measures final energy intensity as the ratio of energy consumption to population. This widely used indicator reflects a country's energy consumption adjusted for population changes over time. Its growth can be interpreted in contrasting ways; it may indicate improved access to energy for the population (often linked to increased purchasing power) or, conversely, reduced efficiency in energy use.

Between 2000 and 2015, the final energy intensity in the studied countries increased from 0.71 to 0.80 toe per capita, before decreasing to 0.76 toe per capita in 2022.



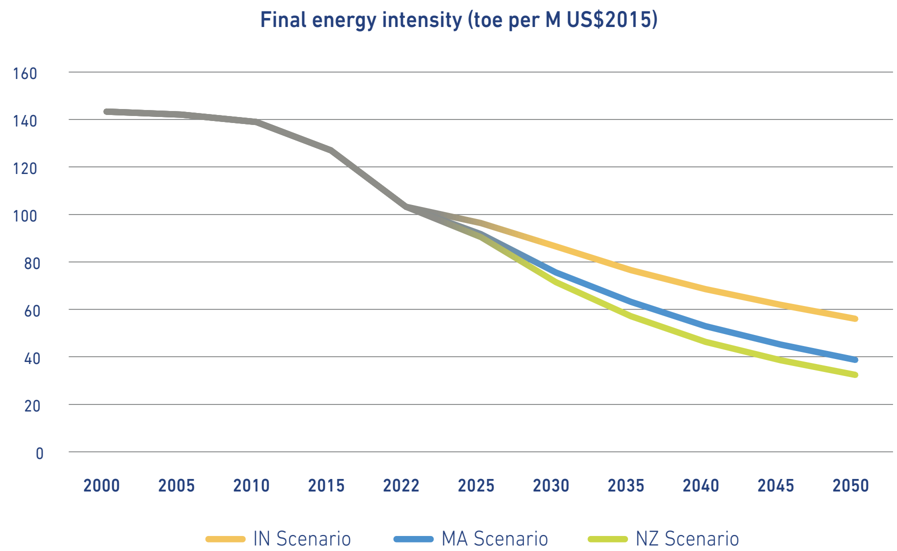
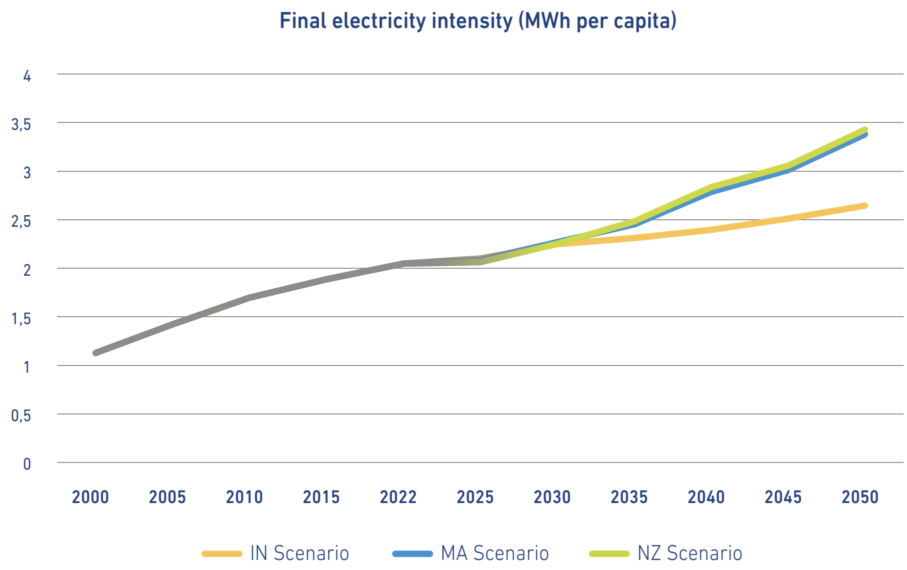


Figure 10: Final energy intensity

In all three scenarios, the final energy intensity, expressed in toe per 2015 US dollar, continues the downward trend observed historically. The rate of decline is significantly steeper in the MA and NZ scenarios, reflecting broad improvement in energy efficiency across all final consumption sectors, driven in particular by the electrification of energy uses.

These indicators can also be calculated for final electricity consumption, in which case they capture the dual effect of overall energy efficiency improvements and the electrification of energy uses.



