# EURO

## EUROPEAN REGION

**REGIONAL GUIDE**

AMWHO

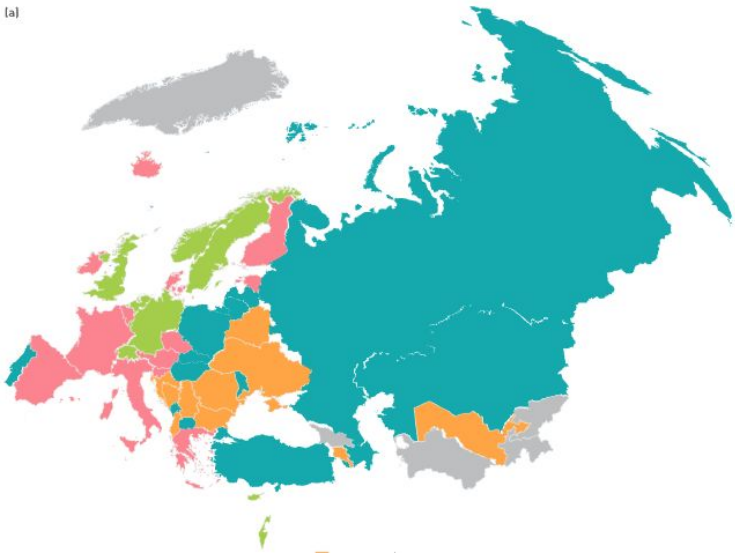
*2023 AMWHO INTERNATIONAL CONFERENCE*

**PLANETARY HEALTH AND THE HUMAN CONDITION**

# INTRODUCTION

The World Health Organization's (WHO) European region (EURO) consists of 53 countries covering a vast geographical region from the Atlantic to the Pacific oceans.[1] The European region plays a leading role in global health by helping shape priorities and providing necessary financial support for humanitarian related efforts, including human development, climate change, and crisis management.[2] It is important to note that the European region is not synonymous with the European Union, which was formed in efforts to better integrate Europe after World War I as many European countries sought closer economic, social, and political ties to help achieve economic growth and security.[3] However, the European Union plays a large role in the region. The European Union consists of seven major institutions, which are made up of dozens of smaller bodies that perform a variety of important functions for the region. These functions include making laws, organizing trade, managing a budget, and coordinating foreign affairs.[4] The European Union's activities oftentimes have impacts on the entirety of the European region.

In recent years, the European region has encountered several crises, including the 2008 global financial crisis, Brexit negotiations, economic fallout due to the Coronavirus pandemic, and issues related to climate change. Though the European Union is primarily composed of developed countries, these countries and the rest of the European region still encounter many issues especially due to climate change. The most recent changes in climate occurring throughout the past few decades has led to detrimental issues, such as the rise in food insecurity across many countries.




Also contributing to food insecurity is the rising prices for food and other necessities that have continued to increase in recent years, especially in the wake of the COVID-19 pandemic.

The European region has made significant attempts to decrease the effects of climate change in hopes of reaching climate neutrality within the next few decades. By investing in clean energy practices and companies to further develop efficient practices to promote sustainability, the European countries demonstrate their dedication to resolve climate issues. Similarly to other regions, the European region still faces the threat of infectious diseases and outbreaks, including hepatitis, tuberculosis, monkeypox, and COVID-19. As a result, the European region countries have developed methods to effectively help their communities. Such matters must be addressed at a global level to help collaboratively resolve some of the issues many communities across the world face.

## FAMINE AND FOOD SECURITY

Climate change has grown to be an increasingly significant global issue, negatively impacting nations with detrimental changes in weather patterns leading to declining ecosystems, agricultural production, and human health. Many European countries have fallen victim to the drastic changes of climate change, specifically high drought levels. According to a drought assessment released by the European Commission's Joint Research Center in July of 2022, as much as 46% of EU territory is currently exposed to dangerous drought levels.[5] The resulting lack of moisture in the soil creates significant vegetation stress, severely negatively impacting agricultural systems and decreasing crop yields. The reduced crop yield and crop potential has led to an increase in food insecurity in several countries throughout Europe.

