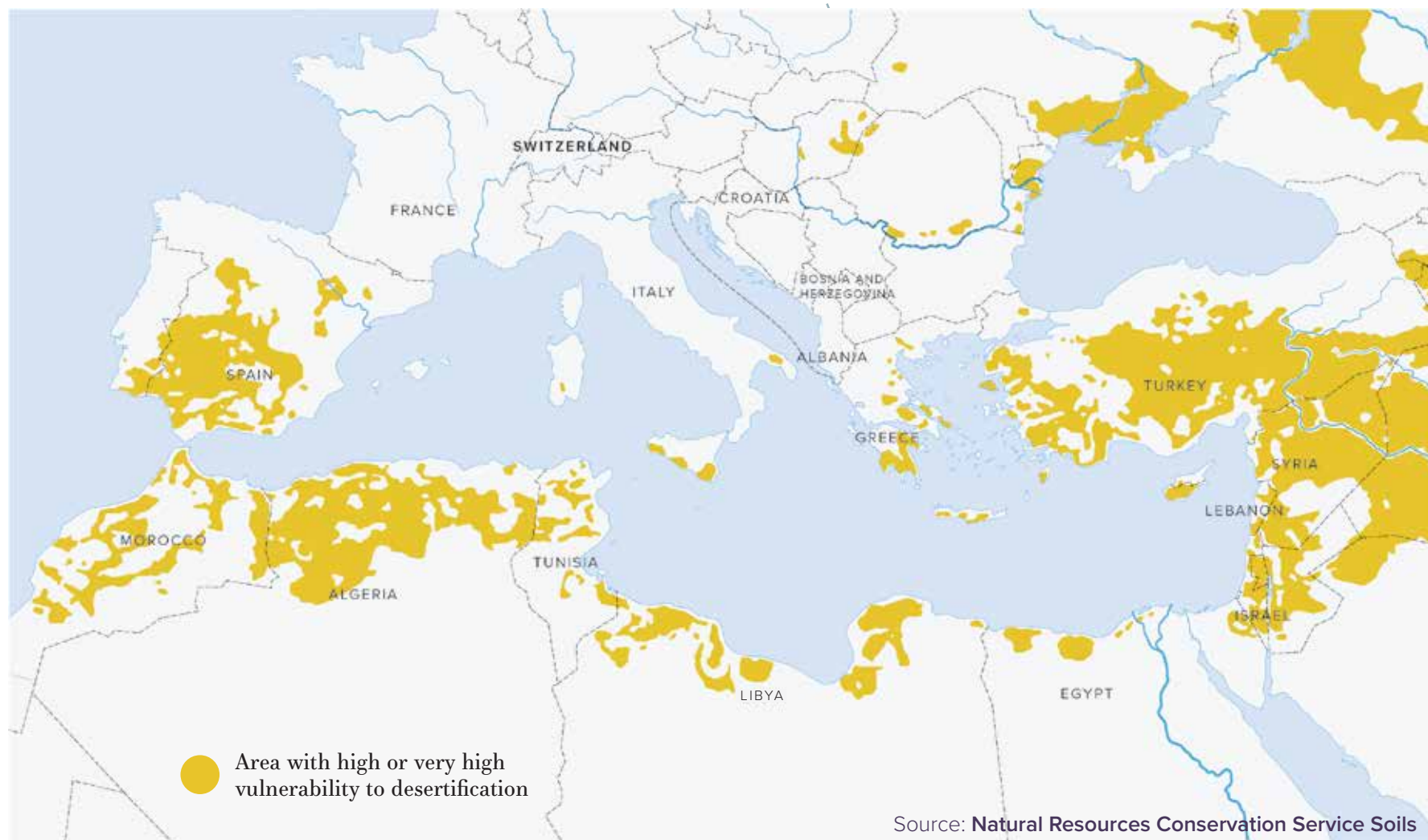


Climate Change & Security in the Mediterranean basin

and potential implications for Switzerland

Research suggests that an increase of already 1.5 degrees Celsius in global temperature will catalyse a mass expansion of desertification in the Mediterranean region and bring unparalleled changes.

Vulnerability to desertification

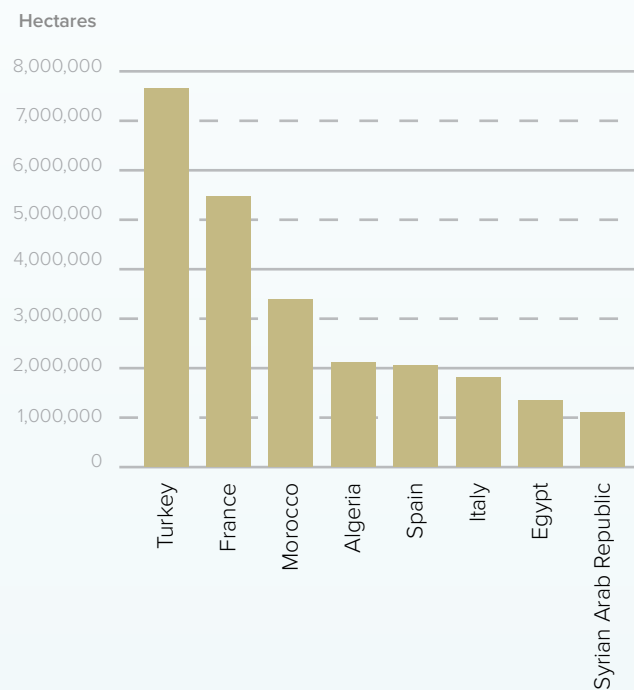


Agricultural production

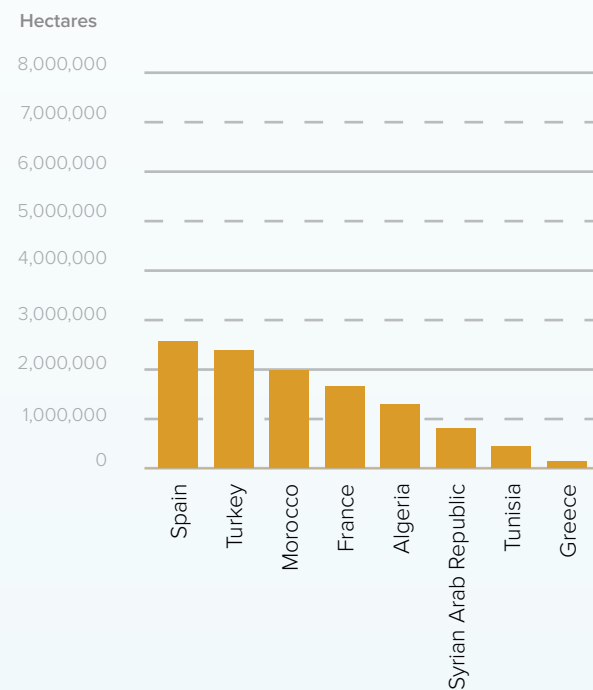
of selected crops in the Mediterranean basin in 2017

Climate change has severe impacts on people's lives around the Mediterranean Sea. The total harvested area for staples – wheat, barley, and olives – will decline as a result of increased desertification, significantly affecting the availability of food and the generation of agricultural income in the region.