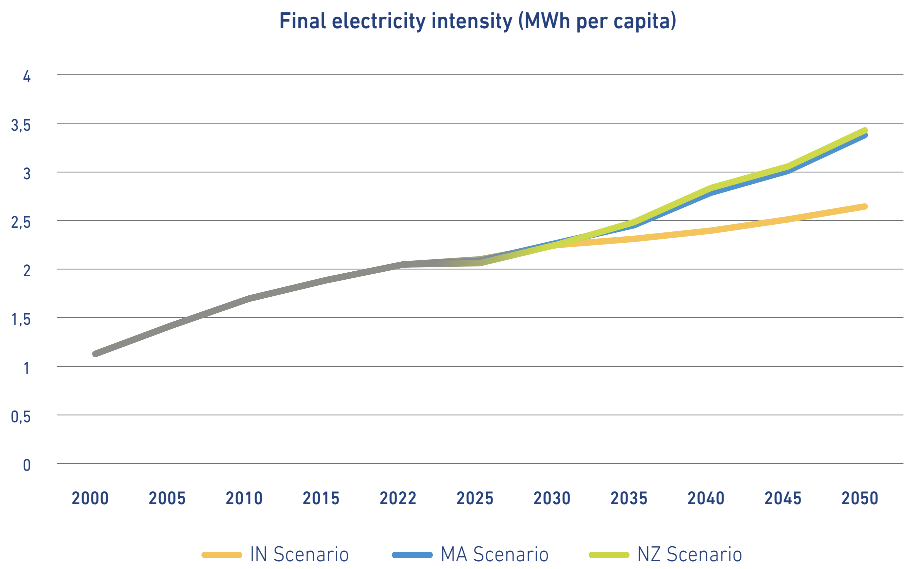


Figure 11: Final electricity intensity

Between 2000 and 2022, per capita final electricity consumption increased from 1,130 kWh to 2,050 kWh. This growth continues across all three scenarios, progressing steadily in the IN scenario, while both the MA and NZ scenarios show a similar acceleration, reaching approximately 3,400 kWh per capita by 2050. The apparent similarity in final electricity intensity between the MA and NZ scenarios again results from the opposing effects of efficiency gains and the electrification of energy uses.

5.5. Hydrogen production

By definition, hydrogen production falls outside the scope of final energy consumption. However, the MENAT countries possess abundant renewable natural resources and proximity to the European market, creating ambitious opportunities to produce hydrogen through the electrolysis of renewable electricity.

Initially viewed by potential producer countries as an economic opportunity, this renewable hydrogen production would be carbon-neutral in the producing nations. At the same time, it would pave the way for decarbonising specific industrial processes such as steel production, fertilisers, heavy chemicals, and synthetic fuels in importing regions.

The graph below presents two development trajectories for renewable hydrogen production up to 2050, expressed in millions of tonnes per year.

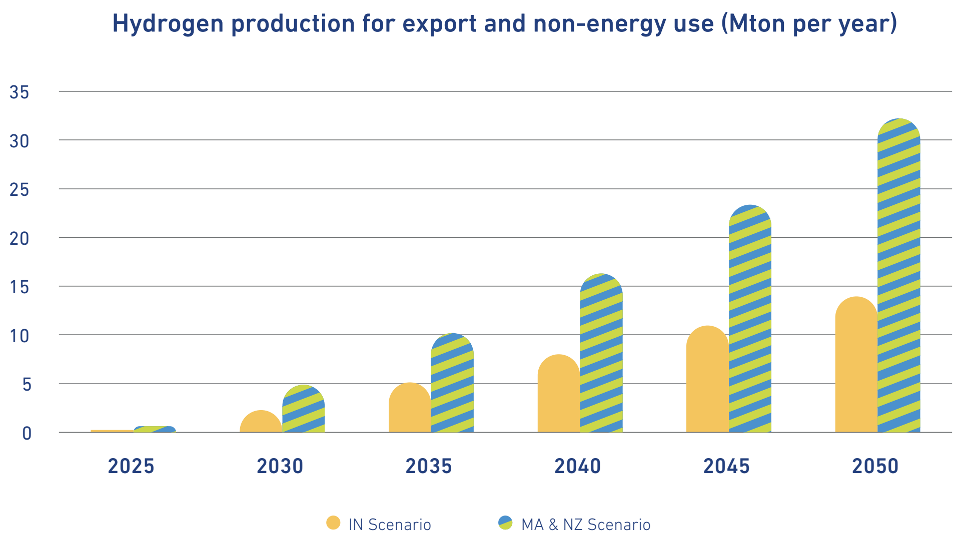


Figure 12: Hydrogen production for export and non-energy use

Given the current state of technology, producing one million tonnes of renewable hydrogen requires approximately 50 TWh of electricity. The projections presented here assume the dedicated production of renewable electricity on a scale comparable to final electricity consumption. It should be noted that these facilities would primarily be off-grid, therefore not connected to the main electricity transmission network.