### CASE STUDY 1: FOOD SECURITY IN HUNGARY

The Central European nation of Hungary faces a variety of issues introduced to the region as a result of climate change and the Russo-Ukrainian conflict. This has led to a significant increase in food insecurity rates across the nation. Hungary is no exception to the significant drought many countries in Europe are experiencing. Hungary is currently experiencing a moisture content level close to zero in the soil in some regions, leading to an expected drastic reduction in crop yield further threatening their food security and forage supply.[5] With a population of nearly ten million, approximately 14.6% of Hungarians live well below the poverty line and a little under 3.3 million citizens, many of whom are children, are suffering from food insecurity.[6] While some are killed from starvation, many more die from a lack of a nutritious diet. As they do not receive the bare minimum of healthy nutrients to live a sustainable life, they are far more susceptible to infection and disease[6]. The current arid climate, lack of rainfall, and increase in droughts is becoming an increasingly problematic issue for Hungarians as their farming options are far more limited.

Furthermore, due to the conflict between Russia and Ukraine, the price of food throughout the country has dramatically surged. Hungary currently has the third-highest food prices in the European Union, making it harder for individuals to purchase sufficient food, especially for those living below the poverty line.[7] Though Hungary is relatively self-sufficient, as they produce and export more crops than they import, citizens have experienced a considerable increase in the prices of several crops, ranging from an 18% to a 62% increase.[7] For many Hungarians, affording basic meals is getting increasingly difficult. This has further contributed to the decreased food security Hungary is experiencing.

Recognizing the severe detrimental effects of food security citizens are facing, the Hungarian government established their primary priority to preserve the resilience of agriculture and ensure food security. To help carry out their mission, the government set up a Drought Emergency Operational Task Force to help combat the effects of the drought.[8] One of the central points of this plan to increase the resilience of agriculture is to prepare a long-term action plan for irrigation throughout the country. To help further improve food security throughout Hungary, the government should not only enforce plans to improve crop yields but also increase capital loans and the number price caps on basic food items.

## Case Study #2: Food Security in Italy

Italy is a country in the southern part of Europe that extends into the Mediterranean Sea. Agriculture is a large economic sector for the country, with agricultural exports to the US bringing in about $6.5 billion in 2020.[9] Global warming increases the likelihood of dramatic weather events, which have negative implications for the agricultural industry all over the world, including Italy. The summer of 2022 brought heat waves to much of Europe, greatly impacting the health of many.

The Po river, the largest river in Italy, runs through the country and provides drinking water to highly populated districts.[10] Spanning 405 miles, the river has dramatically dried up as a result of the drought that came from the 2022 heat waves. The high temperatures are anticipated to eliminate about one-third of the harvest.[11] This has drastic effects for the food supply in Italy, as the Po valley farmers produce approximately 40% of Italian food.[10] The drying of the Po river affects millions of households.

Another effect of extreme temperature fluctuations is rising food prices. As the food output decreases, the price of food increases. With the drought in Italy, the corn production has been severely limited. As a result, the price of corn reached the highest it has ever been.[12] Farmers also say that the shellfish in the Po river are suffering because of the lack of freshwater in the river, which will drive up the price of certain seafood.[12] With a total population of over 60 million, over 4.5 million Italians are vulnerable to food insecurity each day.[13] As the price of food increases, more Italians will be unable to purchase food. Food banks have proven to help provide meals to many, but the impact of the drought on food prices is likely to drive more people to utilize these free resources and create a strain on the system.[14]

Pollution has also had a large impact on the food security in Italy. Diffuse pollution from agriculture represents the most significant pressure on surface and groundwater bodies.[15] The introduction of nutrients and pesticides to the water supply creates a negative feedback loop, as this now polluted water is being used to water crops. This action significantly reduces crop yields, further driving food prices up. In addition, pesticides reduce the quantity of potable water.[16] Worse, contaminated water is known to spread disease and cause foodborne illness.[17] Italy's rivers and coasts have historically been polluted by contaminants and its lakes contaminated by acid rain.[18]

The Drought Emergency Operational Task Force serves to reduce the impact of severe drought events in Europe through its five point plan. Meuccio Berselli, secretary general of the Po River Basin Authority, has strived to look for solutions to the drought in the Po valley. His plan includes higher draining from Alpine lakes, less water for hydroelectric plants, and rationing of water in the upstream regions.[18] Although these are strong solutions, Italy must also look for preventative measures to ensure that severe climate events do not repeatedly impact food security for its population.

