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Chapter 2

Spatial Distribution of Population and Urbanisation



Abstract Populations are not randomly distributed across the Earth's surface. Some regions are almost empty, while others concentrate with a large proportion of the human population. Analysing the spatial distribution of a population is an exercise involving geography and demography. It takes place on different scales, both global and local, as given the striking uneven distribution of populations in the Mediterranean and all over the world. This chapter will begin by describing the Mediterranean settlement, emphasising the contrasts that exist at different scales, and then identifying regularities and explanatory factors. We will end by looking at the phenomena structuring the contemporary distribution of the population: metropolisation and coastalisation.

Keywords Urbanisation · Settlement · Spatial distribution of the population · Coastline · Mediterranean

2.1 Introduction

Populations are not randomly distributed across the Earth's surface. Some regions are almost empty, while others concentrate with a large proportion of the human population. Analysing the spatial distribution of a population is an exercise involving geography and demography. It takes place on different scales, both global and local, as given the striking uneven distribution of populations in the Mediterranean and all over the world.

These spatial contrasts in population distribution are an important element in the functioning of societies, i.e. in their organisation and their future. While the spatial distribution of a population provides an image of societies at a given time, it is also the result of phenomena that characterise human time: the short-time duration of individuals and generations, population dynamics and the long-term duration of societies. It is also the consequence of populations adapting, more or less, to their environmental constraints (accessibility of places, available resources, quality, etc.), i.e. their capacity to take advantage of the latter to settle and live there.

We will begin by describing the Mediterranean settlement, emphasising the contrasts that exist at different scales, and then identifying regularities and explanatory factors. We will end by looking at the phenomena structuring the contemporary distribution of the population: metropolisation and coastalisation.

2.2 Uneven Distribution of the Population

Spatial distribution of populations is quite heterogeneous throughout the world. Differences according to the chosen scale or the level of observation are always important. To describe this uneven distribution, it is customary to use population density, an interesting indicator since it relates a population to a given area.

The population density in the Mediterranean is 65 hbts/km² in 2020, which is slightly higher than at the world level (60 hbts/km²). However, this average value hides great disparities (Oliveau & Doignon, 2014). There are marked inequalities between the two shores: the Southern Shore is much less populated than the Northern Shore (35 hbts/km² and 125 hbts/km² respectively), and if we look at the Eastern Shore, the population concentration is similar to that of the Northern Shore (125 hbts/km²). Two out of three Mediterranean countries have a density between 60 and 130 inhabitants/km². However, Libya has only 4 hbts/km² and Algeria 15 hbts/km², as the extent of the desert regions is considerable in each of these countries. In contrast, the four most densely populated Mediterranean countries in 2020, apart from the city-states¹ (Monaco, Vatican, San Marino), are Israel (400 hbts/km²), Lebanon (550 hbts/km²), Palestine (830 hbts/km²) and Malta (1640 hbts/km²). This shows the extent to which the Near East, and especially its coastal strip, is one of the world's settlement centres.

If we look at the evolution of population densities since the middle of the twentieth century (Fig. 2.1), we see a general upward trend. The Mediterranean countries have seen their density multiply by an average of 2.5 between 1950 and 2020. The countries on the Northern Shore have generally experienced a weaker evolution: their density has been multiplied by less than 1.8, excluding Kosovo and Albania, where the multiplication coefficient is 2.2 and 2.3 respectively. On the other hand, the densities of the countries on the Southern and Eastern shores have been multiplied by at least 3, sometimes by more than 5 (Egypt, Palestine, Syria, Libya, Israel), and by 25 for Jordan. This sustained evolution is the result of later and faster demographic transitions than on the Northern shore, resulting in high rate of natural change (see Chap. 4). Migration can sometimes accentuate this population growth, as in Israel and Jordan (Chap. 9), but also occasionally, as in Lebanon in 2013–2015 with the arrival of Syrian refugees.