5.6 CO_2 emissions and RES share

Between 2000 and 2015, total CO_2 emissions in the eleven countries increased significantly, rising from approximately 500 to 870 million tonnes per year (+75%). These figures represent total emissions, encompassing those induced by final energy consumption, as well as those from the energy sector and transmission losses.

After 2015, emissions growth began to slow, reaching 900 million tonnes in 2022. The graph below shows the projected trajectories up to 2050.

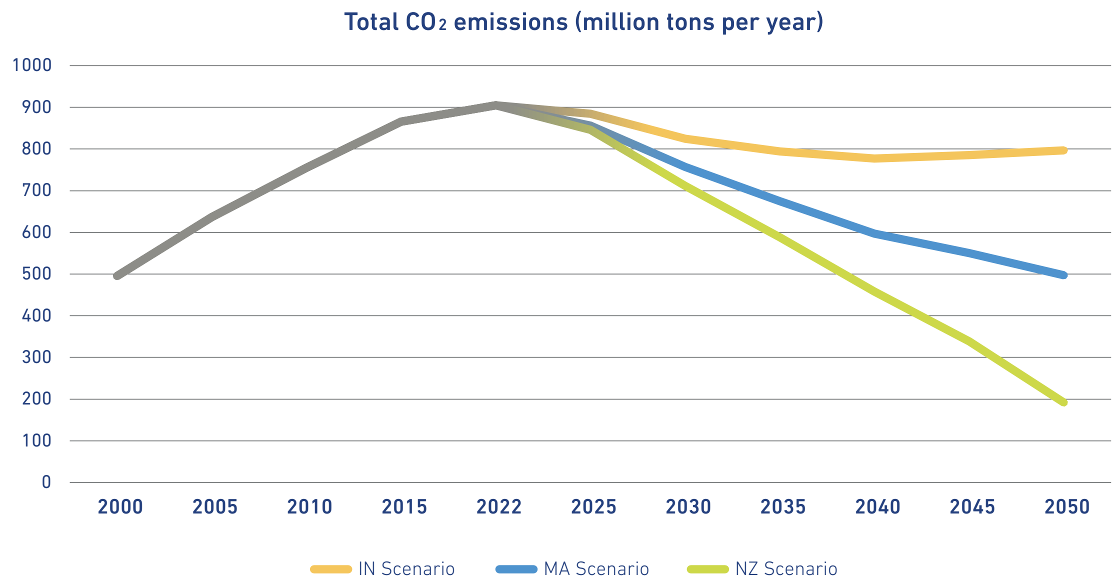


Figure 13: Total CO_2 emissions

In the IN scenario, emissions decline and stabilise at around 800 million tonnes per year from 2035 onwards. This stabilisation results from the continued decrease in final energy intensity, accompanied by a modest increase in the electrification of end-uses and the ongoing expansion of renewables in the electricity generation sector.

In the MA scenario, the decrease in CO_2 emissions is much more pronounced, with emissions returning to their 2000 level by 2050, at approximately 500 million tonnes per year.

Finally, the NZ scenario presents, by design, an even more significant reduction in emissions, reaching around 200 million tonnes by 2050 (-60% compared to MA in 2050). This difference between the MA and NZ scenarios is analysed later in this report. It is worth noting that this significant difference in CO_2 emissions actually stems from much smaller variations in the main macro-indicators (16% difference in final energy consumption, 10% difference in the overall electrification rate).

The graph below illustrates the share of renewables in total electricity production. As electricity use for final energy consumption grows, the decarbonisation of electricity generation becomes a key element of the energy transition.