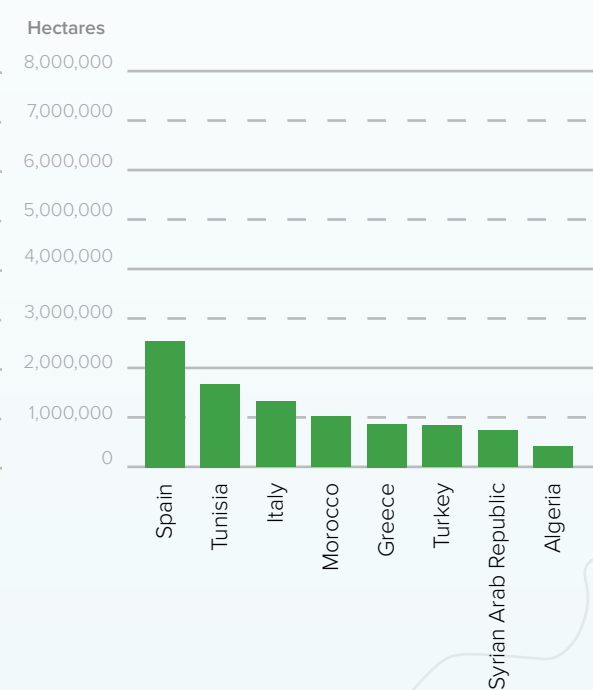
Wheat



Barley



Olives

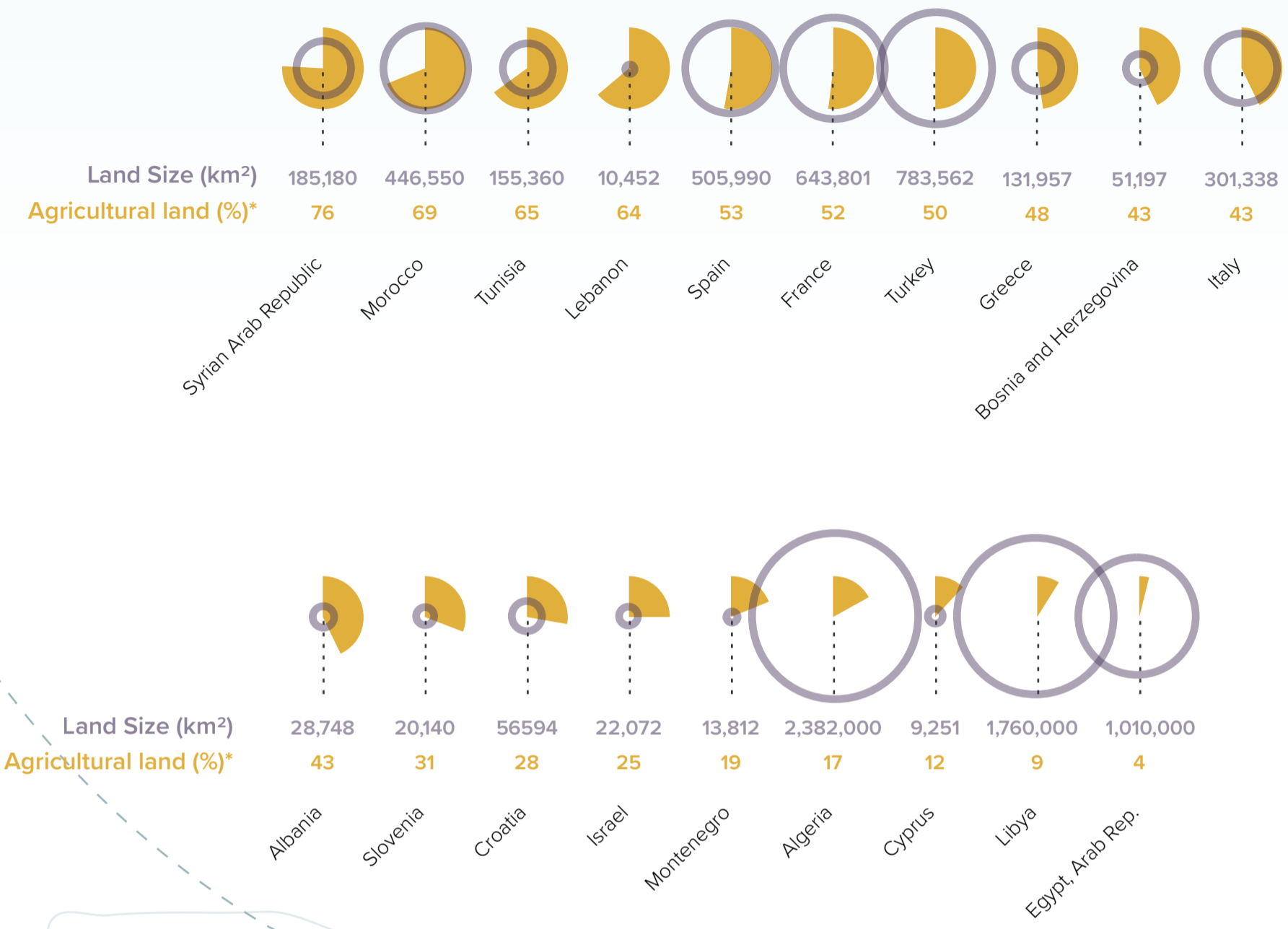


Source: Food and Agriculture Organization, 2017

The Mediterranean region produces close to 100% of the olive oil, 60% of the wine, 45% of the grapes, 20% of the citrus, and 12% of the cereals in the world. Declines in crop yields and in the nutritional value of food will lead to high risks of food insecurity.

Agricultural land

in the Mediterranean basin in 2017



* share of land area that is arable, under permanent crops, and under permanent pastures

Source: Food and Agriculture Organization, 2017

Agriculture plays a vital role in the economy of Mediterranean basin states providing livelihoods for farmers and fueling international trade. The agricultural industry's broad susceptibility to higher temperatures, reduced precipitation, and flooding imply a significant decrease in productivity and earning potential in this key sector.