¹ In 2020, the population density is 24,780 hbts/km² in Monaco, 2,000 hbts/km² in the Vatican and 557 hbts/km² in San Marino.



Fig. 2.1 Evolution of the population density in the Mediterranean (1950–2020) (*Source* World Population Prospects 2022. *Note* the most densely populated countries (Israel, Lebanon, Malta, Palestine) are placed in a separate graph so that the evolution of the other countries can be seen more clearly)

Although the general trend over the period 1950–2020 is towards an increase, we nevertheless observe decreases in population density in certain countries, as envisaged 20 years ago by Attané and Courbage (2004). This concerns a large part of the Balkan countries since the 1990s (Albania, Croatia, Serbia), or the 2000s (Bosnia-Herzegovina, Greece). These downward trends are mainly due to a declining demographic regime (Chap. 4). Kosovo and Bulgaria show interesting trajectories. The

former saw a sharp drop in population density following the Kosovo war (1998–1999), from 200 hbts/km² in 1997 to 170 hbts/km² in 2000. The country then experienced significant emigration, leading to a continuous decrease in population density, which reached 150 hbts/km² in 2020, the level of the early 1980s. Bulgaria's population density has been decreasing since the early 1980s, and in 2020 it returned to the same level as in 1950, a unique case in the Mediterranean (Doignon, 2023). Very recently, some Southern European countries are starting to see their population density decrease as well, such as Portugal and Italy.

An analysis of population densities at the country level provides a general overview of the situation. Nevertheless, strong disparities in population density are generally visible at the sub-national level. France has an average density of 115 hbts/km², but this masks the wide variations that exist: the least dense communes have less than 5 hbts/km² and the densest ones exceed 20,000 hbts/km². Similarly, a country like Egypt has an average density comparable to France (of 110 inhabitants/km²), but due to the size of the Saharan regions, it is actually mostly empty. In contrast, the Nile, and more particularly its delta, has very high densities. Rural areas can exceed 1,000 hbts/km², which is unusual outside monsoon South and East Asia, and Cairo reaches 40,000 hbts/km² (Oliveau et al., 2023).

Thus, the contrasts are reinforced when the Mediterranean settlement is mapped at a finer level (Fig. 2.2). Two main spatial structures can be observed. Firstly, there is the contrast between large, densely populated urban areas and less populated rural areas. This division is clearly visible in Spain with Madrid and Barcelona, in Turkey with Istanbul and Ankara, in Bulgaria with Sofia and in France with Paris. The second spatial structure is the contrast between the coast and inland. Of those living within 200 km of the Mediterranean,² about half are less than 50 km away, and 30% less than 10 km. This shows the extent to which the Mediterranean population is concentrated on the coast. On the Southern and Eastern shores, this difference is very marked between the large concentrations of populations on the urbanised coastlines and the much less dense desert inland region. This phenomenon is particularly striking in North Africa (from Morocco to Benghazi in Libya) and in the Near East (from the northern Sinai Peninsula to the Cilicia plain in Turkey). Egypt is a unique case in the Mediterranean. Indeed, unlike other regions, its settlement is not structured by the contrast between the coast and the inland region, but by a general contrast between the Nile and the rest of the country, even if some parts of its coastline are densely populated.

This coastal-inland spatial structure is also visible in Southern Europe, but with a less dense coastal strip. On the other hand, it is hardly found in the Balkans, where the densely populated areas are not located on the coast, but rather in the inland plains or valleys of the mountain ranges.

In general, and for several decades, the inland regions of the various shores of the Mediterranean have been marked by a population decline (Coudert, 2013; Liziard, 2013).

² Only the population of the countries we have defined as Mediterranean is included in this calculation (see introduction of this book).