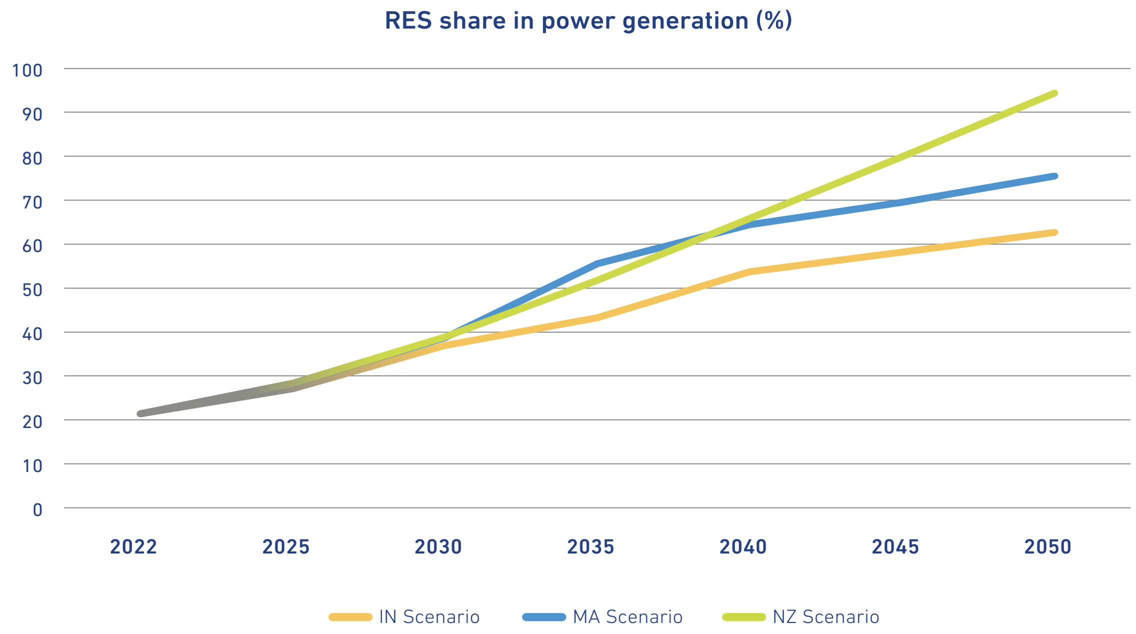


Figure 14: Share of renewables in power generation

In 2022, the share of renewables in electricity generation across the eleven countries was approximately 21%. Based on current momentum and ongoing projects, the IN scenario anticipates a continued increase, reaching more than 60% by 2050.

The MA scenario assumes an accelerated deployment of renewables, particularly over the 2025-2035 period. In the NZ scenario, the share of renewables approaches 100%, with the remaining portion covered by nuclear power.

It should be noted that the electricity required for renewable hydrogen production (which is by definition 100% renewable) is included in the calculation of this indicator.

6

Comparative Analysis

The comparative analysis of the Mediterranean Ambition (MA) and Net Zero (NZ) scenarios aims to identify a comprehensive set of measures required to enable a full energy transition in the Mediterranean countries.

The analysis involves two layers:

- **Policy comparison**, identifying regulatory barriers, and highlighting governance or financing gaps.
- **Potential measures,** covering policy actions, infrastructure actions, capacity-building, or innovation and technology adoption.

6.1 Policy analysis

The transition from the Inertial Scenario (IN) to the Mediterranean Ambition Scenario (MA) and the Net Zero Emissions Scenario (NZ) represents the evolution from incremental decarbonisation, largely driven by nationally determined plans and selective renewable deployment, to a systemic transformation of the energy system. While the MA scenario aligns with the current ambitions and policy frameworks of MENAT countries, the NZ trajectory requires full decarbonisation of the power mix, deep electrification of end-uses, regional energy integration, and a mature market framework that supports clean technologies.

The transition faces a number of regulatory, governance, and financing challenges that slow its progress. These reflect both long-standing structural limitations and areas where policy momentum could be strengthened. Together, these issues can be organised into six key thematic areas:

- **Fossil fuel subsidies:** One of the most persistent barriers is the continued subsidisation of fossil fuels in several MENAT countries which artificially keeps energy prices low. Although these subsidies are often justified on economic and social grounds, their broad and unrestricted application can undermine the competitiveness of renewables and energy efficiency measures.

- **Carbon pricing and market signals:** There is a widespread absence of carbon pricing mechanisms across most MENAT countries. With the exception of Türkiye, which is planning an Emissions Trading System (ETS) aligned with its EU customs union obligations, and limited pilot initiatives in Egypt and Morocco, there is no coordinated carbon market or carbon taxation scheme in the region. Integrating the economic value of CO_2 into policies and investment decisions can serve as a relevant tool for steering investments toward the energy transition.