## CLEAN TECHNOLOGY AND GEOPOLITICS

Many issues in climate change occur as a result of the overuse and overconsumption of natural resources and fossil fuels. As these changes have become increasingly apparent, the development and use of clean technology has emerged. However this sector is relatively new and therefore often unregulated. As a result, mines and plants driving the future of clean technology can often cause more harm to the environment and surrounding communities. Measures of standard conventions are being developed to help combat the corrosive practices contributing to harming the environment and negatively impacting the health of individuals in surrounding communities.

CASE STUDY 1: COAL USE IN LUXEMBOURG

Luxembourg is a country in Southwestern Europe that is bordered by Belgium, France, and Germany.[19] It is characterized by a mild climate, a population slightly less than 650,000, and an autonomous political unit.

Burning coal has harmful effects on the environment, releasing carbon dioxide, sulfur dioxide, and other pollutants that are known to contribute to global warming. Although its effects are known, the world has largely accepted coal as a form of electricity generation due to its relatively low cost and high output, with global coal-fired generation reaching an all-time high in 2021.[20] Despite this record, the European Union has worked towards reducing their coal consumption, dropping from 522 million tonnes in 2019 to 423 million in 2020.[21]

While the EU overall has shown strong efforts to shift towards cleaner energy, Luxembourg has increased its coal consumption in recent years. In 2019, the country used 73.3 thousand tonnes, and in 2020, this amount went up to 74.4 thousand tonnes.[21]

Luxembourg has been increasing its total energy consumption since 2016 and links this uptick in consumption to steel production and fuel tourism.[22] Fossil fuels, like coal, oil, and gas, supply about 89% of Luxembourg's energy as of 2021.[23] This has disastrous effects through its release of pollutants on the environment and on the health and wellbeing of those burning coal, both in industry plants and in the home.

To reduce the country's greenhouse gas emissions, a possible solution is to shift to other forms of energy. The EU was able to reduce their coal consumption, indicating that Luxembourg can as well. Cheap gas has shown to be a decent alternative to coal burning, although it has its environmental issues as well. Since Luxembourg gets most of its coal energy from other countries (mainly in Africa), the European country could instead import other cleaner forms of energy or use the money to create its own renewable sources within the country, which would save money in the long run.[24]

In fact, The Luxembourg CleanTech Cluster strives to create public support for green technologies.[25] This group is run by two public research institutes and is partnered with many companies and private organizations in an effort to bridge public and private networking to create new environmental solutions. Members of the CleanTech Cluster are able to get advice on funding for clean technology and get a lot of support through the organization.

CASE STUDY 2: CEMENT PLANT IN BULGARIA

The global population rise and advancement in industry come with a very expensive and destructive price; climate issues that not only affect the environment but the health of communities as well. Fortunately, with this rise, we have also seen an increase in advancements towards making these efforts more clean and sustainable through clean technology, with companies awarding millions to help increase the production and use of more sustainable practices. Recently, the EU invested €1.8 billion in seventeen large-scale innovative clean-tech projects under the Innovation Fund. One of the projects receiving a grant will be the first full-chain carbon capture and storage project in Bulgaria.[26]

HeidelbergCement's newly launched ANRAV-CCUS (carbon capture, utilization, and storage) was selected for Grant Agreement Preparation by the EU Innovation Fund.[27] ANRAV aims to be the first full-chain carbon capture and storage project throughout all of Eastern Europe. The project plans to capture carbon dioxide and pipeline it to the depleted Galata offshore gas field under the Black Sea where the carbon can be permanently stored.[27] The funds from the EU will be extremely beneficial as there are a variety of industrial uses for carbon dioxide, but the technology thus far has proven to be less successful and efficient than expected. There is currently no sustainable operation model that is structured enough to successfully capture and store carbon.[27]