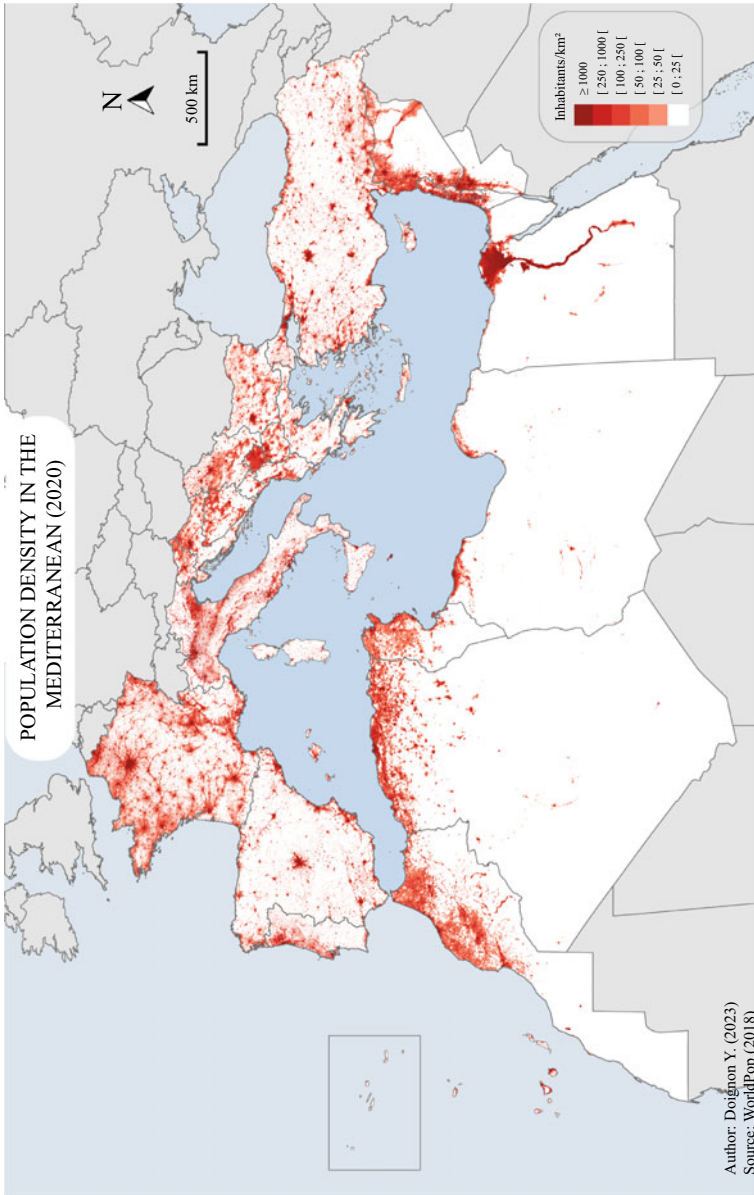


Fig. 2.2 Population density in the Mediterranean (2020) (Source WorldPop [2018] [Population Density, Unconstrained UN adjusted, ³ 1 km resolution])

³ Only the population densities of Kosovo are not adjusted by those of the UN. Indeed, WorldPop used the World Population Prospects 2019 data, in which Kosovo's data were still aggregated with Serbia's.

2.3 Far from Determinism: Opportunities and Constraints of Mediterranean Areas

It is always tempting to look for determinants of observed density inequalities in physical conditions, but “simplistic attempts to justify densities by physical constraints have failed. The distribution of people seems, a priori, remarkably poorly correlated with climate, or even with vegetation”⁴ (Dubresson et al., 2011). This observation made for Sub-Saharan Africa also applies to the Mediterranean area, which is characterised by a typical climate bearing its name, with hot, dry summers and mild, wet winters.

Nevertheless, the dominant role of water remains visible. The sea is the structuring element of this area, where the coastlines are generally densely populated regions. Rainfall is a major constraint on agriculture, while rivers offer opportunities. However, situations cannot easily be fitted into standard models, and it is necessary to consider the various combinations of factors, always with possible retroaction.