- **Regulatory fragmentation and interconnection obstacles:** Interconnection regulations are weak and fragmented. National TSOs operate under divergent planning rules, tariff structures, and reliability standards. Regulatory frameworks for cross-border capacity allocation, congestion management, and grid codes are either absent or inconsistent. Regardless of political integration efforts, a shared, stable, and coherent framework for developing electrical interconnections among countries in the region is recognised as a favourable and potentially essential factor for the large-scale deployment of renewable energy.

- **Sectoral governance limitations:** The governance landscape is characterised by institutional coordination gaps and variations in regulatory independence across countries, which can lead to inconsistencies in policy implementation. While many countries have developed energy transition strategies, some would benefit from stronger legal frameworks and better cross-sectoral integration to enhance their effectiveness. Furthermore, the complexity of public procurement and licensing procedures can create barriers to broader and more sustained private sector engagement.

- **Financial and investment bottlenecks:** Financing the energy transition in the region presents notable challenges, calling for a substantial scaling up of investment. Access to affordable capital remains constrained, while political and currency risks, together with a need for more developed green financial instruments, can pose obstacles to accelerating the energy transition. Additionally, evolving regulatory frameworks and grid capacity limitations may affect investor confidence, adding further considerations for risk management.

- **Opportunities for policy and social advancement:** While the energy transition faces challenges such as governance coordination gaps, evolving interconnection frameworks, legacy fossil fuel subsidies, and untapped investment potential, these can be effectively addressed through targeted policy reforms and strengthened international cooperation. At the same time, social compensation mechanisms and stakeholder engagement are emerging as important elements in facilitating the acceptance and smooth implementation of energy reforms.

6.1.1 Infrastructure and capacity planning

As indicated in the previous section, electricity demand is projected to rise significantly across all time horizons, reflecting economic and population growth, and the structural electrification of end-use sectors. The MA and the NZ Scenarios record the highest electricity demand, driven by extensive electrification replacing fossil fuels in transport, buildings, and industry as well as by the production of green hydrogen. This steep increase necessitates substantial infrastructural responses across generation, transmission, and flexibility.

Expansion of Renewable Generation - This growth drives the need for wider deployment of energy storage solutions, advanced grid digitalisation, and upgrades to cross-border interconnections to ensure system stability and efficiency.

Grid Reinforcement and Modernisation - In the MA scenario, and even more so in NZ, rising electricity demand and accelerated electrification require major upgrades to grid infrastructure and greater system flexibility. This involves strengthening transmission networks, expanding substation capacity, and modernising distribution systems to support decentralised energy integration and the growing adoption of smart meters.

Interconnection Expansion - A fully interconnected Mediterranean electricity network would serve as a regional backbone, facilitating shared generation, enhanced flexibility, and cross-border energy trade. Key priorities include developing major corridors, such as North Africa-Europe links, Eastern Mediterranean connections, and South-South interconnectors. Yet, regulatory differences across countries remain a challenge to achieving seamless integration.

Integration of Storage and Flexibility - To accommodate high levels of renewable energy, investments in flexibility solutions are essential. This includes demand-response initiatives, pumped hydro storage, thermal storage technologies, and large-scale battery systems, all of which help balance supply and demand while ensuring grid stability.

Hydrogen and CO_2 Infrastructure - Several countries in the MENAT region are developing strategic plans for hydrogen production and export, along with CO_2 management. This calls for dedicated infrastructure, including electrolysis hubs, hydrogen pipeline networks linking North Africa to Southern Europe, storage terminals, and CO_2 transport and storage systems, particularly to support industries that are difficult to decarbonise.

6.1.2 Investment needs

The MA and the NZ trajectories require an order-of-magnitude increase in investment flows compared to the IN scenario. Core investment drivers include massive renewable deployment, grid expansion, regional interconnections, electrification infrastructure (like EV charging), and industrial efficiency upgrades. The two scenarios therefore demand large-scale mobilisation of private investment.