Impact on Switzerland

As the impacts of climate change reduce GDP in countries in the basin, their purchasing capacity will also decline, as will their import of Swiss products.

Climate impacts on productivity

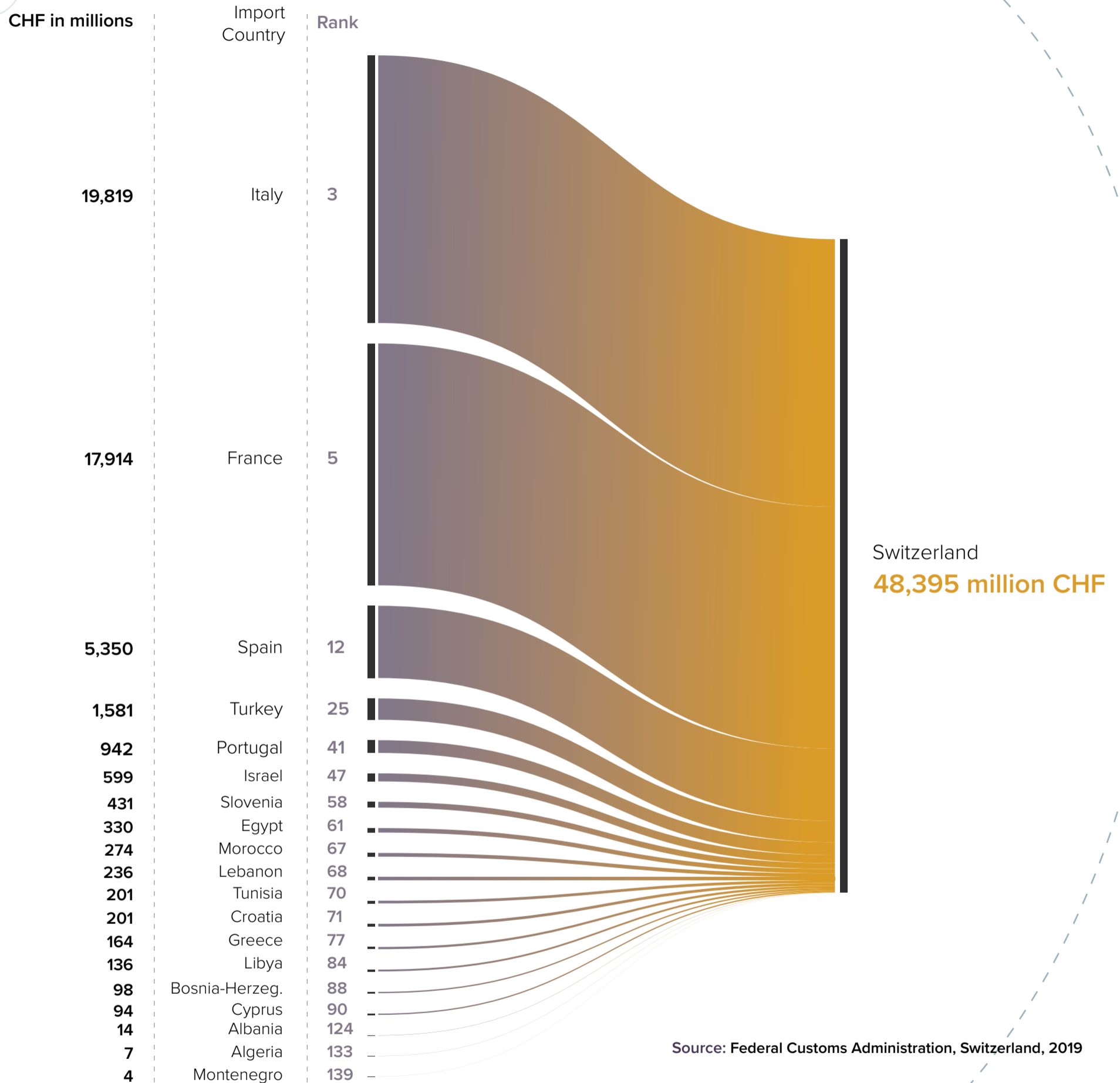


Experts predict that a temperature increase of **2 degrees C** will result in a 20% decrease in precipitation, **rampant desertification**, and submerged land due to **sea level rise** and intense flooding in the Mediterranean Basin. Agricultural output will decline by as much as 25% by 2050.

Impact on Switzerland

The expected increase in natural disasters and the degradation of coastal areas, combined with a rise in poverty across the Mediterranean, will result in an overall decline in the quality of life, and will call for increased humanitarian engagement.

Swiss imports by trading partner in the region, 2017



Source: Federal Customs Administration, Switzerland, 2019

Impact on Switzerland

Among all of Switzerland's trading partners, Italy ranks third in terms of exports to Switzerland, France ranks fifth, and Spain is twelfth. Collectively the other Mediterranean basin countries export roughly as much as Spain. The proportion of agricultural products sensitive to climate change is in general higher in the south than in the north of the Mediterranean Sea.

Tourism

Climate change is likely to affect warm-weather tourism in the Mediterranean basin as rising temperatures make the region more uncomfortable and less attractive, especially during the high season. Eventually, sea level rise will alter the coastline, and may destroy important landmarks and beachfront hotels, and put popular beaches permanently under water.

These factors may increase tourism within Switzerland itself as people are less likely to go to Mediterranean destinations.

Country-specific impacts from climate change

Spain

To date, economic costs related to desertification in Spain are estimated at \$200 million.