Thus, distance to the sea (and to water in general) seems to be an important element, although not the only explanatory factor. For instance, Mediterranean populations are mainly located in direct proximity to the sea (Fig. 2.3).

The population density within 10 km of the sea exceeds 400 hbts/km² in 2020, then decreases rapidly with distance, reaching about 100 hbts/km² from 40 km of the Mediterranean. However, the situation in Libya and Egypt reminds us that this general relationship is not so simple and is not observed everywhere, as areas near the sea have very low densities. Further north, although there is no desert, the low densities of the Balkan coast of the Adriatic Sea stand in stark contrast to the high densities of the western coast in Italy. The first is characterised by a very mountainous coastline, notably with the Dinaric Alps. Only the Albanian coastal plain with high population densities seems to be an exception.

Mountains are also part of the Mediterranean landscape. It should be remembered that the Latin name for the Mediterranean, *mare Mediterraneum*, means “sea in the middle of the earth”. Mountains are present almost everywhere, but their relationship to human settlement is varied. In the Libyan desert, Jebel Akhdar offers a green space which saw the establishment of the ancient city of Cyrene and which remains today one of the rare populated areas of the country, with the region of Tripoli, at the foot of Jebel Nefoussa. Conversely, the mountains of Provence are much less populated than the plains, and the same is true in Italy and Lebanon (Verdeil et al., 2007). As for the Balkans, whose very name refers to the mountain range (Balkan Mountains/stara planina) crossing Bulgaria, the mountains are omnipresent, but do not determine human settlement. In contrast, the highest densities are found in the inland plains, such as the southern Pannonian Plain in Croatia and Serbia, or in the valleys of the mountain ranges.

⁴ This text has been translated into English by the authors. The original text in French is as follows: “les tentatives simplistes de justification des densités par des contraintes physiques ont fait long feu. La répartition des hommes paraît, a priori, remarquablement mal corrélée au climat, voire à la végétation”.

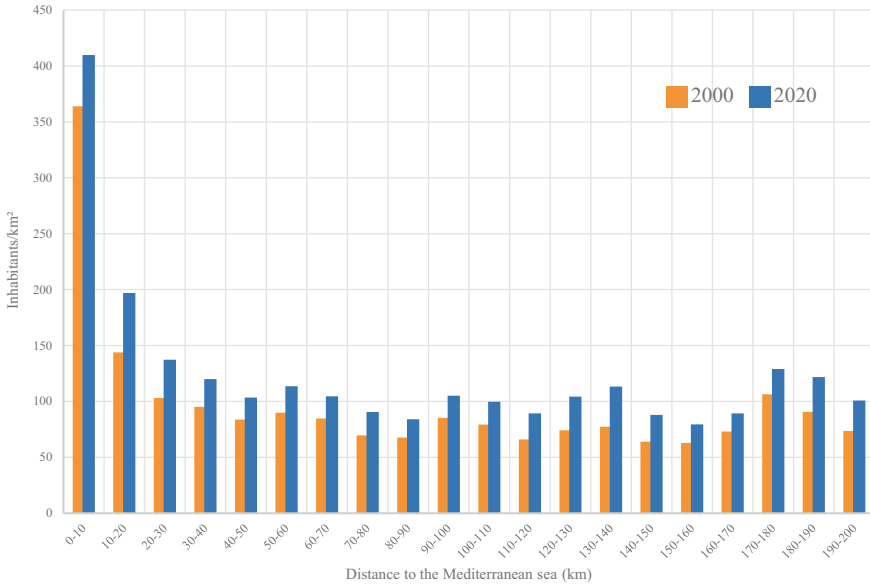


Fig. 2.3 Population density according to distance from the Mediterranean in 2000 and 2020 (Source WorldPop [2018] [Population counts, Unconstrained UN adjusted, 1 km resolution])