Unlocking investment at this scale presents an opportunity to address key financial dynamics in the MENAT region. While political and currency risks, evolving regulatory landscapes, and the need for more advanced green financial tools remain important considerations, they also highlight areas where progress can be made. By strengthening regulatory stability, introducing long-term offtake agreements, developing green taxonomy frameworks, and leveraging risk-mitigation instruments, the region can create an enabling environment for private sector investment. Additionally, aligning with frameworks like the EU ETS (Emissions Trading System) can further support trade-exposed industries in their transition.

6.1.3 Regional cooperation opportunities

Electricity demand evolution provides expanded opportunities for coordinated energy integration across the Mediterranean region. Among the potential approaches to address transition challenges, three key areas stand out:

- **Harmonised regulation and market coupling:** The NZ scenario requires moving beyond the current largely bilateral trade towards a more coordinated Mediterranean electricity network. This could include harmonised grid codes, regional capacity-allocation rules, and the development of a Mediterranean regulatory platform that builds on existing regional collaborations.
- **Cross-border electricity trade:** Higher shares of intermittent renewable energy sources (RES) create significant potential for load-balancing exchanges. Cross-border trade could also emerge from the complementarity of renewable resources across the region, for example by leveraging areas with exceptionally high wind or solar potential.
- **Hydrogen cooperation:** A further area for collaboration could focus on establishing shared safety and quality standards, joint green hydrogen certification systems, and coordinated pipeline and port infrastructure. Such efforts would support the development of export corridors to Europe and strengthen regional energy ties.

6.1.4 Emission reduction strategies

The MA scenario demonstrates very significant progress in emissions reduction (a 45% decrease by 2050), though residual emissions remain at a notable level. To fully align with net-zero pathways, additional and more ambitious measures will be necessary to complement current strategies.

Key strategies required to achieve Net Zero-level emission reduction could include:

- **Deep electrification and efficiency:** Achieving the lowest energy demand levels in NZ is driven by deep efficiency gains and widespread electrification. Many national plans already include ambitious efficiency targets, while electrification plays a central role in sectors such as transport (e.g., electric vehicle mandates) and industry.
- **Decarbonising power generation:** The NZ scenario involves a gradual, managed, and full transition away from unabated fossil fuel-based generation, shifting toward low-carbon energy sources, primarily renewables and nuclear power. This transition is enabled by expanded storage capacity and strengthened interconnections to ensure system reliability and flexibility.
- **Carbon pricing and market signals:** The lack of carbon pricing represents a key structural challenge for achieving the NZ trajectory. Establishing explicit carbon pricing mechanisms can help incorporate environmental costs into economic decisions and provide clear, long-term signals for investors and consumers.
- **Green hydrogen and clean fuels:** The large-scale deployment of clean hydrogen plays a critical role in replacing fossil-based industrial feedstocks and supporting hard-to-abate sectors like aviation and shipping.

6.2 Measures for transition

The recommended transition measures are designed to remove structural barriers, catalyse private investment, and unlock progress toward the NZ scenario, bringing the MENAT region closer to global climate neutrality goals. These measures span policy, regulation, and market integration.

6.2.1 Policy and regulatory measures

- **Strengthening efficiency and electrification:** To advance toward net-zero goals, countries can consider adopting sector-specific efficiency targets, implementing mandatory industrial energy audits, and setting minimum performance standards for appliances and buildings. Policies may also support end-use electrification through fiscal incentives—such as those for electric vehicles and heat pumps—alongside EV adoption mandates. Coordinating these efforts with demand management strategies can further enhance the benefits of demand flexibility.
- **Reforming energy pricing:** A foundational step involves the gradual phase-out of fossil fuel subsidies, which currently reduce incentives for efficiency and distort investment decisions. Achieving net-zero targets calls for energy pricing that reflects full costs, implemented in parallel with renewable energy expansion. This approach can be paired with targeted social

protection measures to safeguard vulnerable consumers.

- **Establishing carbon pricing**: Introducing carbon pricing mechanisms in MENAT countries can help incorporate carbon costs into economic decisions, steer investments toward low-carbon solutions, and support export industries in adapting to the EU CBAM framework.
- **Fossil generation phase-out:** To align with net-zero objectives, policymakers can develop capacity-replacement strategies that focus on expanding clean and renewable energy sources, supported by flexibility solutions, as unabated oil and coal plants are retired. By 2030, all new capacity additions could be carbon-free.
- **Legal and institutional harmonisation:** To encourage cross-border investment, greater regulatory alignment may be pursued, including the establishment of independent energy regulators, the harmonisation of technical standards, and simplified permitting processes. The creation of a Mediterranean Energy Regulatory Forum, modelled on the EU's ACER, could support coordinated regional rulemaking.