France

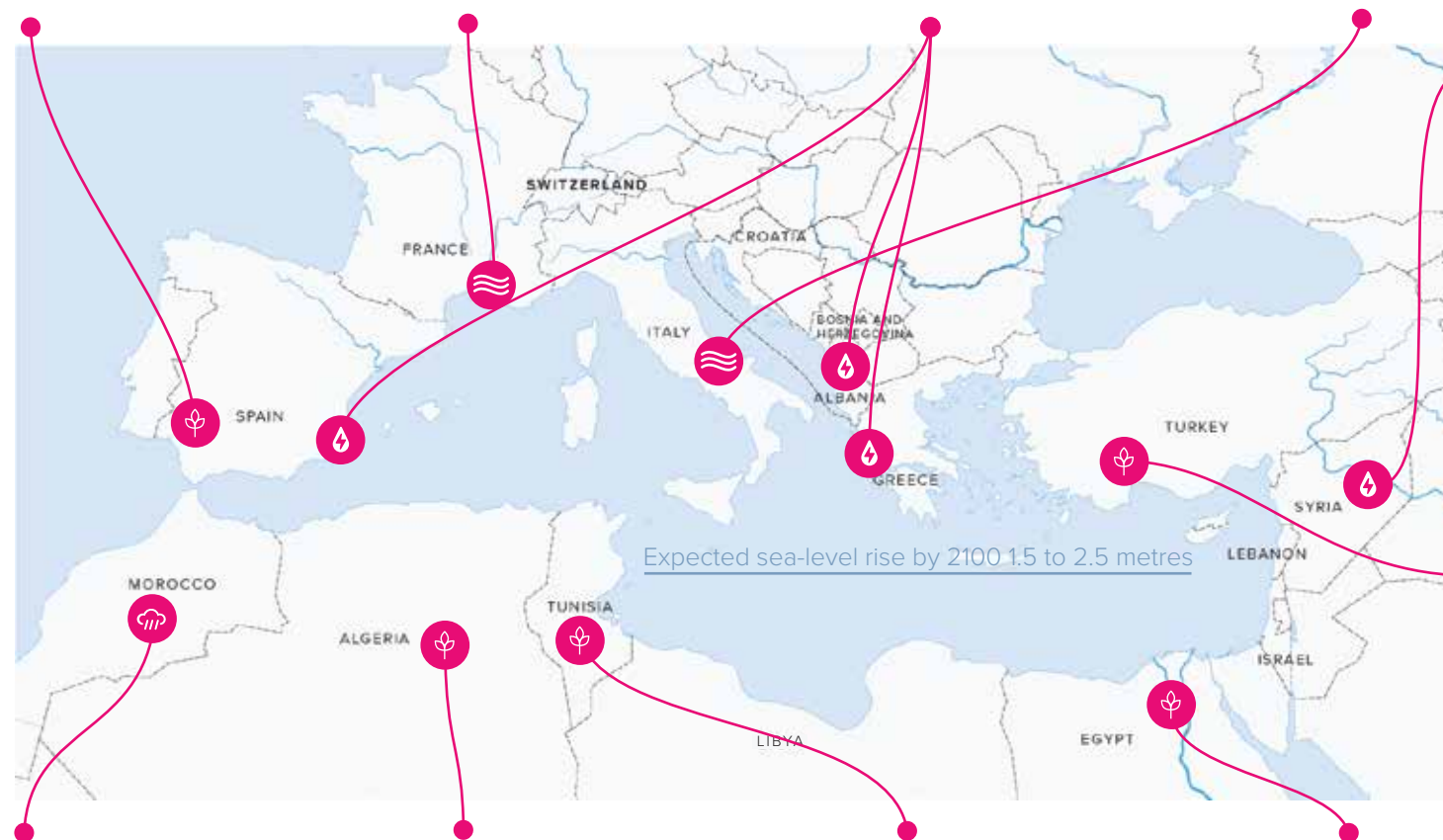
In 2015, the French Riviera experienced intense flooding that resulted in the deaths of 19 people. Instances of heavy flooding are likely to increase and put more people and facilities near the coast at risk.

Spain, Greece, Albania

Spain, Greece, and Albania draw significant power from hydroelectricity, and as reservoirs shrink in volume, these countries will face some of the most severe consequences for energy production.

Italy

Rising sea levels threaten such UNESCO World Heritage sites as Pompeii and Herculaneum, the city of Venice, and Pisa's famous tower with complete destruction.



Syria

Hydropower is an important component in Syria's energy production, and the country already suffers from diminished water availability. Rising temperatures are likely to put further strain on a region attempting to cope with intense conflict.

Turkey

Turkey's rich biodiversity is at high risk from climate change impacts. Limited water resources, increasing human demands, and uneven distribution place a heavier burden on biodiversity and access to water across the country.

Morocco

Morocco, which has suffered 20 years of drought in the past 70 years, will face a further 20% decrease in precipitation, harshly reducing their water availability.

Algeria

Desertification and declining water availability could lead to poor harvests and the degradation of more than 50 million hectares of land in Algeria, leading to rapid migration to cities.

Tunisia

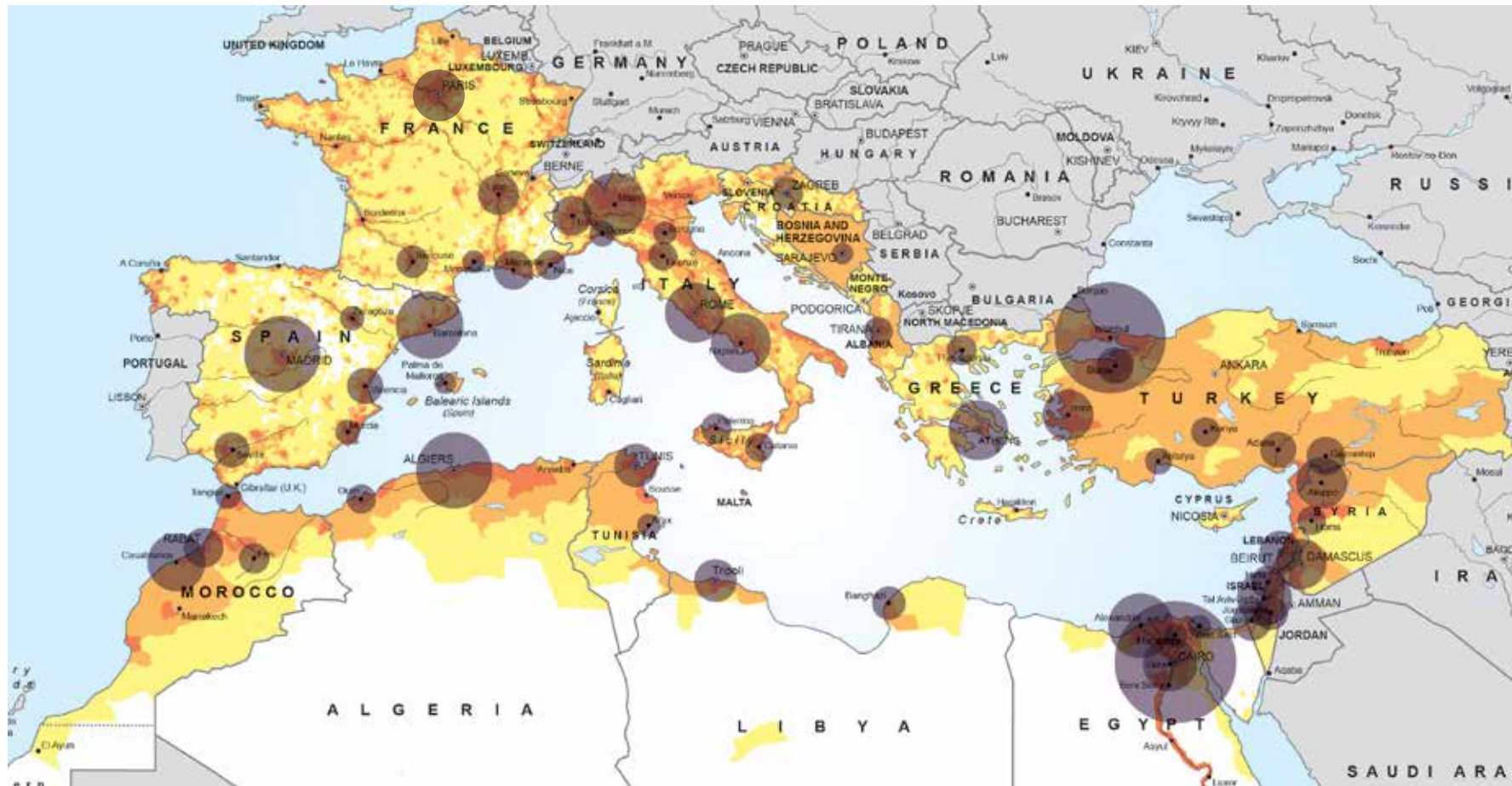
A 30% reduction of arable land by 2030 in Tunisia will lead to 5-10% GDP loss. To date, economic costs related to desertification are estimated at \$100 million.