However, water is the only element that seems to play a dominant role everywhere. The sea coast, as we have already said, but more generally the rivers, strongly structure the Mediterranean settlement, more than any other environmental element. We could take the example of the Nile to convince ourselves of this, as it is the most visible. However, the structuring effects on the settlement of other rivers are just as obvious if we look at the Rhône, the Loire and the Seine (France), the Po and the Tiber (Italy), the Ebro and the Guadalquivir (Spain), the Jordan (Lebanon, Syria, Jordan, Israel, Palestine), the Euphrates and the Khabur (Syria) or the Tigris and the Gediz (Turkey). There are of course exceptions, the low densities of the Rhône Delta in France being a good counter-example to the concentrations observed in the Nile Delta.

2.4 A Very Coastal and Increasing Urbanisation

The Mediterranean is a place of ancient settlement and urbanisation. Mediterranean societies at the beginning of the modern era were characterised in particular by a peasant population settled in villages or small towns rather than in scattered settlements (Huebner, 2016), especially in North Africa (Tabutin et al., 2002). As an area of great circulation, the Mediterranean was very early on woven with cities and ports, the traces of which are still visible today, in a more or less visible way depending

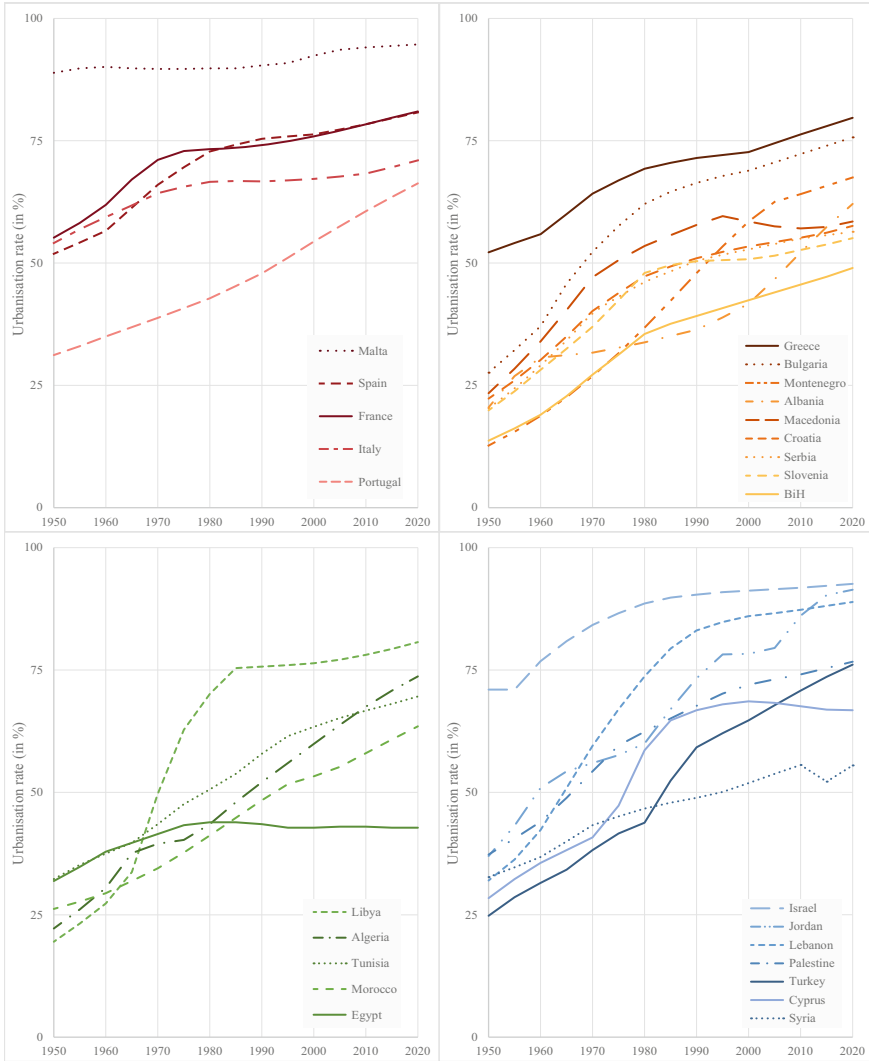


Fig. 2.4 Urbanisation rates in the Mediterranean (1950–2020) (Source World Urbanization Prospects 2018)