The plant could potentially become fully operational by 2028, carried out in conjunction with Petroceltic (an oil and gas company), with a capturing capacity of 800,000 tons of carbon dioxide per year. This is a very significant increase from the current largest commercial carbon capture plant, located in Iceland, which captures roughly 900 tons of carbon dioxide per year.[28]

According to the European Commission, using ANRAV-CCUS to link facilities at the Devnya Cement plant, if successful, will become a carbon storage and capture cluster for not only Bulgaria but the bordering regions, Romania and Greece.[29] While geopolitical tensions may arise between the countries and Bulgaria regarding the use and management of the plant, it is likely the countries will remain civil as they seem to prioritize energy sustainability.[27]

However, the implementation and storage of the carbon comes with a risk to the environment. Storing carbon collected by the system under the Black Sea has many positives but leaves the potential for a carbon leak. If the carbon dioxide stored is not highly monitored and regulated, high amounts of leakage can be expected.[30] If the leak persists into the Black Sea, many organisms and ecosystems could be negatively impacted due to the significant increase in carbon in the surrounding environment. Though there are many positives to the carbon capture and storage system, the storage area and potential drawbacks must be evaluated and heavily regulated to ensure the environment is not harmed.

## INFECTIOUS DISEASES

Infectious diseases are diseases caused by organisms. They can be passed from person to person, by animals, or from contaminated food/water sources. Due to their nature, infectious diseases are heavily determined by the environment; certain conditions create ideal situations for microorganisms that can infect humans and spread illness. In the EURO region, many of the common infectious diseases, like smallpox, have been eradicated. Despite numerous successes, however, infectious diseases still remain a problem that threatens the lives of many.

## CASE STUDY: TUBERCULOSIS IN FRANCE

Bordered by Belgium, Luxembourg, Germany, Switzerland, and other countries, France is one of the most visited countries in Europe. With a population of almost sixty-eight million people, the country is known for its rich history, wines, and art.

Although the country, like many others in the European continent, has had great success in eliminating deadly infectious diseases, France is experiencing a recent increase in tuberculosis infections. Tuberculosis (TB) spreads through the air and is caused by the *Myobacterium tuberculosis* bacterium. It primarily affects the lungs but can also attack the brain, kidneys, and spine.[31] In France, the disease had a downward trend starting in the 1970s, but the country has been experiencing slight increases in incidence since 2016.[32]

There are differences in the distribution of disease among certain populations and regions in France. Mayotte, Guyana, and Île-de-France are experiencing higher rates of TB. These regions are some of the more densely populated areas and/or poorest in France. Research has indicated that the incidence among people born outside France (34 cases per 100,000 people) is ten times higher than people native to France. Characterized as a social disease, TB has a significant impact on low-income groups in the population, especially people experiencing homelessness, who have an incidence rate of 200 cases per 100,000 people. Individuals who are imprisoned are also at a higher risk of contracting tuberculosis than the general population.[33]

Studies have shown that there is a link between climate change and the spread of TB, as changes in climate influence host response. Extreme weather and climate conditions that have led to major displacements across the region facilitate population dense areas that facilitate the transmission of the disease.[33] Research has indicated that the rate of TB began to increase around the peak of migration to Europe in 2016.[34] As such migration begins to occur in the region again due to climate change, the risk of TB also begins to rise. Additionally, TB rates have also been observed to increase with temperature.[33] With rising temperatures as a result of climate change, TB rates are at a risk of increasing further.

The Global Fund was created in 2002 and has since invested over $49 billion to fight pandemics.[35] France has taken its global health initiatives very seriously and has contributed to the Fund by providing key political and financial support. Although this has shown to be a great step in preventing large TB outbreaks in the country, France can do more to lessen the burden of this highly infectious disease.

For one, the disparities in income and high population can be addressed through government policies. Living in poverty and population dense areas greatly increases the risk of developing TB, as residing in an overcrowded/unsanitary environment facilitates transmission of disease. Climate change has been a leading cause of the development of such areas and addressing the issue at its root cause is vital to addressing the rise in TB cases within the region. In 2020, it was reported that 11.8 million people in France were at risk of poverty, and the current poverty rate is 14 percent.[36] France has implemented an antipoverty plan, but more can be done for the homeless population. Increasing welfare programs and encouraging medical visits will reduce the disparity.