Egypt

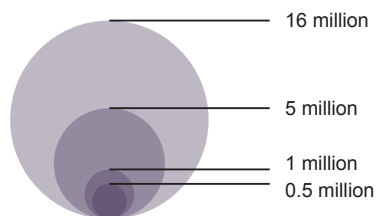
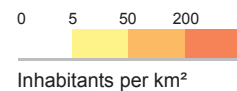
With its limited agricultural areas, Egypt may see a complete termination of agricultural production.

Population

Many of the threats of climate change will be exacerbated by an increasing population. The results may yet include further reductions in available agricultural land, large populations susceptible to flooding from sea level rise, and a greater strain on resources.



Population in urban centres
(Estimation where data not available)



Sources: **Center for International Earth Science Information Network (CIESIN), Columbia University; World Gazetteer**

The population currently living in the Mediterranean basin numbers more than 500 million. Food shortages, limited water supply, and reduced inhabitable area will have severe consequences on a substantial number of the world's population.

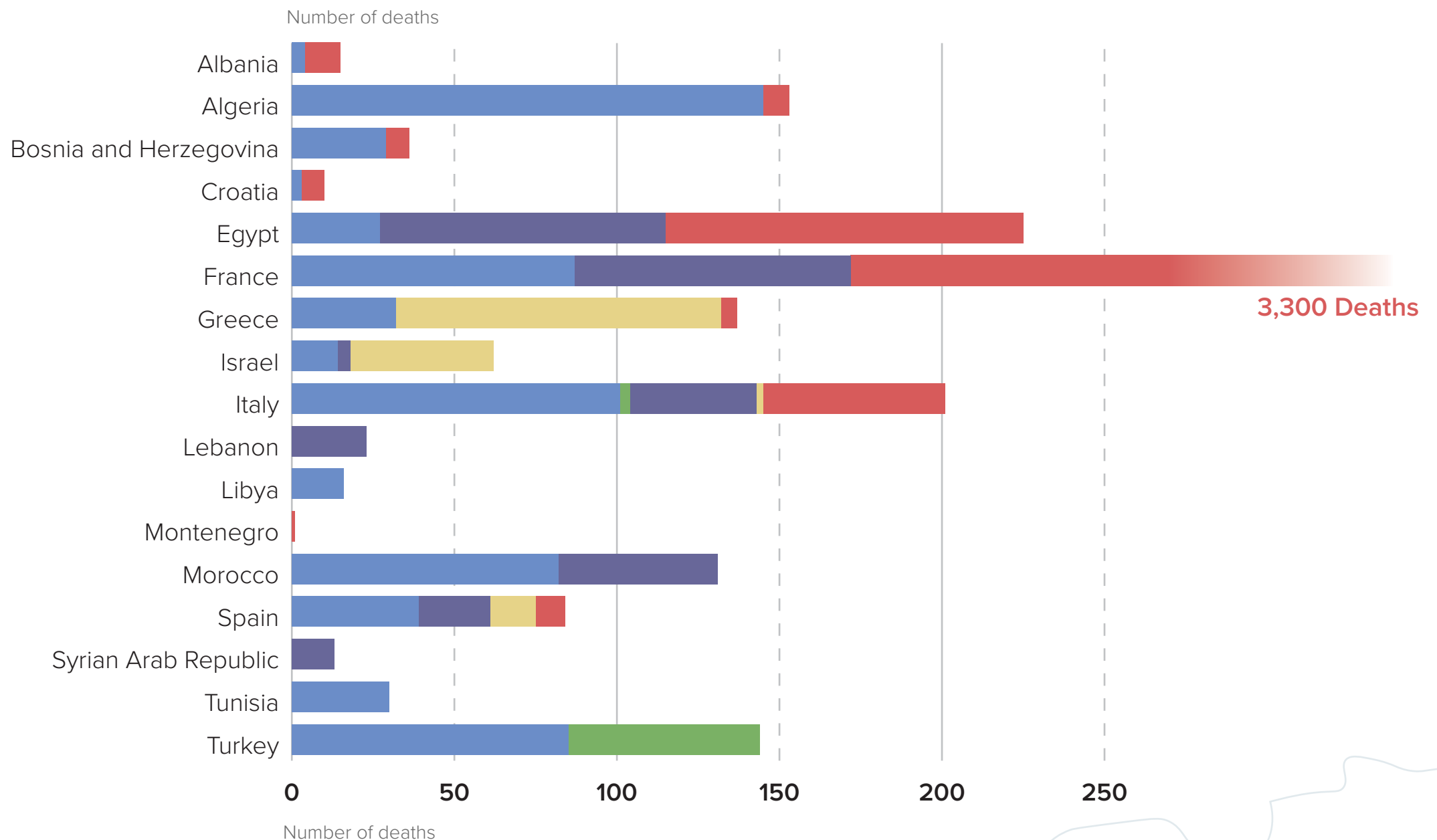
Climate-related Disasters, 2009-2017

The impact of natural disasters in the Mediterranean region is sizable, with more than 4,753 deaths and USD 31 billion in damage in the last decade. Increased instances of disasters will further impact human safety and the countries' economic status, and will increase displacement.