on the region. Nevertheless, the populations of the countries bordering it were still predominantly rural in the mid twentieth century (Fig. 2.4).

Indeed, 7 out of 10 Mediterranean countries had an urbanisation rate⁵ below 50%. As a regional average, 34% of the Mediterranean population lived in a city in 1950. Some countries had very low levels, such as Montenegro, Bosnia-Herzegovina, Libya

⁵ The urbanisation rate measures the proportion of the population living in cities. When it is below 50%, it means that a majority of the population lives in rural areas.

and Slovenia, where less than 20% of the population lived in urban areas. Conversely, 6 countries had a predominantly urban population, mainly in Southern Europe (Spain, Italy, France, Malta), and also in Israel and Greece.

Since 1950, there has been an increase in urbanisation in all countries without exception. In 2020, 70% of the Mediterranean population was urban (regional average). All countries have an urbanisation rate above 50%, with the exception of Egypt (43%). The least urbanised countries are mainly found in the Balkans (Bosnia-Herzegovina, Slovenia, Serbia, Macedonia), and also in Syria. Egypt's trajectory is unique, as its urbanisation rate increases between 1950 and the mid-1970s, and then stagnates until the present day. Other countries have seen their urbanisation rates stagnate, such as Macedonia and Cyprus since the mid-1980s. Malta is the most urbanised country in the Mediterranean, with an urbanisation rate of almost 95% in 2020, and already 90% in 1950.

This general increase in urbanisation indicates a progressive concentration of the population in small areas (cities). In fact, the Mediterranean population is becoming increasingly concentrated in space. As we have already noted, the coastline concentrates populations, but these populations are also attracted to the cities, and the coastal villages are becoming urbanised.

According to the World Urbanization Prospects 2018 data, there were 163 urban agglomerations in the Mediterranean with more than 300,000 inhabitants in 2018 (Fig. 2.5). Of these cities, about 1 in 4 has more than one million inhabitants, and 60% of them are on the Southern and Eastern shores. In addition, there are 3 cities with more than 10 million inhabitants: Cairo (18.8 million), Istanbul (14.1 million), and Paris (10.7 million). The first two are among the 20 largest cities in the world. Since 1950, although almost all the cities in the Mediterranean countries have seen their populations increase, they have done so at different rates. The population growth of the cities on the Northern Shore has generally been more moderate. In fact, 80% of the cities on the Southern and Eastern shores saw their population multiply by at least 5 between 1950 and 2015, while the population of those on the Northern shore multiplied by 2 on average. In some cases, the increase has been particularly significant, such as Antalya (Turkey), which has gone from 27,000 inhabitants to 1.5 million today, a 40-fold increase in population. Amman, the Jordanian capital, has seen its population increase from 100,000 to over 1.7 million (a 20-fold increase). As a result of this very rapid urbanisation on the Southern and Eastern shores, partly due to a rural exodus and demographic transition, the large cities have seen the emergence of slums (Puschmann & Matthijs, 2016). These trends partly explain the significant increase in population density in coastal areas (Fig. 2.3).