6.2.2 Market integration measures

- **Cross-border interconnection frameworks:** Aligning regulatory frameworks could help accelerate joint interconnection planning and establish shared investment rules, which are essential for scaling up renewable energy deployment and enabling flexibility sharing across the region.
- **Hydrogen market integration and certification:** To capitalise on the anticipated rise of hydrogen exports, countries can work toward regional guarantees-of-origin schemes, shared safety standards, and coordinated infrastructure planning with the EU.
- **Expanding energy storage and flexibility solutions:** With increasing renewable energy penetration, flexibility becomes essential. MENAT countries may consider investing in demand-response programmes engaging both industrial and residential consumers in balancing operations, as well as pumped hydro storage, grid-scale battery systems, and thermal storage solutions.
- **Evolving distribution networks and smart grids:** As energy systems evolve, distribution networks must adapt to incorporate digitalisation, smart grid technologies, and improved coordination between transmission and distribution. This evolution supports the integration of distributed solar PV and EV charging while enabling local flexibility and real-time monitoring of electricity flows.
- **Facilitating private sector participation:** To attract the necessary investment, supportive measures can include risk-mitigation tools, green financing frameworks, and standardised Power Purchase Agreement (PPA) templates. Ensuring regulatory stability and predictable tariffs further strengthens investor confidence.

6.2.3 Capacity-building and governance actions

- **Integrated energy-climate planning frameworks:** MENAT countries can develop integrated energy-climate frameworks that combine electricity, transport, industry, and building strategies into cohesive decarbonisation roadmaps.
- **Social engagement and inclusive transition:** A comprehensive transition strategy for the NZ pathway may include workforce reskilling programmes, social protection measures to address subsidy reforms, and opportunities for public participation in decarbonisation efforts.

The energy transition presents an opportunity to transform the region's natural resource endowment into a competitive advantage within the global low-carbon economy, fostering a resilient and integrated energy system. Financing this transition demands significant investment in clean energy and infrastructure.

To mobilise the required capital, countries can establish clear green finance standards, leverage national development banks and sovereign wealth funds for blended finance, and forge partnerships, such as with the EU Global Gateway or GCC funds, to access concessional financing for key projects like interconnectors and hydrogen infrastructure. Revenue from carbon pricing mechanisms can also be redirected to support domestic efficiency and innovation programmes.

6.3. Roadmap for implementation

A phased implementation strategy can ensure coherence and political feasibility:

Phase	Key Focus
Phase I: Policy Alignment (2025-2030)	Reform subsidies, adopt carbon pricing pilots, enhance efficiency targets, and launch grid modernisation programmes.
Phase II: System Integration (2030-2040)	Expand interconnections, deploy hydrogen infrastructure, establish storage and flexibility markets, and integrate national power markets regionally (Pan Arab Electricity Market should be fully implemented by 2036).
Phase III: Full Decarbonisation (2040-2050)	Complete fossil phase-out, achieve >90% renewable and nuclear power mix, electrify transport and industry, and operate a unified Mediterranean electricity market.

Table 2: Phased implementation strategy

7

Conclusions

The urgency of the 2050 horizon

The clock is a critical driver. If the eleven countries maintain 2022 emission levels, the regional carbon budget for the 1.5°C target will be exhausted by 2046 and considerably earlier for several MENAT countries. This reality dictates that the transformation requires immediate, decisive policy reforms, intensified regional cooperation, and a massive effort in capacity-building to prepare the workforce for a new, infrastructure-intensive energy economy.

Transitioning to a fossil-free energy sector presents a multifaceted challenge that goes beyond technology adoption alone. Whilst the region has the natural resources to drive the global energy transition, success is fundamentally contingent on aligning policies, mobilising substantial infrastructure investment, and strengthening institutional capacity.

The central role of infrastructure

Infrastructure serves as the physical backbone of this transformation. Achieving the goals of the Net Zero scenario is impossible without a systemic overhaul of the region's energy systems:

- **A Mediterranean power grid:** A fully interconnected electricity network is required to act as the regional backbone, enabling seamless resource sharing, flexibility, and cross-border trade.
- **Grid modernisation:** Significant investment must be directed toward grid reinforcement, digitalisation, and the expansion of substations to handle distributed generation and smart-meter penetration.
- **Storage and flexibility:** To manage high renewable penetration, the region needs widespread integration of storage systems, including pumped hydro, thermal storage, and grid-scale batteries.
- **The role of hydrogen**: Strategic planning must include electrolysis hubs, dedicated hydrogen transmission pipelines connecting North Africa with Southern Europe.