Deaths caused by climate-related disasters

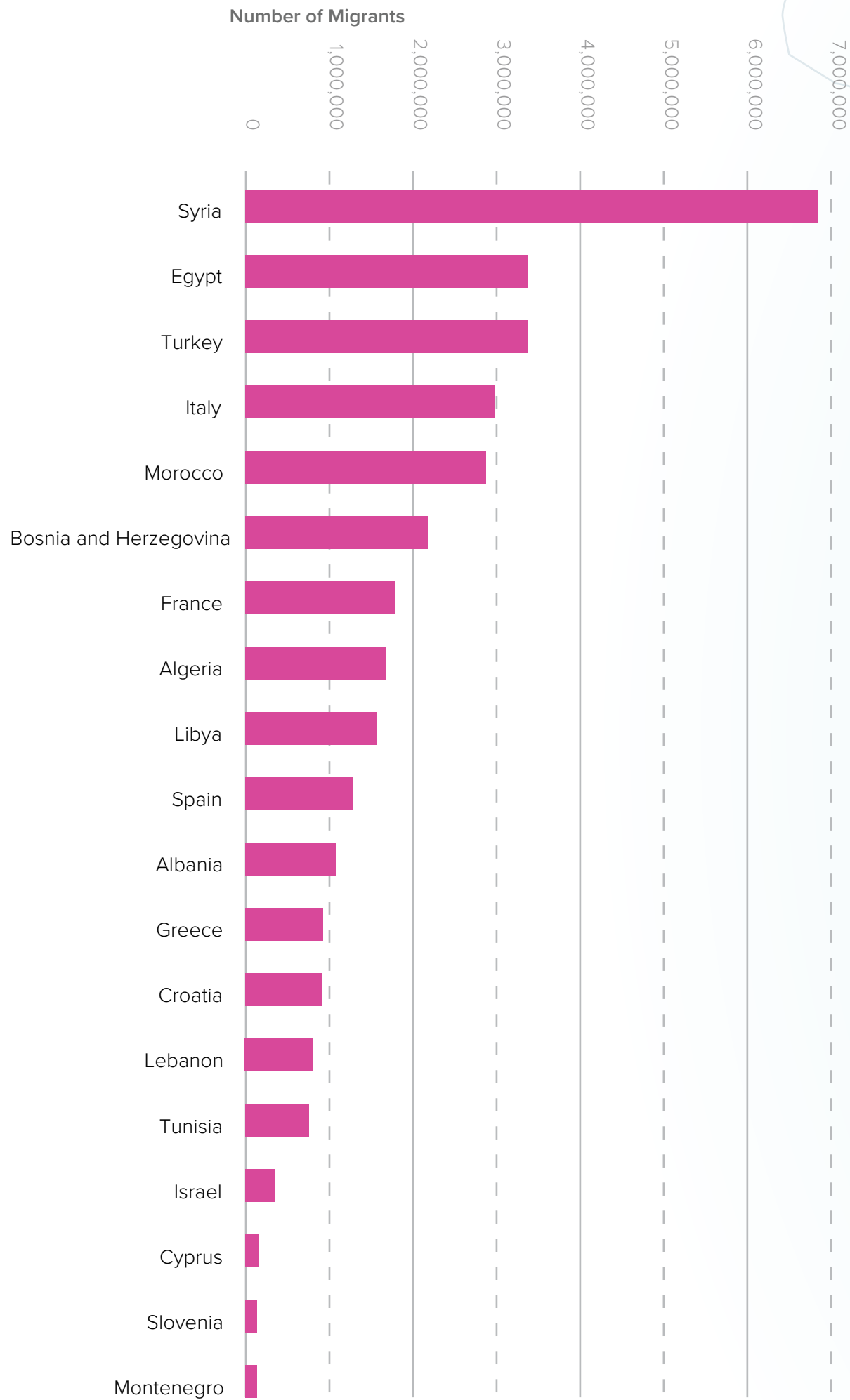
Type of disaster

-  Flood
-  Landslide
-  Storm
-  Wildfire
-  Extreme temperature



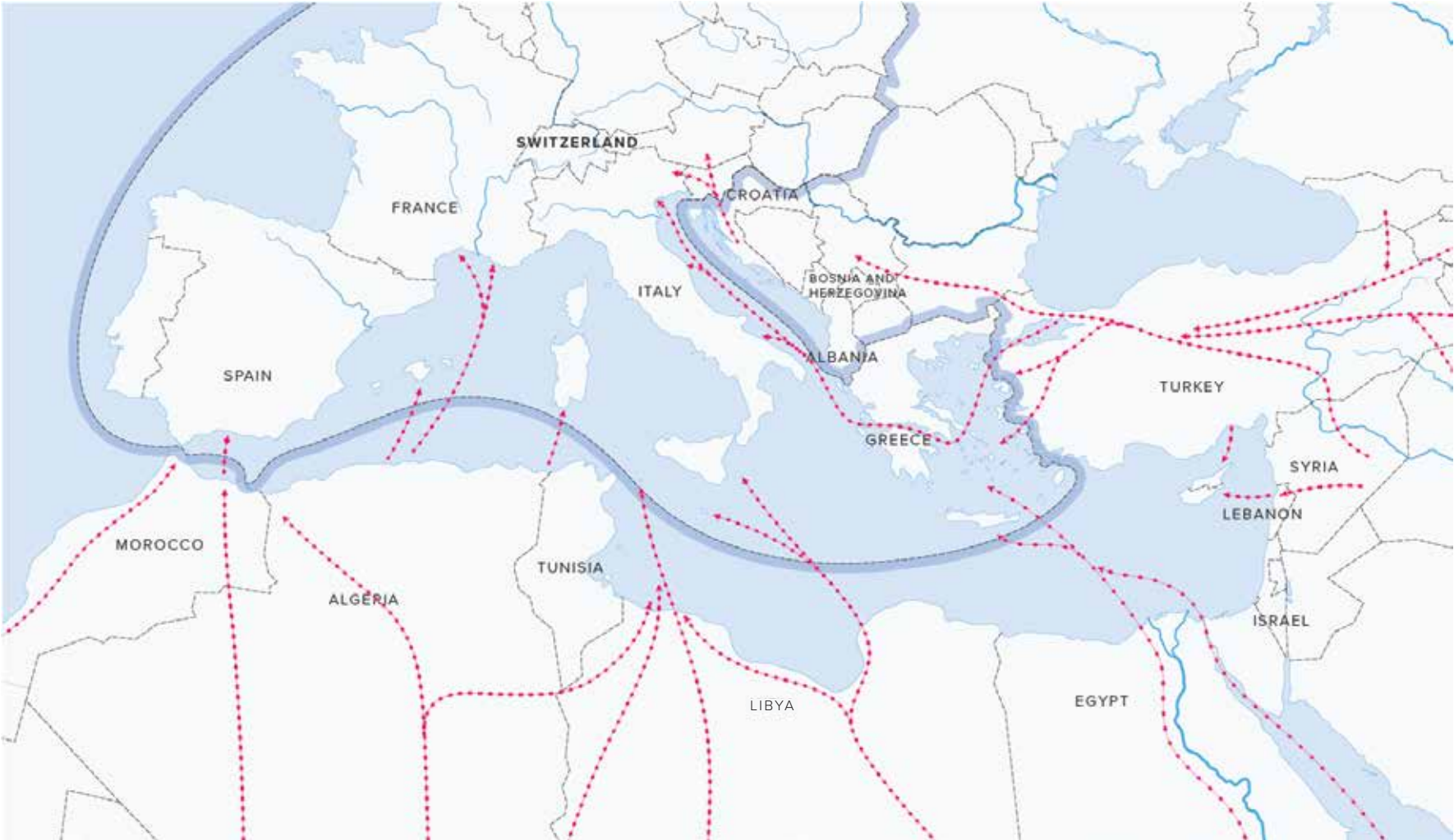
Source: EM-DAT: The Emergency Events Database - Universite catholique de Louvain (UCL) - CRED, D. Guha-Sapir - www.emdat.be, Brussels, Belgium