The cities of the Mediterranean countries are characterised primarily by their coastal location. Indeed, 25% are located within 5 kms of the Mediterranean Sea, and 50% within 100 kms. Thus, many of the cities with more than one million inhabitants are ports: Barcelona, Marseille, Naples, Athens, Istanbul, Antalya, Izmir, Alexandria, Port Said, Tangiers, Haifa, Beirut, Tripoli, Tunis, Algiers, etc. 8 countries bordering the Mediterranean have a coastal capital, thus underlining the long-standing role of this sea in international trade. Some of these cities are also very old, generally dating back to antiquity, especially in the Middle East (Reba et al., 2018). This is particularly

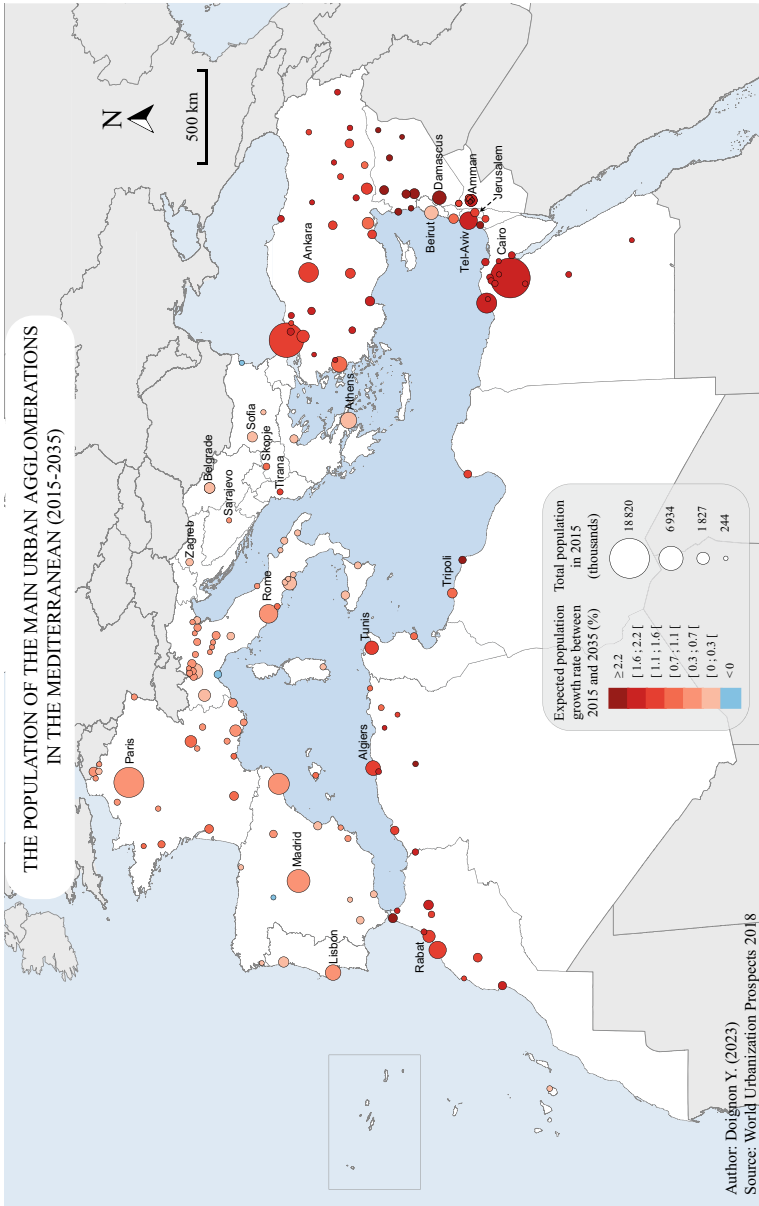


Fig. 2.5 Population of agglomerations with more than 300,000 inhabitants (2015), and projected population change between 2015 and 2035 (Source World Urbanization Prospects 2018)

evident between Istanbul and Alexandria, where there are many agglomerations with more than 300,000 inhabitants. The specific situation of the Balkans, where, with the exception of Greece, none of the countries has a coastal capital and where there are few large cities, should be recalled here.