A critical foundation: social and regional inclusion

A truly successful transition must also address the social dimension to prevent resistance to energy reforms. This involves:

- **Stakeholder engagement:** Ensuring public participation in decarbonisation strategies to build local support.
- **Social protection:** Implementing compensation mechanisms and re-skilling programmes to mitigate the impacts of subsidy reforms on vulnerable populations.

A competitive Mediterranean advantage

By enacting these measures, from establishing carbon pricing and phasing out fossil fuels to deploying smart grids and hydrogen backbones, the eleven MENAT countries can convert their natural resource endowment into a lasting competitive advantage.

This is not only a path to Net Zero emissions by 2050; it is a blueprint for a resilient, integrated, and inclusive Mediterranean energy system that serves as a pillar of regional stability and sustainable development.

8

Appendices

8.1 Data categories and indicators

General data	Energy Consumption	Energy Sources	Industry, commercial and public sectors
Macroeconomic indicators (GDP, population, inflation rate, exchange rate), climate data, fuel prices, etc.	Final energy consumption per sector	Solid fossil fuel, manufactured gases, natural gas, oil and petroleum products (excluding biofuel portion), renewables and biofuels, non-renewable waste, electricity, heat, hydrogen.	Added value of sectors (industry, commercial and public sectors), final energy prices, production for key industries

Households related data	Technologies and appliances used by households	Transport	Power and H_2
Sector-specific parameters (heating [%], cooling, cooking, etc.), specific energy demand for heating and cooling, Final energy prices, etc.	Heating, cooling, lighting, water heating, laundry, drying, dishwashing, refrigeration, cooking, etc	Passenger and freight mobility demand by mode of transport, final energy prices for transport consumers. TEC Transport: total registered vehicles by type and fuel (e.g., large gasoline-powered cars, etc.)	Power generation, electrolysers, hydrogen production and export, desalination.

8.2 Selected modelling parameters

	Unit of Measure	Historic data source
Macroeconomics and climate		
Population	Millions	World Bank
Household size	#	UN Households and size composition
Number of households	Millions	UN Households and size composition
GDP	M USD 2015	World Bank
GDP per capita	M USD 2015 per capita	World Bank
HDD	#	Copernicus Med-TSO
CDD	#	Copernicus Med-TSO
Industry		
Added value (industry)	M USD 2015	World Bank, UNIDO, national official sources, estimations by Med-TSO FP
Mining and quarrying	M USD 2015	
Chemical and petrochemical	M USD 2015	
Food and tobacco	M USD 2015	
Iron and steel	M USD 2015	
Machinery	M USD 2015	
Non - ferrous metals	M USD 2015	
Non - metallic minerals	M USD 2015	
Paper, pulp and printing	M USD 2015	
Textile and leather	M USD 2015	
Transport equipment	M USD 2015	
Wood and wood products	M USD 2015	
Construction	M USD 2015	
Industry not elsewhere specified	M USD 2015	
Physical production		
Primary chemicals	Mt	National official sources, estimations by Med -TSO FP
Steel	Mt	
Aluminium	Mt	
Paper and pulp	Mt	
Cement	Mt	
Glass	Mt	
Ceramics	Mt	

Commercial and public services		
Added value (commercial and public services)	M USD 2015	World Bank, estimations by Med-TSO FP
Agriculture, forestry and fishing		
Added value (agriculture, forestry and fishing)	M USD 2015	World Bank, estimations by Med-TSO FP
Households		
Energy services in the household		IEA, national official sources, estimations by Med-TSO FP
Heating	% on households	
Cooling	% on households	
Water heating	% on households	
Cooking	% on households	
Refrigeration	% on households	
Laundry	% on households	
Transport		
Number of vehicles		IEA, national official sources, estimations by Med-TSO FP
Passenger cars	#	
Motorcycles	#	
Buses and coaches	#	
LDV	#	
HDV	#	
Other vehicles	#	
Hydrogen and new electric usages		
Hydrogen production	kt/y	Med-TSO
Desalination plants	million m^3/y	
Data centres	MW	

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