Emigration rates in 2017



Climate change is a threat multiplier that worsens social, economic, and environmental pressure. Together they can cause more instability and more displacement as impacts intensify.

Main migration routes to Europe



Source: MTM Map on Mediterranean and African Irregular Migration Routes, ICMPD, EUROPOL, FRONTEX

..... Migration Route

———— Schengen Border

Impact on Switzerland

Rising sea levels, flooding, severe droughts, and increased intensity and frequency of natural disasters may render some areas uninhabitable, leading to forced migration of millions of people. Increasingly, the local population of coastal countries may be moving on the main migration routes to Europe.

Switzerland is among the top 25 most attractive countries for immigrants in the world.

Climate Change hotspot

Egypt's Nile Delta

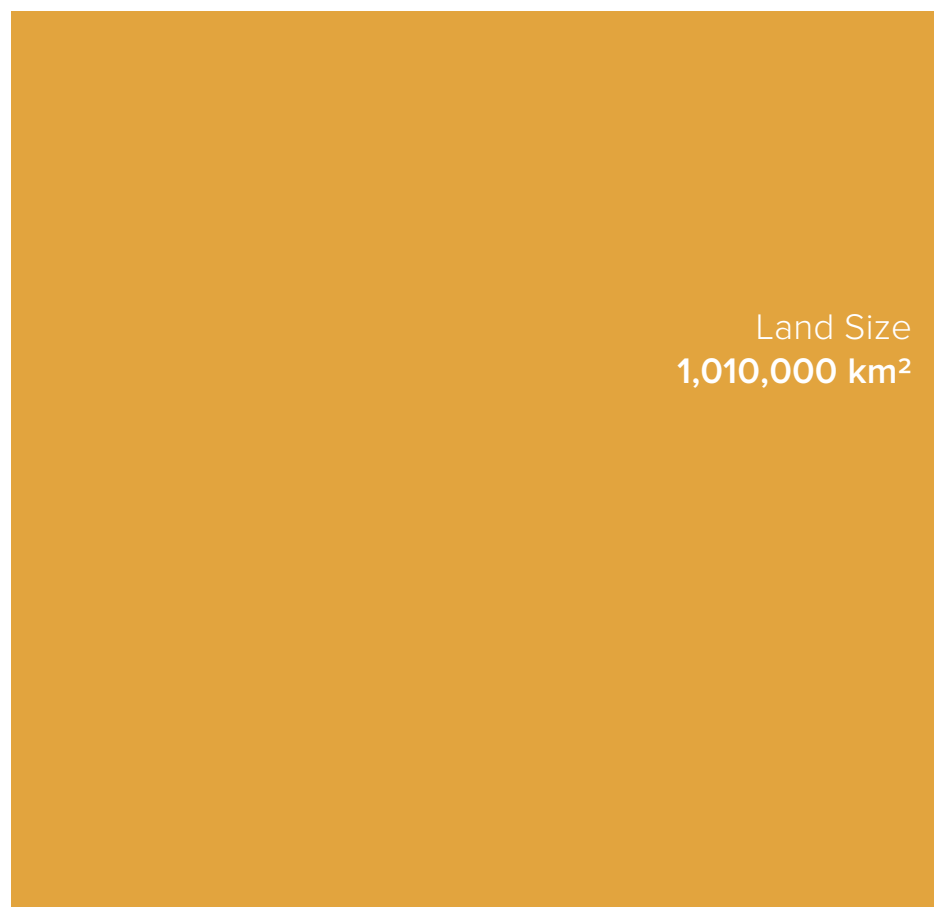
Population density

The Nile delta is densely populated and roughly half of the country's food is grown in the lotus-shaped wedge. Egypt's population is set to reach 100 million in late 2019, a roughly 30% increase since 2000.