Today, the settlement pattern is changing, and these cities are mainly taking advantage of longstanding benefits which they are converting to maintain their regional primacy. Urban settlement is spreading inland and the coastal location often becomes an asset for tourism or quality of life, rather than a necessity for the industrial or agricultural economy. From urbanisation, which concentrated inhabitants in cities, we have moved on to metropolisation, which agglomerates them in vast spaces comprising the central city, its suburbs and its outskirts sometimes over great distances. In France, for example, the urban fabric is now almost continuous along the Mediterranean coast and sometimes penetrates up to 50 km inland (Aix-Marseille metropolis). The same phenomenon can be observed in Spain, and to a lesser extent in many other countries, such as Libya, where the Tripoli conurbation now stretches almost 150 km from west to east (Moriconi-Ebrard & Pascal, 2020).

Tourism plays an important role in these settlement developments in several countries. In Western Europe, the shores of the Mediterranean attract a population of seasonal tourists, and also migrants who come to enjoy the living environment for their retirement (Doignon et al., 2017). In addition to these populations, there are also migrant populations who come to work from within the country or from abroad. These different populations can sometimes have a significant impact on the settlement. This is particularly the case in Spain, where the flow of retired foreign residents and the flow of workers to the Mediterranean coasts make it possible to maintain population growth in these regions (Oliveau et al., 2019).

Projections from the World Urbanization Prospects 2018 envisage that this urbanisation trend will continue to 2035, reinforcing both the urbanisation of all countries and the littoralisation of their population. For instance, the urbanisation rate in Mediterranean countries is expected to reach 80% by 2050. The population of agglomerations with more than 300,000 inhabitants in 2018 is expected to continue growing until 2035. This growth will again be greater in the cities of the Southern and Eastern shores, but at a lower rate than between 1950 and 2015 (Fig. 2.5).

2.5 Settlement Challenges in the Mediterranean

To conclude this chapter, we now turn to the settlement challenges that Mediterranean areas will face in the coming decades. Although the Mediterranean population is very heterogeneous and it is difficult to characterise it by a single trait, the populations share a common sea, a typical climate and fragile natural environments.

Although the degree to which the coasts are inhabited by humans is heterogeneous, the high level of coastal population poses real problems of pollution. The Mediterranean is one of the most polluted seas in the world, especially with plastics (Alessi & Di Carlo, 2018). Pollution of maritime waters is a real issue, too often left

to the goodwill of States. This is significantly exacerbated by the poor management of waste generated by mass tourism, and the ever-increasing concentration of the population on the coastline. Pollution of maritime waters is also dependent on pollution, particularly industrial pollution, carried by the large rivers that flow into the Mediterranean, as is the case with the heavy metals discharged by the Rhône or the nitrates transported from agricultural areas. These various forms of pollution threaten one of the Mediterranean's major reservoirs of marine and coastal biodiversity.

Human pressure on the coasts is already very strong and is expected to increase, accentuating the constraints on nature and the human beings that occupy it. In the summer of 2021, fires were exceptionally widespread along the entire Mediterranean coastline (in Italy, Greece, Algeria, Turkey and the Balkans). Fires are one of the major threats facing the Mediterranean, as are tensions over water resources, coastal flooding, etc. Human pressure is therefore felt not only by nature, but by the settlement itself. It is true that climate change increase (also of human origin) is an aggravating factor; however it is primarily the presence of humans that is to blame. These fires are perhaps only the most dramatic part of the effects of climate change. Floods and flash floods are also increasing, due to the combined effect of land artificialisation on the one hand, and changes in rainfall patterns on the other.

Ultimately, the current settlement of the Mediterranean raises the question of its effects on ecosystems. Natural hazards are a real problem for societies (Laria, 2008). They will be accentuated by the densification of the population, the significant littoralisation of the population, urbanisation and climate change. The question is therefore that of the sustainability of the settlement in these conditions, and of the adaptation of societies, since the changes brought about will be inevitable (Borderon, 2023).

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