## CASE STUDY 2: INCREASE IN SEVERE ACUTE HEPATITIS IN CHILDREN IN THE UNITED KINGDOM

Since the spread of the Coronavirus, infectious diseases have been an increasingly ubiquitous subject. Ranging from the common cold to cellulitis, infectious diseases can cause very minor issues or pose a great threat to one's health. Though most countries in Europe do not observe frequent outbreaks, many, like the United Kingdom, still experience outbreaks in different subpopulations.

In April of 2022, an increase in cases of acute hepatitis of unknown etiology among previously healthy children aged under 10 was reported to the World Health Organization's International Health Regulations (IHR) notification system.[37] Acute hepatitis refers to the inflammation of the liver, and patients often experience a range of symptoms including abdominal pain, fever, malaise, and jaundice.[38] There is currently no cure for hepatitis, as most cases resolve over time, although treatment is primarily focused on preventing further damage to the liver.[39] As of November 2022, 572 cases of acute hepatitis of unknown etiology were reported by 22 countries in Europe, with 280 of them coming from the United Kingdom.[37] Many cases involving children reported gastrointestinal symptoms including abdominal pain and diarrhea or vomiting preceding presentation with severe acute hepatitis.[40] The reason behind the sudden increase in acute hepatitis is unknown. although tests are being conducted to find similarities between those that are infected.

Neither international travels nor connections to other countries have been identified as contributing factors. However, adenovirus has been detected in at least 74 cases (out of 169 at the time the tests were conducted), SARS-CoV-2 in 20 cases, and both in nineteen cases.[40] Of these 169 children aged one month to 16 years old, approximately 10% have required liver transplantation and at least one death has been reported. Adenoviruses are common viruses that typically cause mild symptoms often observed with a cold or the flu.[41] The United Kingdom has observed a significant increase in the adenovirus infection throughout the community in children. Though the tests have yet to provide a single causative influence for the sudden rise of acute hepatitis, the current hypothesis involves the spread and prevalence of adenovirus. While hepatitis can be reported in immunocompromised children with adenovirus, the virus was previously not connected to hepatitis in otherwise healthy children until now.[40] It is believed this may be a result of increased susceptibility among the younger population following a lower level of the spread of adenovirus during the Coronavirus pandemic.

Another contributing factor could be climate change which is the primary cause behind recent weather extremes. According to a study published by the NIH, there is a correlation between the spread of Hepatitis E and environmental factors.[42] While food and water accessibility can be attributed to the increased spread of Hepatitis, environmental factors and meteorological factors such as water quality, radiation, and precipitation can further contribute to the spread.[42] Climate change is found to have a major negative influence on the spread and severity of different strains of hepatic diseases as temperature and humidity play play a significant role in spreading pathogens between hosts.[43] By increasing chemical emissions or changing the dispersion pattern, climate change could potentially be an additional factor contributing to the increased spread of acute hepatitis in the United Kingdom.

Though acute hepatitis does not pose a fatal or extremely harmful threat to most children, there are several health implications and associated costs. The European Centre for Disease Prevention and Control and the World Health Organization have set up a case-based surveillance system to collect data on reported cases.[37] Investigations are currently ongoing to collect and report more detailed clinical and toxicology assessments for those diagnosed to help prevent the spread, although much more must be done to truly prevent the issue from becoming more problematic. Climate change must be assessed as a causative factor to further evaluate causes behind the spread in order to localize the issue.

## CONCLUSION

The EURO region includes a variety of countries, each with different political, social, and cultural characteristics. However, the region shares the dilemma of ecological crises and faces several challenges relating to planetary health. This has drastic implications for both the environment and population as well, since humans rely on nature for resources and livelihoods. Food security concerns, clean technology, and the spread of infectious diseases in this region show the complex relationships between the earth and public health. The case studies in this guide are used to demonstrate some of the problems that the EURO region is currently facing as a result of worsening planetary health. It is necessary to look for solutions to improve the health of our people and of the world and reduce the impact of climate change.

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