Nile Delta

Land Size
20,000 km²

Population
38 million



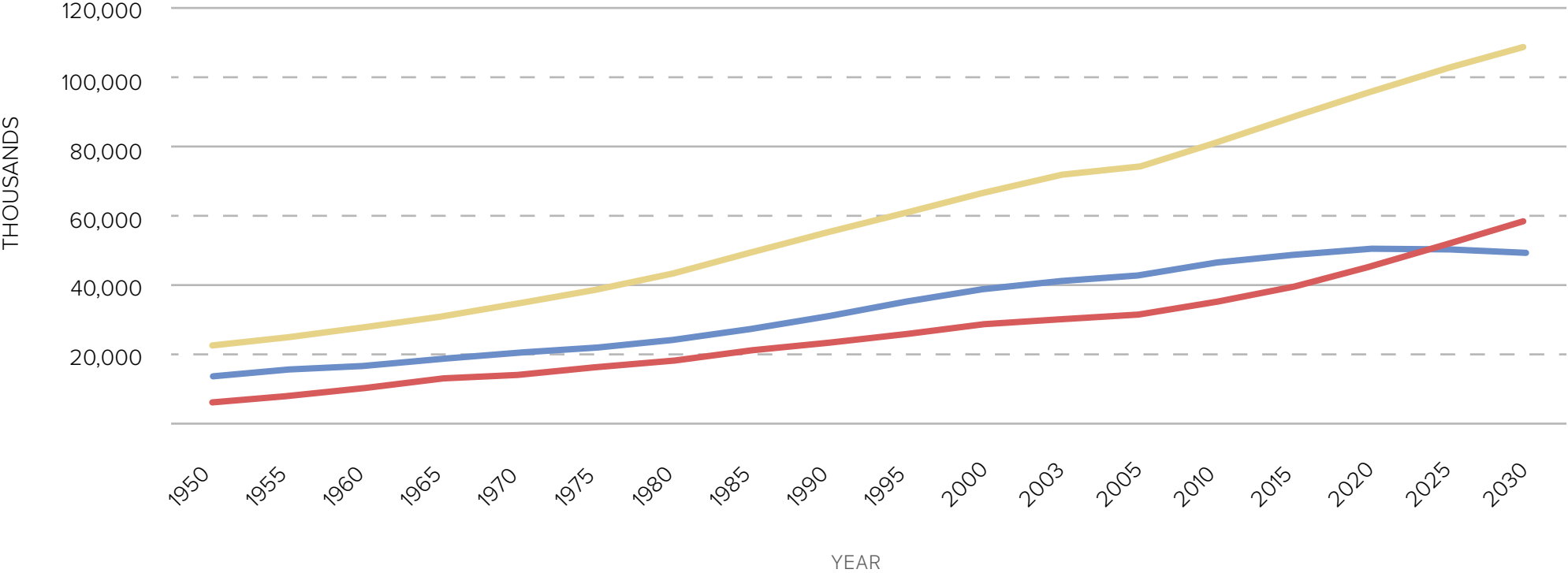
Land Size
1,010,000 km²



Rest of Egypt
Population
59 million

Source: World Bank

Population growth (Egypt)

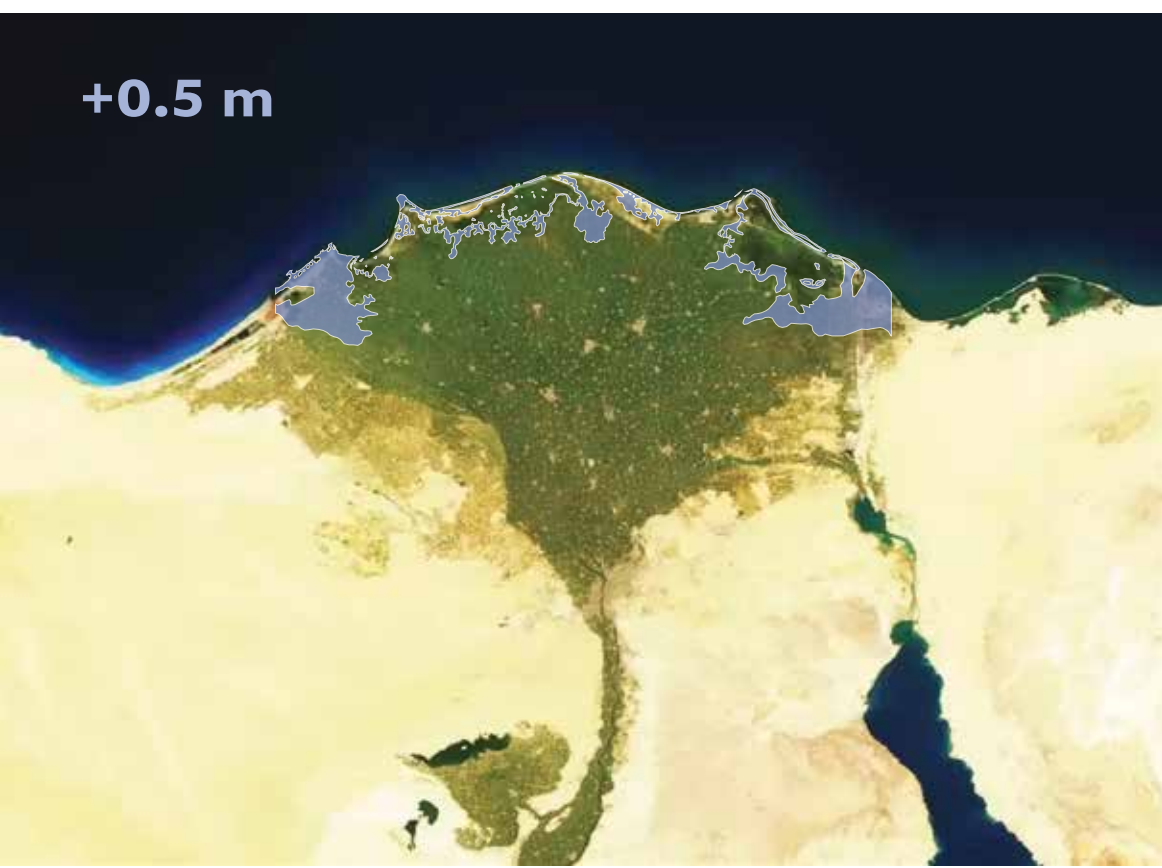


— Total Population — Rural Population — Urban Population

Source: **World Bank**

The Delta disappears...

The delta is subsiding because of a decrease in Nile sediment and excessive groundwater extraction. At the same time, the Mediterranean is rising due to climate change. As a consequence seawater floods freshwater aquifers along the coastal strip. Additionally, the population grows while the desert encroaches from the flanks and diminishes agricultural land. All these factors increase pressure on the Nile delta and its ecosystems, further deteriorating living conditions.



● Submerged coast line with 0.5m sea level rise



● Submerged coast line with 1m sea level rise

Sources: **UNEP**

...and with it livelihoods

Agriculture accounts for almost one third of the jobs in the country, including 45.0% of all women in the workforce, and contributes up to 14.5% of GDP but yields are crumbling and could fall further as the Delta declines.

These challenges, if not addressed appropriately, might lead to increased migration, especially from young Egyptians looking for a more prosperous future.



AbuKir, outside of Alexandria, where residential buildings are built within metres of each other right on the coastline. **Photo Sima Diab**